Medical education in the University of Dublin : a discourse delivered at the opening of the School of Physic in Ireland, session 1864-65 / by William Stokes.

MEDICAL EDUCATION IN THE UNIVERSITY OF DUBLIN.

A DISCOURSE

DELIVERED AT THE OPENING OF THE

SCHOOL OF PHYSIC IN IRELAND,

SESSION 1864-65.

BY

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MEDICAL EDUCATION

IN

THE UNIVERSITY OF DUBLIN.

GENTLEMEN,

WE meet here to-day to open the winter course of instruction in the School of Physic in Ireland; and there are circumstances which render the present occasion one of more than common interest, as bearing on the relations of this University to its Medical School.

But, before proceeding further, it is manifestly my duty to speak of the loss which, during the past year, this School has suffered in the resignation of Dr. Churchill, the distinguished successor of Professor Montgomery, and in the deaths of Dr. Brady and Dr. Osborne. Dr. Brady received the degree of Bachelor of Medicine in this University in 1828; and he was the first Professor of Medical Jurisprudence, elected by the King and Queen's College of Physicians, in 1839. In him were found the best qualities of mind and of heart,

—a combination not always to be met with. In manner unostentatious, he was in his public and private conduct without reproach. He was, as a lecturer, learned and painstaking; and as an examiner ever courteous, though always conscientious. No political or sectarian feeling narrowed his mind, which was truly that of a gentleman, a physician, and a Christian, while his admirable social and domestic virtues drew more and more close to him those friends who had the happiness, as I had, of enjoying his society and his confidence.

The late Professor Osborne was appointed to the chair of Materia Medica in 1840, and continued in the discharge of his duties until the commencement of the last session. Endowed with many gifts, Dr. Osborne was not only an eminent scholar, but had stored his mind with a vast amount of rare and curious medical lore. He was a man, also, of highly cultivated tastes in many ways; while his playful humour, his cheerful temper, his powers of apt illustration, all contributed to make communion with him delightful,—a feeling heightened and hallowed by this, that he was known as a true and a steady friend. Dr. Osborne was the author of many important papers in medical science and literature, all of which are to be found in the first and second series of the "Dublin Journal of Medical Science," and of which the most important are those on dropsy connected with albuminuria, on diseases of the sto-

mach, and on the effects of cold on the human body. This last memoir was published in 1836, and in it is the first notice of the "*sensation thermometer*." His last communication was on the proper use of the thermometer in determining, not so much the maximum, minimum, or mean temperature of localities, but rather the comparative rates of cooling of the human body in these places, and is one that must prove of great practical value. If the admirable proposal of the late Dr. Graves, of establishing medical observatories in various parts of the world, should ever be carried out, Dr. Osborne's mode of observation must be widely adopted.

If we look at the position of the Medical School of this University, we have good grounds for hope that the principle to which she has steadily adhered, of insisting upon a full mental culture as ancillary to the obtaining of a medical degree, will in time be followed by other bodies whose powers in controlling medical education are so large, and which have, I regret to say, too often used these powers more for their own immediate necessities, than for the enlargement of science, the benefit of the public, or the true interests of the profession.

But you are not to understand that I advocate the idea of an absolute uniformity in education or instruction. Such a state of things might not be desirable, even if it were possible; but great principles can be adopted, although the details of their working may vary according to many circumstances, such as those

of time, place, opportunity, usage, the character of teachers, the nature of institutions, and so on. These principles may be shortly stated to be, First, that the aim of all education should be, not so much the accumulation of knowledge, as the preparing of the mind in the best way for its reception.

Next, that in all cases, the larger the mental culture of the student, the greater will be his aptitude for receiving, advancing, or using any branch of special instruction or applied knowledge.

Medicine requires to be served, fostered, and elevated; and the right way of so doing has been long considered by the professors and the heads of the University of Dublin. It requires to be served, as it is a progressive science, demanding for its service an army of educated men to act as discoverers; it must be fostered, and it must be elevated, because, from the nature of man's mind, it has been long kept in an inferior position as compared with its sisters, Divinity and Law; because a large proportion of those who enter it are, as we shall just now see, trained as if they were to be members of a caste, and not of a profession; and, lastly, on account of the facility with which it can be—and is too often—degraded to the level of a trade.

