Introductory address on medical education, with especial reference to the course of study required for the degree of M.D., in the Queen's University, Ireland / by Alexander Fleming, M.D.

QUEEN'S COLLEGE, CORK,

FACULTY OF MEDICINE, SESSION 1850-51.

INTRODUCTORY ADDRESS

ON

MEDICAL EDUCATION,

WITH

ESPECIAL REFERENCE TO THE COURSE OF STUDY REQUIRED FOR THE DEGREE OF M.D., IN THE QUEEN'S UNIVERSITY, IRELAND.

BY

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THIS ADDRESS

IS RESPECTFULLY INSCRIBED

TO

SIR ROBERT KANE, M.D., F.R.S.,

PRESIDENT OF THE COLLEGE.

The limits of an Address do not permit the full discussion of the subject of Medical Education, and the Author has confined his observations to a selection of the more important points deserving of the student's attention.

Queen's College, Cork,
November 1, 1850.

SUMMARY.—Medicine a difficult profession.—Extent and importance of the medical sciences.—Pleasure derived from their study, and from the practice of medicine.—The bright and dark sides of the profession.—Importance to success of a high standard of education.—This of two kinds, preliminary and professional.—Objects of preliminary study, and what it should embrace.—Professional study of two kinds, intellectual and practical.—Nature and importance of the latter.—The student is advised to cultivate correct observation, to work diligently during all the years of study, to follow the order of courses recommended by the University, to study equally all departments of medicine, and to rely on his own exertions.—He is reminded of his obligations to the College, the Profession, and his fellow-students.—Claims of medicine to the esteem and gratitude of mankind.—Conclusion.

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ADDRESS.

GENTLEMEN,—We welcome the students of last year as old friends, and the new-comers, in the hope that between them and us will rapidly grow that kindly intercourse essential not only to our mutual happiness, but to the successful prosecution of the ensuing winter's labours. It is to the latter, or those who now enter for the first time on their professional life, that my observations to-day are more especially addressed, but I trust they may be listened to with advantage by all. The present occasion must ever be an anxious period to both pupil and teacher. To you, on the threshold of a difficult profession, success in which is to be attained only by severe and long-continued labour; and to us, conscious of the importance of the advice which may now be given, to guide you in husbanding your time, and in acquiring, soundly and profitably, that extensive range of knowledge which you cannot be told too early is absolutely necessary to the enlightened physician.

I have said that your profession is difficult, and I feel that it would be doing you a wrong to encourage you now by representing it as easy. The question for you is not,—how great is the difficulty, or how much labour is necessary to overcome it; but, the knowledge and the profession once gained, will you

then be compensated for your industry and self-denial? The difficulty of your profession consists in the acquisition of an extensive range of knowledge, embracing more especially the sciences of Natural Philosophy, Chemistry, and Biology; but the delight experienced in tracing and unveiling the laws of any one of these sciences is so pure as to afford in itself an ample reward to thousands, who devote their lives to their study. In mechanical philosophy you become conversant with those beautiful results of induction—the laws regulating the general phenomena of matter; in the intricate researches of the chemist, with the important laws which determine the special phenomena of external bodies. But how far surpassing in interest to either of these is the science of life, in its double capacity of unfolding, on the one hand, the delicate machinery of the most perfect part of creation, and, on the other, of investigating their uses, and revealing the wonderful design exhibited in the adaptation of structure to function; or, proceeding deeper, to the study of the laws of the mind, which guides, controls, and in its aberrations reacts so powerfully on the physical actions of the frame; and how absorbing, though futile, is the attempt to explore the mysterious nature of life itself!

But however gratifying may be the study of these sciences in themselves, their interest to you is doubly enhanced in their applications to practical medicine, the value of which may be usefully impressed on you at the present time by a few illustrations. In physics, the recent researches of Matteuci on the passage of fluids through animal membranes have explained to us several phenomena in the action of drugs, and have suggested new and important rules to our art. The invention of Arnott has supplied us with the hydrostatic bed and compressor; the one valuable to the sick in relieving and preventing suffering, and the other essential to the equal distribution of pressure applied as a remedial agent. How indispensable

are the sciences of light and sound to the explanation of the morbid states, and in the suggestion of remedies for diseases of the eye and ear; and so important is acoustics to the detection of internal disease that the recent advances of this obscure science have been chiefly contributed by diagnostic physicians. The services of physical science in explaining the phenomena of health, disease, and treatment, are only beginning to be properly appreciated, and a few years will suffice to give it an equal place with chemistry among the fundamental branches of medical learning.

The human body has been likened to a laboratory, in which are constantly proceeding a vast number of intricate chemical changes; and though chemistry has unveiled only a few of these, so important is the light already afforded, that we confidently look forward to the time when the chemist will clear up much that is now utterly obscure, and so change the face of medicine as to make it almost a new science. Chemistry has furnished antidotes to the mineral poisons, and is daily being applied with success to the elucidation of healthy and diseased action. To this science we owe most of our remedial agents, and to it we shall be mainly indebted in the future for the explanation of their mysterious operation, as well as for the only scientific basis of the rules of diet.