For many years previous to the passing of the Medical Act, 1858, the profession was agitated by the struggle for medical reform; and among the evils complained of was the want of a fitting position for Medicine. The Act, however, has as yet done little for

Medicine in this respect. It is true that, by the creation of the Medical Council, the profession has been brought for the first time into direct contact with the Government of the country; and that the powers of the Council, with regard to registration, and as a criminal court, are large, and have been usefully and impartially exercised. But, as touching the social position of the profession, it is but too obvious that the leading idea among the promoters of the Act was more the protection of the various licensing bodies in the exercise of that craft by which they had their wealth, than the placing of medicine on a level with its sister faculties, by the enforcement of a large and liberal education. If we take the original Act, which consists of fifty-six clauses, and also the additional Acts passed since 1858, we have seventy-seven clauses of Acts of Parliament, but five which relate to education: three of these, the 20th, 21st, and 22nd, are so worded as to make it doubtful to many whether they give any power, direct or indirect, to the Council to interfere with extra-professional education. There are two more, the 23rd and 28th, which distinctly relate to professional education; and it is notorious that these clauses were introduced after the passing of the Act in the House of Commons for the protection of the most miserable quackery that ever soiled a noble calling.

It is important to note, not only that there is no power under the Act to make on the Register any classification of the higher medical qualifications as

compared with the lower, or any distinction as to Medical degrees obtained after full University education from those for which no such condition is required; but no degree in Arts of any kind is permitted to appear on this long roll of "qualified practitioners."

But men speak of the social position of Medicine, as compared with that of the Church and the Bar, without considering the remote and immediate causes of the state of things they deplore. Let us look to the past and to the present. If we study the nature and history of man, we observe two great and correlative phenomena—the instinct of worship, and the obedience to law; or, in other words, the feeling of religion, and that love of the just and the true for which so many brave men have laid down their lives. Naturally, then, it followed, that the ministers of religion, and of justice,—the priest, the patriarch, and the king, were placed first in man's estimation,—the priest, as standing between him and his God; the patriarch, who governed his early household by laws hallowed by love, and enforced by duty; and the king, who was the head of the law, and himself the personification of its justice.

Medicine, on the other hand, if we pass by the Hippocratic period, was long only known as a rude and imperfect art, among the Romans principally practised by slaves, nearly extinguished after the fall of the Roman Empire, and only first appearing in the beginning of the ninth century as a pursuit related

to mental culture; while Surgery, down to recent times, was but a handicraft. Its position, then, whatever that may be, is traditional; and the remote causes of that position are traceable to the earliest and noblest feelings of human nature.

But let us turn to the more immediate causes of the state of things complained of, and inquire whether the profession itself, or at least those who have exercised corporate powers in it, are free from blame. Do they come into court with clean hands? Is not the true cause of the grievance, that by long custom and for their own ends, the medical corporations, and that class of Universities, which by ignoring the value of an education in arts to the medical student are really little more than faculties, have confounded instruction with education, have placed the special training as first in importance, often to the total neglect of that enlarged education which would enable their members to advance the real interests, and support the true rank of a liberal and a learned profession?

As the result of this system, large numbers of uncultivated men have been, and are still, admitted into the profession; and here is the cause which produces the evil of an inferior relative position, an evil of such magnitude, that were it not for the good and purifying influences of Medicine itself on the character of those engaged in its ennobling work, the consequences to society would be deplorable.

If it be admitted that a superiority in the mental

culture of the individual has its influence as to the respect in which he is held, it will be allowed that the same will apply to masses of men, to communities, professions, and so on. Let us see how Medicine stands in these respects as to its sister professions. If we look to the history of Medicine, and at all that its followers have done for the scientific and moral advancement of the world, we shall find among physicians, as evidenced by their labours and example, a greater number of instances of the result of large views, of genius, of success in scientific discovery, and of a noble philanthropy, than in either Divinity or Law. But, on the other hand, looking at the members of the three professions collectively, we must admit that in the latter education is more equally distributed. The result is only what might have been anticipated. Just as in a democracy, in which the masses give the character to the whole, Medicine in the public eye is judged by the attainments and character of its masses ; and if for one man whose mental powers have been well cultivated, whose tastes and whose manners are refined, who has the ambition and the power to advance his science, there are many who stand in another category,—who can wonder that the medical practitioner, though he may be a deserving, conscientious, and laborious man, is so often unworthily treated ?