So numerous are the applications of anatomical and physiological knowledge to practical medicine, that your teacher of this department will have constant occasion to direct your attention to them. The recent researches of Marshall Hall on the spinal cord, of Dr. Reid on the functions of the eighth pair of nerves, and of Bernard on the secretions of the stomach, pancreas, and liver, deserve prominent notice, from their great value in explaining much that was formerly unintelligible in the diseases of the nervous, digestive, and urinary systems.

Estimated by the extent and importance of the knowledge which it demands, your profession takes precedence of all others; and it would be difficult to indicate any department of mental or physical philosophy of which medicine has not availed itself, or which has not been successfully cultivated by medical men. Its study presents an intellectual feast of the most attractive character, and is in itself a full compensation for your labour.

But it is in the practice of your profession that is found its highest reward. He who unites in himself the successful practitioner and the upright and honourable man, enjoys a position in society which may well be envied. He is the adviser, friend, and confidant, and at all times a welcome visitor of those who possess his professional services. And when to this are added the pleasure derived from abating pain and restoring health, and the yet more divine privilege of saving life itself, I may justly call your's a noble profession, worthy of any amount of toil, and deserving of your highest ambition. As a means also of securing an honourable independence it has many advantages. There are few occupations in which success is more obviously influenced by personal exertion. If you dislike civil life, you may join the army or navy; and should you wish to avoid the severe struggle which the crowd of competitors occasions at home, the world is open to you. There are few emigrants more certain of success than the medical man; his services are welcome to all, irrespective of country or creed. Among my own fellow-graduates there are some metropolitan physicians, some country practitioners, some military and naval surgeons, and some medical missionaries,—all distributed in nearly every quarter of the civilized globe.

Like most things, however, your profession has two sides, a bright and a dark one; and in fairness to you I cannot withhold some account of its gloomier aspect. The ordinary

exercise of the art involves intercourse with grief, contagion, and death. The life, more especially of the country practitioner, is one often of unceasing toil to body and mind; he has no hour by day or night to call his own, and dares not dream of a holiday. The slave of others' caprice and unreasonable fears, he must bear all with patience and meekness; and perhaps after months of anxious attendance and unwearied kindness, he finds coldness and ingratitude growing with the increasing strength of his patient. And the trials of the profession are not confined to rural life. If ambition lead you to a metropolis, long years of unrequited toil may await you, and some may, perhaps, fall victims of excessive mental exertion, or of infectious disease caught in the practical study of medicine. Medicine as a profession is too commonly adopted as an instrument merely of obtaining fortune; and the public is apt to accord consideration to its members in the ratio of their income as successful practitioners, and to neglect unjustly the much higher claims of him who devotes his time and talents to its advancement as a science. Everywhere we have to contend with the hydra-head of quackery, whose pretentious boasting yet deceives a large portion of the public. Too often do we see the charlatan homœopath, the bone-setter, or the mesmerist, rolling in wealth, and followed by crowds, when the enlightened physician is pining in obscurity.

The Government also, on which, by reason of our manifold gratuitous services to the community, we have such strong claims, has neglected us. Complete legislative protection I would not ask, but assuredly efficient means should be taken to enable the public to distinguish readily and certainly the educated and legally qualified practitioner from the charlatan who so often obtains success under the disguise of legitimacy.

But do not let this picture alarm you; it is given to excite you to exertion, for it rests much with yourselves whether

your's be the brighter or the darker lot. I grant that in every physician's career there are circumstances affecting success over which he has little or no control, but their influence is slight when compared with that exerted by the intellectual and moral character of the individual. The rewards of ability and industry,—not always, it is true, adjudged to the most deserving,—are becoming more certain every day. The public is not so readily deceived now as it was, by ignorance concealed under a mysterious solemnity of manner; and charlatans, both within and without the profession, must possess talents of some sort, and a consummate knowledge of mankind, to exercise with success their deceptive calling. Men begin to seek anxiously for the best educated and most skilful practitioner, and are often guided in their selection by the position enjoyed by the candidate in the estimation of his professional brethren.

The moral requisites of the profession, though most important, scarcely fall within my province, which is more especially to enforce upon you the value of a high standard of intellectual education.

To secure the social rank and consideration to which you are entitled as members of a *liberal* profession, and to make your presence acceptable in whatever company your duties may call you, you should be educated in taste, feeling, and manners, at least to the level of good society; and I cannot too earnestly direct your attention to this element of your education, as to the want of it is due a considerable share of the neglect which our profession sometimes receives from the public.

The education required of you by the regulations of our University is of two kinds, preliminary and professional. The object of preliminary education is twofold; first, the development and discipline of the mind, and secondly, the acquisition of knowledge necessary to your position in society,

and much of which is indispensable to the successful pursuit of professional study.

You are required to know Latin and Greek, because an acquaintance with these ancient tongues is essential to the thorough understanding of your own language, and of the technical terms of your profession. Formerly, the classics were trusted to as the best means of securing all the objects of preliminary study; and the youth who could write Latin and Greek verse, though utterly ignorant of all more useful knowledge, was supposed to be educated. But this system is now exploded, and certainly no greater wrong can be inflicted on the youth destined to medicine than an exclusive attention in his school education to classical learning; it absorbs time which may be more profitably employed, and is apt to generate a disposition of mind unsuited to the active and cheerful intercourse with the world which the practice of his art requires. This evil is provided against by the matriculation examination, which demands a certain knowledge of geometry, arithmetic, and geography.

On the subject of the classics, I must protect myself against misapprehension, by observing, that I object to them only when allowed, as is so often the case, to exclude other and important branches of education. I have said that a certain knowledge of Latin and Greek is essential to the medical student; and I am fully conscious that a *complete* course of classical study exercises a beneficial influence in developing the faculties and refining the taste and imagination; but these advantages are secured only by a very long period of study, and such a sacrifice of time as is scarcely compatible with the urgent demands of an extensive system of scientific and practical education. Moreover, it should always be kept in view that, as a means of mental cultivation, the study of French and German is of nearly equal value, and that the acquisition of these modern languages is of direct utility to the practical

wants of our profession. The intellectual training of the young student should be accomplished (and it may perfectly) by the same means which store his mind with useful knowledge. How few of us, even among the most diligent, have acquired a fair acquaintance with a tithe of the knowledge which we feel we ought to possess; how many books we have marked to read—how many subjects to investigate, but for which the time is never found: and surely it is a great error to devote sixteen or seventeen years of that time which subsequently becomes so valuable, exclusively to mental discipline, when by another course that end may be attained, and, as we believe, even more effectually, at the same time that the mind is filled with knowledge capable of daily and useful application.

These remarks on the early education of the medical student apply with equal force to the case of the young lawyer, engineer, merchant, or farmer; and certainly it is not the least of the many important objects contemplated by the Queen's Colleges, that they will show the value of recognising natural and physical science, general knowledge, and modern literature, as essential elements of a liberal education. They understand the spirit of the age, and will meet its pressing requirements, by preparing the students for the *real* business of life.

In offering to direct the studies of the aspirant to the medical profession, we should always bear in mind the urgent claims on his limited time; that he cannot learn all that is or may be useful to him, and that the longest and most diligent life is too short for the acquisition of knowledge absolutely essential to his preparation for the discharge of responsible duties.

I shall scarcely be accused of a disposition to limit his general acquirements, or to undervalue the importance of a good preliminary education; but I am anxious, on the other hand, to avoid an error common to those in my present position, of enumerating such a variety of accomplishments as essential, that

the youth is bewildered and depressed by the conviction of his inability to adopt the counsel given. I am thus led to speak of two branches of instruction generally recommended to medical students—drawing and German. If the youth have a very decided taste for drawing, he may acquire it, but not otherwise. This accomplishment is of very sparing utility, absorbs much valuable time, and is often made a plausible excuse for trifling. It is much cheaper to give our money than our time for illustrations, and to purchase the finished labours of an artist. Of the value of German, as a key to a rich mine of medical knowledge, there is no question; and it is only in relation to the time selected for its study that I now refer to it. It is certainly best acquired as a branch of preliminary education; but students who have commenced their medical course as you have, are often advised to study the modern languages, but more especially French, German, and Italian, as if an acquaintance with these tongues were picked up with the same facility as apples from the ground. But a really useful knowledge of German is not acquired by the majority of youths with less than from nine to twelve months' close and almost exclusive study; and to withdraw that time from the four years devoted to medical instruction would indeed be a fatal error. You must wait until you have obtained your degree, when you shall have more leisure, and when you may, perhaps, have an opportunity of visiting the German Universities, and learning the language in its native country, at the same time that you are extending your knowledge of practical medicine.

Our University has boldly taken a step in advance of many older institutions, in establishing an entrance examination for the medical student; but it is incumbent on me to warn you against the error of supposing that the passing of this examination implies your having obtained an adequate general education. It is difficult for any one institution to exact more without en-

dangering its success; and, as earnestly pointed out many years ago by Sir James Clark, it is the duty, and in the power of the Government only, to enforce by law a really efficient course of preliminary study on every one entering the profession of medicine, and not leave this question, so vital to the best interests of ourselves and our science, to be determined by the mercenary contentions of rival Colleges and Universities.*

In addition to the subjects included in our matriculation examination, a sound and complete system of preliminary education for the young physician should embrace English composition, logic, history, the study of our standard literature, and the acquisition of at least one modern language. Geometry and logic force him to reason and compare, and give him quickness and accuracy of thought; while the other branches remove prejudice, teach him caution, sharpen discrimination, and strengthen the judgment.