The question before the student is, or ought to be, how he may best prepare himself to be a means of advancing his profession in its moral, scientific, and social

position. I have elsewhere spoken of true as distinguished from defective education. I shall here read a passage from Archbishop Trench on this matter:—

"And you must not be permitted to transfer the admissions which we freely make in regard of 'instruction,' as though they also held good in respect of 'education.' For what is 'education'? Is it a furnishing of a man from without with knowledge and facts and information? or is it a drawing forth from within and a training of the spirit, of the true humanity which is latent within him? Is the process of education the filling of the child's mind, as a cistern is filled with waters brought in buckets from some other source, or the opening up of its own fountains?"

Let us now turn to the state of medical education at the time of the passing of the Medical Act.

In the United Kingdom there were no less than nineteen bodies which had powers to grant Diplomas entitling the holders to practise Medicine and Surgery, or Medicine or Surgery, according to their qualifications. These institutions we may divide into four categories:—

I. Universities in the true acceptation of the term, with Faculties of Divinity, Physic, and Law, in which degrees could only be obtained after a full and equal education in arts.

II. Universities in which this education was not a condition for obtaining the degree, and which consequently, so far as Medicine was concerned, were Faculties, not Universities.

III. Colleges of Physicians and Surgeons, which granted licenses by examination, and required the fulfilment of a curriculum of special instruction, that is, of purely medical and surgical teaching.

IV. The Faculty of Physicians and Surgeons of Glasgow, and the Apothecaries' Society of London, and the Apothecaries' Hall of Dublin—all of which followed the example of the Colleges of Physicians and Surgeons.

Now, out of all these, there were but three which by their practice essayed to give to Medicine its proper position, of equal rank in an educational point of view with Divinity, and with Law—these were the old Universities of Oxford, Cambridge, and Dublin.

Yet, to say that the remaining bodies have ignored the study of arts would be going too far; for, in most cases, some form of preliminary examination was provided. But in giving effect to such regulations, it is certain that great laxity has prevailed.

Even if these tests were carried out in good faith, their value as compared with that of the University system is next to nothing. It is true that the London University demands for its medical degree that the candidate should pass a matriculation examination in arts, which is, of its kind, full enough; and that for the degree of M. D. the candidates should be examined in logic and intellectual and moral philosophy, and for this we must give her full credit. Still the system is the same, and the study of arts is to the

candidate more a barrier than a preparation to the obtaining of his degree. It is not an integral part of his general mental culture, so as to meet the requirements of professional rank and of social status—still less, as is well expressed by a late writer,* "to help him to do what the illiterate man cannot do,—to think, to reason, to compare, to discriminate, to analyze, to refine his taste and sharpen his judgment, to place him in that state of intellect in which he can take up any special calling with an ease, a grace, and a versatility to which he would be otherwise a stranger."

We may go further, and declare that, with reference to most of the licensing bodies, these regulations are not only useless, but objectionable; they demoralize the student, by making him a party to proceedings which present the show for the substance, and which he has generally wit enough to estimate at their true value.

The system, in truth, was and is, in most cases, deplorable. A young man, often little more than a boy, is sent from his parent's roof, and plunged into a medical school in a large city. As to discipline, there is none for him; as for example, he has that of his fellows. There are none to care for him. He may degrade himself to the last extreme. After a time one idea takes possession of him, how he may best obtain his diploma, and so he resorts to the crammer, under whom he remains until his fourth year of mis-

* "Lectures on University Education," by J. Newman, D. D.

spent time is past; and then, with crowds of other victims, he is turned out to commence his professional life, ignorant even of his own business, with his observing and reasoning powers uncultivated, his moral sense necessarily blunted, his tastes unrefined,—his literary attainments, if he had any, forgotten. Unfitted by his habits for independent thought, he enters on practice; and what wonder if he occupies an inferior place in society, when he finds, too late, that he wants that mental culture which would enable him to support the position of a gentleman, or the dignity of a profession?

We get more clear ideas of the extent of this evil by referring to the Medical Register, in which the qualifications of every legal practitioner are on record. Taking the printed Register of 1864, in which, of course, the names of those registered since January last do not appear, we find upwards of 18,000 medical practitioners on the list. Out of these the numbers of those that hold degrees from Oxford, Cambridge, and Dublin, is, as far as I can determine, not more than 541, which when divided into 18,000 would give this startling result, that not more than only three per cent., of the entire profession in these countries, have received that University education which places the members of the learned professions, at least in England and Ireland, on terms of social equality in an educational point of view.