Thus educated, with his mind invigorated and stored with a large amount of general and useful knowledge, the student is prepared to enter with advantage on the special and more complex studies of his profession, and he may aspire not merely to the successful practice of a routine art, but to the complete knowledge and advancement of a most difficult science. Your preliminary knowledge already tested by examination, and your medical studies once begun, I recommend you to give your almost undivided attention to the latter; and according to my experience of medical students, you are not likely to neglect this advice. The earnest student is quickly enamoured of his studies, and, conscious of their extent and immense importance to his future career, is most unwilling to devote time to any pursuit not having a direct and obvious bearing on his profession. The combining of extrinsic with essential profes-

* Remarks on Medical Reform, in two Letters addressed to Sir James Graham. By Sir James Clark, Bart., M. D., F. R. S. 1843.

sional study, is, I am satisfied, most injurious in its results, and is not founded on a correct knowledge of the human mind.

The subjects of *professional study* are stated in your curriculum, and the importance of each in relation to the end of all your labours—the successful treatment of disease, will be pointed out by their respective professors. I will not occupy your time now by special allusion to them, but I have some advice to give you applicable to the study of all of these sciences, and to which I beg your earnest attention.

Professional study is of two kinds, which may be named intellectual and practical. By *intellectual* study is understood the reading of books and attendance on lectures, modes of obtaining information with which you are already familiar; but these sources furnish only a portion of the knowledge of the medical man, a large share of which is obtained, and obtained only by *practical* study, *i.e.* by seeing, hearing, feeling, smelling, and tasting the various objects described in your text-books and spoken of in the lectures. Both kinds of study are essential, and it is foolish to vaunt the one and undervalue the other, but the knowledge gained through the senses is the more enduring and the more important. A few illustrations will make this evident to you. Let us suppose that you desire to study the metal potassium, and that you have read its description in your text-book, you will yet have only a very vague idea of its appearance and properties; but the moment you see the metal, and perform for yourself the experiments detailed, a flood of precise and very permanent knowledge is obtained: or you wish to study the brain, and find it impossible to do so with success by merely reading the account of it in your work on anatomy; yet how readily the description is followed with the organ itself before you: or again, how futile would be the attempt on my part to describe to you a drug and its preparations, without the articles before me to illustrate my remarks: or finally, to

take a very familiar example, and suppose that you wish to know the appearance of a man, so as to be able to identify him again with certainty, you would not read a description of his face, or content yourself with a sight of his portrait, but you would take the first opportunity of seeing the individual, and observing for yourself his features; and the same plan must be followed in the study of all the medical sciences.

But it is in obtaining a knowledge of the symptoms and signs of disease that practical education is most indispensable. It is then called clinical medicine, and is, or ought to be, taught at the bed-side of the patient. Those of my hearers who have advanced to this, the most interesting of all their courses of instruction, must be aware that the only means of knowing the jerking pulse of aortic disease, the crepitating râle of a pneumonia, or the bronchophony of a tubercular lung, is to have them pointed out by your teacher, that you may feel them and listen to them for yourselves. Description is here utterly inadequate to supply the place of observation. Or, again, how impossible to obtain a knowledge of diseases of the skin from books, and yet how easily the student recognises an acne, a psoriasis, or a prurigo, when once they have been shown to him on the living body. No diseases are so readily known as these, yet in this country their diagnosis is commonly thought to be difficult, simply because they are not taught in the hospital. Your knowledge of the properties of drugs may be complete, and yet utterly fruitless, if to it is not superadded an acquaintance with their action on the economy, and of the modifying influences of constitution and disease, as ascertained by cautious observation at the bed-side. In clinical medicine, it is desirable that the pupil in the first instance have a teacher in whom he has full confidence, to tell him the name and nature of the pulse he feels, the sounds he hears, and the appearances he sees: and here the evil of an incompetent instructor is most serious, as erroneous impressions of sense, once acquired, are difficult to

eradicate, and will certainly lead to dangerous mistakes in practice.

It would be well if the improvement of the observing faculties formed a prominent feature in intellectual culture from earliest childhood; but it does not, and hence the greater need for the advice I have now to give you,—that, from the first day of your professional career, you cultivate close and accurate observation, and endeavour to educate your organs of sense, by continued exercise, to a high degree of perfection. Your sight may be clear, but you will find that much looking is necessary ere you can distinguish with certainty a glaucoma from a cataract, or the measles from the nettle-rash; your fingers may be delicately sensitive, and yet many and careful trials are required to enable you to distinguish the fluctuation of a fluid from the elasticity of a solid tumour, or the wiry pulse of inflammation from the irritable pulse of excessive loss of blood; your hearing may be acute, yet considerable practice is necessary before you can recognise with certainty the crepitating râle of an inflamed lung, or distinguish to your own conviction a friction sound from a mucous murmur in the chest. And our science, in recent times, has carried observation to parts inaccessible to the unassisted sense by means of instruments, as the microscope and stethoscope, for the successful employment of which much practical training is required. Without this improved faculty of observation, so important in diagnosis and prognosis, it is impossible to pursue successfully the profession of medicine. It distinguishes the mind possessed of real experience from ignorance with grey hairs; as it must be obvious to you that one man may pass his life in practice, and yet, if deficient in this faculty, or too lazy to use it, may have less knowledge than another may acquire in one year by its active exercise.

Do not misapprehend the meaning of these words, and fall

into the error of supposing that intellectual study leads exclusively to a knowledge of the science or theory of medicine, and practical study to a knowledge, only of its art. You derive from each mode of study information in both the science and the art; but assuredly, the diligent pursuit of practical study, independently of its vast importance in the acquisition of knowledge, is such an admirable means of mental training, and of the education of the senses, that it confers ultimately on the student the *tact* so essential to the successful application of his knowledge in the treatment of disease, or, in other words, to the practice of the medical art.

To provide for the cultivation of the observing powers, and the acquisition of practical knowledge, your teachers are required to illustrate their lectures with the objects spoken of, whether instrument, bone, metal, or drug. That you may verify the description with your own observation, and that you may examine and experiment with them at leisure, special classes are instituted, as, practical anatomy, practical chemistry, practical pharmacy, and clinical medicine. And before dismissing this subject, let me tell you that your mere presence in the dissecting room, hospital, and dead-house, or the simple inspection of the appearances of disease, will not make you medical observers. You must frequently, indeed almost always, reflect and reason on what you have seen and heard, before attaining the knowledge you seek. Your business is not simply to ascertain the fact, but you must also determine its absolute and relative value by a searching inquiry into the conditions associated with its existence. Herein lies the great difficulty, and a fertile source of error in medical observation; and herein also lies the necessity of combining intellectual with practical study; for he only who reads and observes with a mind already well stored with knowledge, and fitted for correct reasoning, will profit by experience, and become a skilful physician.

I insist the more strongly on the importance of practical study, because I know that many of the most diligent students of medicine neglect it, under the false impression that it will be time enough to direct attention to practical knowledge when they have completed their College course, and obtained their degree. I earnestly hope that our University will effectually check this evil by the nature of their examinations for the degree. But I trust my remarks have convinced you that the foundation, at least, of practical knowledge must be laid during your College life, and that much of it is obtained *only* by direct instruction from your teachers. If you fail now to cultivate observation, and secure a certain amount of practical skill, you will be wanting hereafter in the most efficient means of self-instruction.

You are required to devote four years to your medical studies, and if you believe what I have said of their extent and difficulty, you must feel that the period is short enough, and you will be willing to accept my warning against a common and serious error of the medical student—that of sacrificing the first and second years to trifling and pleasure, in the vain expectation that he will be able to make up for the lost time by extra exertion during the third and fourth. I can tell you the consequences, having too often seen them. When the defaulter at last begins his task, overwhelmed and embarrassed by the amount of work before him, he soon abandons all hope of acquiring a sound knowledge of his profession, and confines his ambition to the passing of his examination. He goes to a grinder, is crammed with facts and answers to catch-questions, and hurries from subject to subject with a haste quite opposed to the sure and systematic advance of the regular student. Instead of the pleasure and intellectual strength derived from well-arranged study, he is continually harassed with a painful anxiety as to the result. He may struggle through his examination, but

his superficial and hastily acquired knowledge of facts without principles quickly passes from his mind. Perhaps one of ten has the moral courage and perseverance to commence his studies anew, and ultimately to redeem his past folly; whilst the remainder, after two or three ineffectual efforts to restore their knowledge, purchase books of formulæ, and sink irretrievably into routine practitioners.

This College has endeavoured to secure uniformity of study on the part of the students preparing for the University degree, by submitting them at the end of each year of study to a pass examination on the subjects of the lectures attended by them during that year. I attach much value to this regulation, and I am glad to be connected with an institution which has been the first in these Islands to take this important step in the improvement of medical education. It must be gratifying to the parents of such students to be assured annually of their steady progress in professional knowledge; and, on the other hand, to know that idleness will not pass unchecked by official warning. And let me assure the students themselves, that any trouble which the passing of this examination may occasion will be far more than compensated by the light and cheerful spirit with which they will enter on the following year's labours, when satisfied that they have done justice to those of the past; and they will be enabled to go through their entire curriculum with a healthy self-reliance and certainty of ultimate success, to which medical students are too often strangers. The multiplicity and extent of the subjects on which they have in the end to undergo examination, may well oppress with anxiety even the most diligent, unless assured from time to time, that their studies are being conducted rightly and successfully. Moreover, our students may safely entertain the hope that good marks obtained at these annual examinations will receive due consideration at the final trials for the degree.

To provide against another error of the student, productive of great present irregularity, and of serious injury to his future progress, namely, the mal-arrangement of his classes, the University has prepared an order of study which, though not absolutely enjoined (from the inconvenience which some of you, qualifying for other boards, might otherwise experience), is strongly recommended for his adoption. The principle of it is obvious. Passing from the elementary and general to the more complex and special accessory sciences, the student is finally brought by progressive steps to the practical and more difficult departments of medical study. The first and second years may appear to be overloaded, but the arrangement enables the pupil to concentrate his attention on the more important and difficult subjects allocated to the third and fourth years; and time is secured for efficient attendance on clinical medicine and surgery. And the University could not ignore the fact that some of you have to qualify for other boards, and will require attendance on extra courses of anatomy and surgery in the two last years.