Now if to this number of 540, out of which there

appear 71 for Oxford, 126 for Cambridge, and 344 for Dublin, we add the medical graduates of the University of London, we have in the entire 866, which raises the amount on the whole to 4·5 per cent.

What, then, is the duty of all licensing bodies throughout the kingdom, whose true work should be to watch over and advance the character and status of their licentiates, and so elevate the entire profession? Is it not that, irrespective of all other considerations, they should seek to send forth their graduates without any stamp of intellectual inferiority upon them? The ancient Universities of Scotland, the University of London, and the Queen's University in Ireland, all possess full means for enforcing education in arts; and each of them have professors who would do honour to any seat of learning in the world. But in their system that continuous education in arts which so enlarges and liberalizes the mind is not, as in the old Universities, made to apply to their medical classes; so that to these latter they are, as I have before observed, *Faculties* rather than *Universities*. Far be it from me to say one word in their disparagement. I am myself a graduate of the University of Edinburgh, and a large portion of the success I may have had in life I trace to the teaching and example of her honoured professors and teachers—of Duncan, Alison, and Christison, of Thomson, and the junior Cullen. I only want these Universities to put into action the means which are fully at their command,—to follow the examples of the old Univer-

sities of Bologna, of Paris, and of the still older University of Salernum, in all of which the study of philosophy was made inseparable from that of Medicine.

The Medical and Surgical Corporations can do but little, because, whether in Arts or in Medicine, they can only examine, they cannot teach ; and it is to be feared that their necessities will long prevent them from giving even a feeble encouragement to University education. But let all the Universities of Great Britain and Ireland, from which are yet to proceed the upper ranks of the profession, refuse any Medical or Surgical qualification whatever, unless assured that the candidate has already, and under their own supervision, been trained to as high a point in mental culture, in morals, and in feeling as their education can bring him to. "In a University," says the Rev. Mr. Pattison, "every science sinks into means to a worthier end—the cultivation of mind. This is the one use to which it puts knowledge, the light in which it regards science. The products of a University are not inventions, improvements, discoveries, novel speculations, books, but the fully educated man. Its one great achievement is that philosophical spirit which has been finely described as 'a talent acquired by labour and by practice of forming a healthy judgment upon all things—an intelligence which nothing can escape, a force of reasoning which nothing can confound, a thoughtful and unwavering judgment upon the good or the evil in nature. It is the only rule for the true and the beautiful.'— (Abbé

Nauze, 'Des Rapports que les Belles Lettres et les Sciences ont entr' elles.'")—"Oxford Essays, 1855."

It was in reference to this state of things that the resolution of Mr. Teale was adopted by the Medical Council, to the effect that no degree in Medicine should be conferred on any one who had not received the degree of Bachelor of Arts, or who had not gone through the University education for that degree, or received an education equivalent to that necessary for the degree. Mr. Teale is no longer a member of the Council, and his loss is a great misfortune to the cause of professional progress.

Let us hope that, with the advance of public opinion, the Universities will unite in one noble brotherhood, and looking at their great mission, will think less of the numbers than of the mental training of their graduates, less of special instruction than of full education, and so further that system which has been the mainspring of England's greatness, because the nursing mother of her intellect and her civilization.

Let us now turn to the School of Physic in Ireland, which is under the joint guardianship of the University and of the College of Physicians. It would seem as if the ideas of founding a Medical School in the University, and of a College of Physicians in Ireland, were nearly contemporaneous, as we conclude from a curious letter, which is quoted by Dr. Aquilla Smith in his "History of the College of Physicians." It is addressed to Archbishop Ussher. In this letter,

written by Dr. Bedell, shortly after his appointment to the Provostship of Trinity College, and dated 1628, he says:—"At my being in Dublin there came to me one Dr. De Laune, a physician, bred in Immanuel College, Cambridge, who in speech with me discovered their purpose to procure a patent like to that which the College of Physicians hath in London." And in another letter, written from Hornsheath, April 15th, 1628, and addressed to the same prelate, he writes:—"I suppose it hath been an error all this while to neglect the faculties of law and physic, and attend only to the ordering of one poor College of Divines."

The foundation of the College of Physicians seems due to Dr. Stearne, who was a Fellow of Trinity College. He was a man of great learning, and at one time filled the Professorship of Hebrew in the University. He was the first Regius Professor of Physic after the Restoration, as well as the first President of the College of Physicians, which received its Charter from Charles II. It occupied a house granted by the University of Dublin for the sole and proper use of Physicians; and not only was Dr. Stearne named as President for life by the University, but the power of nominating future Presidents was vested in that body.