Another word of advice and I have done: avoid the error into which many students fall, of confining their attention to one department of the profession, whether surgery or medicine, to the neglect of the other. I can recollect some of my fellow-students, who, believing themselves endowed with manual dexterity, and attracted by the reputation of a successful operator, devoted themselves almost exclusively to surgery and plumed themselves especially on their ignorance of medicine. This is very contemptible, and I cannot warn you too anxiously against it. The division of labour in our profession is convenient in practice, but should be unknown to the student, who, to be well versed in any one department, must be fully educated in all; and moreover, it is rarely possible for any one of you, during the period of your studentship, to be certain whether your lot in future life will be that of the physician, surgeon, or general practitioner.

Such, Gentlemen, is the counsel I beg to offer you on the subject of your education, and I urge you not to waste time, nor neglect the opportunities of improvement here afforded. Superiority, or great natural gifts, are not given to all; but in demanding the exercise of various talents, our profession has the advantage of placing its members on a footing of near equality; for where one is endowed with high reflective intellect, another has greater facility of observation, a third superior industry or capacity for labour, and a fourth may have pre-eminently the rare talent of common sense,—a most important element of success in the practice of medicine, and the possession of which will go far to compensate the physician for the want of higher powers. But, whatever be the talents that nature has confided to your keeping, you are required to make the best possible use of them, if you hope in the future to practise the art with an approving conscience. Life is dear to man, and bodily suffering often terrible; and, he who, imperfectly educated and incompetent, undertakes to save the one or abate the other, incurs a great responsibility; and his nature must be blunt indeed if he be not filled with bitter repentance and remorse for time mis-spent, talents prostituted, and opportunities neglected.

I have held up to you as your best reward the pleasure derived from the study and practice of medicine; but a generous Government, anxious to excite emulation and stimulate exertion, has furnished additional inducements to industry, in prizes and scholarships, not surpassed in value by those of any other medical school in this country. Of the great utility of such incitements to diligence, I never had any doubt; and our University has happily removed the only valid objection to the system of prizes, namely, the danger of their causing an exclusive devotion of the pupil's attention to one subject, by awarding the scholarships to the students who exhibit the highest proficiency in all the subjects of the previous year's study.

Do not fall into the mistake of supposing, "that for the formation of your professional characters your teachers alone are responsible. The very best instructions, falling upon a barren soil, are utterly fruitless. The most accomplished lecturer may as well discourse to empty benches as to the careless, inattentive student. The sagacious physician, or the dexterous surgeon, may work any number of miracles of science at the sick bed, before the eyes of a crowd of pupils, with no good result, except to the patient, if you do not strive to understand the rationale of their proceeding, and to acquire the knowledge by which you may yourselves be equally successful. On the other hand, the earnest and discriminating student is comparatively little dependent upon the guidance of the teacher under whom he may chance to be placed; but draws from the dissecting-room, hospital ward, and dead-house, and from the works of the masters of their respective departments, the information which the inefficiency of the lecturer, on whom he attends, or the unskilfulness of the practitioners whom he follows, may fail to afford him. In almost every walk of life, the knowledge which a man gains by his own exertions is that which he most prizes, and which is most fruitful in all good results; and in no case is this more evident than in our own profession."*

I have recommended diligence as the surest and most honourable means of securing your own success; and I would now appeal to you in behalf of the young institution in which we are assembled, and whose reputation will be made or lost mainly by the character and future position of its *alumni*. Though students now, let me carry you forward to the time when I may be able to point to some of you as men advancing our difficult science, and adorning by their learning and virtues the profession of which they are members; and when you may be able to refer with pride to the Cork Queen's College as your

* Dr. Carpenter on the Objects of Medical Study. *Medical Gazette*, October, 1848.

common *alma mater*. The pride is honourable and the pleasure is pure which are associated with the place of our education, and I trust they may be realized to you.

I would remind you, also, of your obligations to your profession, that you may endeavour to reflect upon it a portion, at least, of the honour it confers upon you. The elevation generally of the profession in the social scale will be accomplished solely by the improved knowledge, virtues, and usefulness of its individual members; and you need not indulge the hope that any measure of medical reform or legislative enactment will raise our status otherwise than by enforcing a better training of the youth destined to medicine, and higher general and professional acquirements.

We are unjustly accused of being unfriendly among ourselves; but in all large towns we have our societies, where we meet as well to cultivate mutual kindness as to promote science; and throughout Europe we maintain together a most friendly and beneficial intercourse to an extent quite unknown in the other professions; and I could point to you many instances of young men advancing successfully in their profession, in virtue of aid received from professional brethren, where no claim whatever for the kindness existed except, perhaps, that of a desire to do well. But, Gentlemen, the severe contest for practice, the main source of the uncharitableness which sometimes unhappily exists among medical practitioners, is unknown to you as students; and I urge you to cherish a good understanding among yourselves. The present is probably the best opportunity that you will ever enjoy of sowing the seeds of genuine friendship, by which you will secure happiness not only for the time of your studies, but lay up a store for after life. Into your rivalry for prizes and scholarships let not the canker-worm of envy enter. "It is the product of a narrow and unwholesome mind, and will but

ill attain the object at which it strives. He who repines at another's success, or listens to the recital of the errors or misfortunes of a rival with a malicious joy too vivid to conceal,—who is nervously jealous of the little reputation he may have scraped together, and trembles with anxiety and anger if it be but rubbed against,—surely such a man need not be the object of our envy, and has been punished for his own, for it has led him to adopt a line of conduct the very opposite to that which is calculated to make him happy in himself, or respected by his fellows. Let us meet one another with the open brow of candour and the open hand of fellowship, as labourers in the same rich field, and as all striving for the same good and great object—the advancement of knowledge and the alleviation of human misery. Our time is but short in this world, and should not be frittered away in murmurings and contentions one with another. Let our only rivalry be that of enlightened and generous minds, a friendly strife who shall exert himself most for the benefit of others, and who shall advance furthest, and with the most unblemished steps, in the honourable paths of science and humanity."* Let us be *united* in truth as well as in name.

Our claims on the esteem and gratitude of men are freely admitted. It would be difficult to refuse respect to a profession which is indispensable to civilized life; whose constant occupation is the alleviation of suffering and cure of disease; which gives more time and labour to the poor than all the other branches of society together; which exhibits unwearied devotion to the cause of science, and which can cite the names of Harvey and Hunter, of Bichat and Cuvier, of Jenner and Sympson, of Faraday and Alison.

Thus, Gentlemen, estimated by the extent and importance

* Introductory Lecture on Surgery. By James Miller, Professor of Surgery in the University of Edinburgh. 1840.

of the knowledge it demands, by its past services and present value to society, by the names illustrious in science, literature, and philanthropy, of which it can boast, your's is a noble profession; opening to all a wide field of usefulness, and holding out rewards to the most honourable ambition.

I add the curriculum for the degree of M. D. in the Queen's University, Ireland, to which reference has been repeatedly made in the preceding address. Every candidate is required to pass the matriculation examination, and to give evidence of having attended the following courses of instruction during a period of at least four years. The order of study here given is recommended to the student, but is not absolutely enjoined.

First Year.—Anatomy and Physiology; Chemistry; French or German: *Six Months.* Natural Philosophy; Botany: *Three Months.*

Second Year.—Anatomy and Physiology; Materia Medica; Practical Anatomy: *Six Months.* Practical Chemistry: *Three Months.*

Third Year.—Surgery; Midwifery; Clinical Surgery: *Six Months.* Comparative Anatomy: *Three Months.*

Fourth Year.—Practice of Medicine; Medical Jurisprudence; Clinical Medicine: *Six Months.*

Every candidate is required to give evidence of having attended a general hospital during twenty-four months, or an hospital for eighteen months and the out practice of a dispensary for six months; also, of having received instruction in practical pharmacy, for three months.*

The only courses in this curriculum requiring special notice here are French, Natural Philosophy, and Practical Chemistry.

The introduction of French into the curriculum is a violation of the principle which separates preliminary and professional study, rendered necessary by the imperfect condi-

* In the Prospectus of the Faculty will be found all the Statutes relative to the degree, and the details of the matriculation and scholarship examinations.

tion of many of the preparatory schools in Ireland, where efficient instruction in the modern languages is not provided. The evil of this encroachment on the time set apart for medical education has been, to a certain extent, removed by the selection of medical authors for perusal by the pupils; a plan of study which I adopted myself with advantage in the acquisition of German, and which I have often recommended to students.

The Professor of Modern Languages in this College has arranged a French course exclusively for students of medicine, in which the regular class-books are Bichat's Recherches physiologiques sur la Vie et la Mort, and Pariset's Eloges des Membres de l'Académie Royale de Médecine; and extracts from the following works will be read to the pupils for exercise in dictation:—Leçons de Philosophie chimique, par Dumas; Leçons sur les Phénomènes physiques de la Vie, par Magendie; Discours sur les Révolutions de la Surface du Globe, et sur les Changemens qu'elles ont produits dans le Règne Animal, par Cuvier; Recherches expérimentales sur les Propriétés et les Fonctions du Système nerveux dans les Animaux vertébrés, par Flourens; Histoire de la Médecine, par Rénouard; and the Recherches anatomico-pathologiques sur l'Encépale et ses Dépendances, par Lallemand de Montpellier. This arrangement has the advantage of introducing the student to the rich mine of knowledge which an acquaintance with the language will open to him, and of making him familiar with some of the great names of France in general science and medicine. Nor are these benefits obtained by any sacrifice of education in taste, an important object in the study of the languages, for,—and, as members of the same profession we may be proud of the fact,—the works above cited of Bichat, Pariset, and Lallemand, are scarcely excelled for elegance and purity of style.