In the early Statutes of the University we find reference to persons named Jurista and Medicus, and these, in Bedell's Statutes, are called Professores Jurisprudentiæ et Medicinæ. Dr. Stearne was appointed Regius Professor under Charles I.; but it was not until

after the Restoration that the arrangements both for the School of Medicine in the University, and for the foundation of the College of Physicians were completed.

In a lecture delivered before the University in 1855, I entered at large into the constitution of its Medical School, and the circumstances which led to the establishment of the School of Surgery, and the degree of Master in Surgery. But long before that time the medical faculty and the heads of the University had commenced that series of reforms, in reference to medical education, which have been continued to the present time.

In these successive steps taken by the Board, after careful consultation with the professors of the School, the great end of placing the students and graduates in Medicine, in their academical relations, on a perfect equality with those of the other faculties, has ever been kept in view.

Of these, the first in importance was that regarding the privileges of professional students. Under this rule, the medical student is exempted from certain portions of the course in arts in his junior and senior sophister years; that is to say, he is permitted to avail himself of his studies in anatomy, chemistry, and botany, for obtaining his degree in arts. This regulation, marking as it does an important change in the previous system, has a large significance. The value of studies in these sciences as a means of training the

mind of a University man is thus admitted; and these branches of knowledge, so long almost ignored by the old Universities, have been given their merited place in the undergraduate course.

But some might say, This is a special privilege to the medical student, and places him in arts in an inferior position. It is not so; for similar regulations apply to the remaining professional schools of Divinity, of Law, and of Engineering.

Again, it was ordained that the medical student who was also a student in arts should be privileged to attend on one course of each of the University professors, free of charge. The class prizes were abolished, and in their place Medical Scholarships, the first created University Honors in Medicine, were established, while a Medical Exhibition, open to all students, has been awarded by the Faculty. The mode of conducting the medical examinations was made to conform in all particulars with that for degrees in other faculties; and the *vivâ voce* examination was directed to be held openly in one of the halls of the College. Thus full publicity was given. As in the courts of law, the proceedings and judgments of our examining courts are now placed under the wholesome influence of public opinion. No stronger security can be given for the protection of the candidate, and the character of the proceedings. It is plain, that by the carrying out of this principle in all licensing bodies professional education would be improved, and examination become

a real safeguard to the public. This question of publicity of examination has been ably argued before the Committee of Education of the Medical Council by Dr. Apjohn, the representative of the University, and is among the subjects which I trust will be decided upon at the next meeting of the Council.

But of the various steps taken in our time for the advance of the profession, there was none of more importance than the foundation of the School of Surgery in the University, and the creation of the new Degree and University Chair, by which, for the first time, true and full academic rank was conferred upon Surgery; for this degree, like that of medicine, requires that the candidate shall have completed his education, and received his degree in arts. The University has thus done her best to elevate Surgery to a level with Medicine. Her example has been followed by Cambridge.

And we may trust that Oxford, which has of late done so much for the advance of the studies of the natural sciences, not only by her recent educational arrangements, but by the erection of her great Museum,—a very palace of science, with all its appliances for the studies of chemistry, anatomy, and zoology—will follow in the same path; and that, although, as Dr. Acland holds, it is denied to her to possess a complete School of Medicine, she will extend to Surgery the advantages of that semi-professional education for which she has made so splendid a provision, joining both Dublin and Cambridge in creating a class of Surgeons

having all the benefit and all the rank conferred by a University education.

But these great reforms did not stop here ; for the establishment of the new degree in Surgery was contemporaneous with the admission of extra-mural medical teaching. Certificates from the College of Surgeons and from the private schools were accepted —a wise and liberal measure, necessarily leading to a good understanding with the College of Surgeons. Full reciprocity was thus established.

As a result of these measures, each of them long and carefully considered, by the Professors and the Board, the number of students in Medicine has of late years much increased. And as the privileges of the professional students are dependent upon their actual position in the undergraduate course of Arts, it appeared necessary that a Registrar, who should record the academical exercises of the student in Arts and in Medicine, should be appointed. The nomination of the Rev. Dr. Haughton to this office has been one of the latest acts of the Board; and I need not dwell on the influence which his zeal for the interests of the students, and his success in so many departments of knowledge, including Medicine, may be expected to have upon the entire School.