The students have expressed themselves highly satisfied with this arrangement, and I am confident of its leading to good results.

Attendance on natural philosophy is made imperative on the medical student for three months only, but he is invited by the Professor (and this year I am glad to say that the majority of the students have embraced the offer) to attend the entire course, extending over seven months. This course comprehends, first, the general laws of matter, at rest and in motion, or statics and dynamics, with the subsidiary sciences of, mechanics, astronomy, hydrostatics, hydraulics, pneumatics, acoustics, optics, heat, and electricity; and secondly, a course of lectures adapted exclusively to students of medicine, on the special applications of natural philosophy to medical science. The following is a synoptic view of the course on MEDICAL PHYSICS:—

Phenomena of life divisible into two classes, *physical* and *vital;* their mutual relation; value of a knowledge of the first class to the physiologist, pathologist, and therapeutist.

IMBIBITION.—Endosmose and exosmose through animal membranes; endosmometer; Dutrochet's, Hales', Magendie's, Matteuci and Cima's, and Liebig's experiments; capillary circulation; Poiseuille's experiments; applications of the laws of endosmose to absorption, secretion, cell-growth, action of saline purgatives, &c.

HYDRAULICS.—Circulation of the blood; its mechanism and forces; velocity of the circulation; experiments of Hering, Matteuci, Poisseuille, and Hales; pressure of the blood on the blood-vessels; Poiseuille's hœmo-dynamometer; special physical conditions of the cerebral circulation; Arnott's hydrostatic bed and compressor; Hooper's water-cushion; stomach syphon, and pump; cupping.

PNEUMATICS.—Respiration; its mechanism; changes produced in the air; gaseous endosmose; Valentin and Brunner's researches; Graham's experiments; force and volume of inspiration and of expiration; Hutchison's spirometer; effect of perforation of the thorax.

Animal Mechanics.—Muscular contraction, velocity and extent of motion, how gained; system of levers in the body; influence of atmospheric pressure on the joints.

Sound.—Mechanism of the voice; its *timbre ;* the voice as heard in the chest, and its modifications; consonance of the voice; hearing and its mechanism; auscultation and stethoscope; laws of the production of sound by percussion, and their applications to diagnosis.

Light.—Influence of, on the development and on the colours of animals; eye, and the mechanism of vision; adaptation of the eye to vision at different distances; presbyopia and myopia; achromatism of the eye; specula, eye-glasses, and microscopes.

Animal Heat.—How produced; agency of caloric on vital action.

Animal Electricity.—Muscular electrical current, its direction, intensity, and origin; electric current of other tissues and organs; electric fishes, and the mechanism of their electric organs; relation of electricity to the nervous force; effects of the electric current on the muscles, nerves, &c., of animals; different effects of the direct and inverse current.

I again state my conviction of the value of the study of natural philosophy to the student of medicine, considered either as a means of intellectual discipline, or as affording important light to medical science, and valuable resources to medical art.

The course of Practical Chemistry is adapted to the special wants of the medical student; and his attention is directed more to the different methods of chemical manipulation and qualitative analysis than to the preparation of substances. He is presumed to be well grounded in the general principles of the science of chemistry, having attended the systematic course during the previous year. He is first made acquainted with the ordinary operations in analysis, as pulverization, solution,

decantation, evaporation, distillation, sublimation, &c.; and is then required to practise the construction and arrangement of apparatus for pneumatic chemistry, and for the preparation of chemical and pharmaceutical substances. Recourse is had as much as possible to the Pharmacopœias, for practical illustrations of the different processes. He is then conducted through a regular course of qualitative analysis, and is made to employ the knowledge thus acquired for the discovery of the adulterations of drugs, and the presence and nature of poisons; and to the qualitative examination of mineral waters, the fluids of the body, urinary deposits, and calculi.

In closing these remarks I cannot omit referring to the curriculum for the arts degree in our University* as a course of study admirably adapted to secure the ends contemplated in the preliminary instruction of the young physician. The Statutes permit the student to take both degrees in Arts and Medicine in five years, but I would earnestly recommend such parents as have selected our profession for their sons, to send them to College at the age of 15, that they may complete the arts curriculum, and be prepared at the age of 17 or 18 to commence their medical course, to the subjects of which they will then be able to give undivided attention. It is thus that we shall be able to accomplish our anxious wish of sending forth men fitted to raise our social position and advance our difficult science.

* First Session.—The Greek and Latin Languages. The English Language. The French Language. Mathematics. Second Session.—Logic. Chemistry. Natural History and Physical Geography. The Higher Mathematics, or, The Greek and Latin Languages. Third Session.—Natural Philosophy. History and English Literature. Metaphysics, or, Jurisprudence and Political Economy.

THE END.