I have now sketched out the reforms in the School during the last nineteen years. There are other steps in advance under consideration. On this day our new and extensive dissecting room is opened, while apartments

have been assigned for a library, and a reading room for the use of the students. It is the confident hope of the Provost and Senior Fellows that these additions to the School will advance the self-culture of the student, and tend to preserve that tone of manners and conduct which mark the gentleman ; and I am much mistaken, if, in availing themselves of these great boons, the class will not feel it a point of honour to show themselves worthy of such a trust. The heads of this University are resolved that the Medical School shall be, as the Divinity and Law Schools, an integral part of the educational system of the University, and not a place where Medicine is to be taught irrespective of general culture. All that is requisite for the most efficient teaching of Medicine and the sciences relating to it will be provided; and I am happy here to announce, that measures have been taken by the Board, in conjunction with the Professors of Materia Medica and of Midwifery, for the establishment of a Museum in each of these departments.

I am instructed further to say, that the theoretical portions of the course,—such as those of Anatomy, Chemistry, and Botany, will continue to be taught in the same spirit as are the other pure sciences, such as Mathematics, in the University. And, lastly, I am to declare here, that the University is resolved never to degrade the profession by requiring from her medical graduates a less liberal education than that instituted for Divinity and Law. I rejoice in making this an-

nouncement, as it embodies those principles which I and my brother professors have upheld for years, and which I have publicly advocated in the Hall of Trinity College, and in the Meath Hospital, on more than one occasion.

If, then, the value of full University training be admitted, and if, on the other hand, not more than three per cent. of the Medical Profession have received that academical training resorted to in England and Ireland by the professions of Divinity and Law, it becomes most desirable that the regulations of the old Universities with reference to Medicine should be brought as far as possible into harmony.

At this time, Dublin and Oxford are the only bodies in which the Medical degree is denied to all who have not taken the degree in Arts. For Cambridge, by admitting to her degree on a less amount of education, has strengthened the opinion that Medicine is to be looked on as inferior to her sister faculties. This should not be. No diminution in the amount of Arts' education—not the fractional portion of a term —should be allowed. It is the bounden duty of the old Universities to look more to the character and social status of their graduates than to their mere numbers. In Oxford the time of obtaining the degree is, in my judgment, too remote; in Cambridge, the objection is of another kind. But I cannot doubt, especially after reading the discourse of Professor Humphry on the establishment of the Surgi-

cal Degree in Cambridge, that that ancient and celebrated University will leave nothing undone in the cause of professional advancement.

"Indeed," says Dr. Humphry, "the overweening practical tendencies of the age, of which our profession does but furnish an example, can only be counterbalanced by giving greater heed to early training, to education, that is, during the period when the mind has not yet become absorbed in the engrossing avocations of money-making life.

"To do this, to prolong that period, to promote high mental culture and refinement of thought, to foster the taste for literature, and to prevent its being borne down and swamped by the ever-swelling tide of practical energy, is the especial work of the Universities. Never were these noble institutions more required—never was there greater scope for them, and greater opportunity, and therefore greater responsibility. Their influence upon education, radiating through the public and private schools, pervades the whole land. We look to them to hold up the banner of science at its proper level. We ask them not, indeed, to forsake the ancient and approved standards. Let classics and mathematics, logic and theology, wave as proudly and as securely as ever; but let other pennons float beside them. Other sciences have risen up, and claim their share of attention and assistance. By standing forward as the nursing mothers of these sciences, by fostering them judiciously, by controlling their way-

ward tendencies, by holding them up above the din and clatter of the world, by promoting their study in a calmer, higher, more philosophic manner than could otherwise be done, the Universities will be exercising their proper sway over the great onward movement, will be promoting the revival of a truer spirit of philosophy, and will be assisting it to harmonize and keep pace with the practical genius of the age.

"It is highly desirable that the members of the profession should be drafted from different classes of society, and trained in different ways; and though it is not to be expected that the Universities can contribute more than a small proportion to the number of those engaged in practice, yet if only some of that small proportion, highly educated, and imbued with a real love of learning, and a desire to cultivate science for science sake, could be annually added to our body, how great would be the boon! The leaven thus infused would have its influence on the whole mass. It would induce a higher system of teaching in our schools, and would help to resolder the links of the chain that should bind Medicine to literature and philosophy. Many such men wander forth from the University, not knowing whither to go, or where to direct their energies. My longing hope and heart's desire for Surgery is, that more of them should be drawn into her service. Some have recently entered; and the good work they have done is full of promise for the future. And I cannot but trust that the re-

cent recognition of Surgery in this and some of the other Universities in the United Kingdom will, in course of time, tend to enlist greater numbers of their graduates into our ranks, and will conduce to a more genuine and successful prosecution of our science."

But some hold that it is wrong for the student to pursue his studies of Arts and Medicine at the same time. "It is not desirable," say they, "for a young man to have his attention so distracted. Let him by all means be as well educated as possible in general knowledge, but let all this be preliminary. Having once commenced his medical studies, let him attend to them alone." All this is to be expected from those who practically teach Medicine as if it were a handicraft. General education is to be of necessity preliminary—preliminary to what? to the stopping of all general education. Is such a system calculated to serve a profession of which the master evil is the want of that which is thus denied? But let us look to facts. In this University the student may pursue and complete his education in Arts and Medicine at the same time; and some have even taken their degrees in Arts and Medicine at the same commencements. I do not mean to convey to you that such a course is approved of by the professors and tutors of Trinity College. The course most likely to benefit the student is clearly that he should not commence the study of Medicine until the end of his senior freshman year; by which time he will have had the advantage of at least two years of the

discipline of College life, and time to devote himself to its studies, its generous rivalries, and improving influences, without his attention being distracted by other pursuits.

In connexion with this subject, however, and as showing what may be done by the industrious student, I will read an extract from a letter which I lately received from a gentleman who is one of the most respected members of the Apothecaries' Hall of Ireland, and a Doctor of Medicine in this University:—

"Of the last six apprentices who have been indentured to me, five have been or are students in Arts and Medicine in the University of Dublin. I always recommend the parents of any young men about to be bound to me to make their sons students of Trinity College. The benefit the lads derive from such a course is incalculable. The preparation necessary for the term examinations gives them studious habits from the commencement, and prevents them from postponing all study to the last few months of their pupilage. They, as a rule, spend their evenings at home, reading, instead of running out to scenes of dissipation. Their moral character is raised by the civilizing effects of the Arts course of Trinity College, while physically they are kept from the many evils attendant upon dissipated habits. I can state from experience that the discipline of the University is one of the best aids a master can have in the discharge of his duty towards his apprentices.

"I never found the course of study laid down by the University to interfere injuriously with the other duties of my apprentices; quite the contrary: it tends to teach the young men the value of time, and the importance of utilizing those spare half hours which would otherwise be frittered away in idleness and folly."

In reference to this matter it must be said, that the system of professional education, not only in this but in all other schools, requires a careful revision; and there can be no doubt that the number of lectures which the student is compelled to attend is excessive, and constitutes really a great evil. This evil might be mitigated by making attendance compulsory only on those courses which are essentially demonstrative, and leaving the attendance on the theoretic courses optional. Or, again, the actual number of lectures in each course might be profitably diminished,—the principle being always borne in mind, that the object of a teacher is less to instruct his hearers in the whole of his subject, than by dealing with general principles to train their minds so as to be able to teach themselves. Examinations should be so conducted as to be essentially practical, and thus to diminish the great evil of cramming. I am myself not an advocate for the necessity of examination in all cases; for year after year we meet with men who might safely be admitted to their degree upon their character, without any such process being gone through. Such cases may be supposed to be

exceptional ; but if the examination is to be a stimulus for proper study,—if it is to be any safeguard to the public,—it is plain that in its very nature it must be almost entirely practical. The examination in anatomy should be conducted in the dissecting room ; the examination in chemistry, in the laboratory; the examination in Medicine and Surgery, in the wards of a clinical hospital.

But the value of an enlarged extra-professional training may be urged on other grounds than those I have laid before you. Medicine, as you all know, is not one of the exact sciences ; but from the earliest times to the present its character of certainty has been advancing. Speaking in general terms, we recognise for it two paths of progress,—one very old, the other comparatively modern, but both leading to the same end of certainty. The first,—which is as old as the times of Hippocrates, or even of the Egyptian Medicine,—is the observation and recording of the history and symptoms of disease, whether epidemic, endemic, or sporadic, and the effects of remedies. Up to the period of the cultivation of pathological anatomy, Medicine had no other means of expansion ; but still it was a great science, as any of you who may study the history of the symptomatic Medicine of the Greeks and the Arabians must be forced to admit. The second method or path was first trodden when pathological anatomy,—the study of the physical changes produced by disease,—began to grow into a science. Then men connected

the visible with the invisible, the mechanical result with the vital cause ; and this study of physical results led to the use of physical diagnosis—that is to say, of the means furnished by physical science, with all its exactitude, to determine the nature and extent of the physical results. Now, it is in this direction that there appears to be the greatest promise of discovery, not only in diagnosis, but as a means of knowing the very nature of those powers which direct growth, development, disease, and decay. To advance Medicine now, without ignoring the old and precious Hippocratic system, in which observation was ever rendered fruitful by study, we must call to our aid the sciences of optics, of acoustics, and of chemistry in its widest sense. And if those who are entering the profession in this country do not in the days of their student life make themselves familiar with these sudies, they will see the honours of discovery in their own science passing into other hands.

I need not dwell at length on the wide application of chemistry to the study of organization in health and disease, for it still opens an illimitable field of discovery. The phenomena of secretion, of calorification, of digestion, of composition, and of decomposition, whether as a normal or abnormal state, are still to be elucidated by the aids of the most advanced chemistry. I shall not speak of nervous action as related to chemistry, for time will not permit me to do so.

But I may allude to the investigations of M. Claude

Bernard on the formation of sugar in the hepatic system, to the researches of Dr. Mac Donnell on the amyloid substance in this and the animal economy generally, to those of Schmidt on the existence of ozone in the blood, and to the phenomena of dialysis, as showing what an amount of valuable discovery has resulted from the study of organic chemistry.

But let us turn to optical science. The microscope has done for pathological anatomy what the telescope effected for astronomy. For even as the early shepherds had their Arcturus, their Orion, and the sweet influences of the Pleiades, but knew nothing of the infinite glories which circled above them, so in the study of structure the unassisted eye saw but the salient points of change, and remained ignorant of all that lay beyond and below them.

The microscope has revolutionized the study of pathological anatomy, has largely added to our means of diagnosis, and in the hands of Virchow has made a new science of general pathology ; and physiologists look anxiously for the results of the larger powers employed by Beale. The history of the ophthalmoscope, too, bears on our argument ; for its discovery by Helmholtz was arrived at by the study of a purely optical phenomenon. The instrument of Helmholtz we may hold to have done more for the diagnosis of diseases of the eye than auscultation for those of the heart or lungs. It promises, too, to have a still wider application, and to become a means of diagnosis

in other diseases than those of the eye. I know of no circumstance so full of promise as the fact, that certain diseases affecting the whole economy are revealed by peculiar appearances on the retina, as displayed by the ophthalmoscope. In a new sense, then, we may call the eye the light of the body. This delicate retina, itself the most exquisitely organized structure of the whole body, is found to reveal the existence of a general malady at an early stage; so that the use of the ophthalmoscope is not to be confined to the oculist alone, but promises to have a large application in the diagnosis of disease of the entire system. Thus it appears that the retina undergoes remarkable pathological changes in connexion with organic diseases, not only of the kidney, but also of the heart. I allude more especially to the forms of retinitis, with fatty degeneration and atrophy, seen so frequently in Bright's disease, and in diabetes mellitus, and also that resulting from the deposition of emboli in the central artery of the retina in connexion with organic cardiac disease. Of this you see fine representations in these beautiful plates of Liebreich which I exhibit to you. The case of embolus of the central artery of the retina has a great interest, as it was the observation of this condition by the ophthalmoscope that led Liebreich to the suspicion and discovery of valvular disease of the heart. Other characteristic appearances have been seen in leucæmia, and also probably in congenital malformation of the pulmonary artery. In fact,

Liebreich holds that, while idiopathic affections of the choroid are common, those of the retina are extremely rare. The diseases of the latter membrane he considers to be almost always due to constitutional dyscrasia, or blood poisoning.

But we have not yet enumerated all the applications of optical science to Medicine. And here we touch some of the higher portions of optics. The polariscope, by determining the phenomena produced by the transmission of a ray of polarized light through various media, has, as Professor Jellett has shown, given a power of analysis, not only qualitative but quantitative, often unattainable by organic chemistry; while the researches of the Professor of Mathematics at Cambridge, which followed on those of Hoppe, have made it clear that the chemical constitution of the blood produces certain and extraordinary modifications of the spectrum, and open so vast a field of investigation, that he would be a bold man who would declare its limits. By comparing the spectra produced by the colouring matter of blood, Professor Stokes seems to have established that hæmatin, which was supposed to be the cause of the colour, does not really exist as a physiological element in the blood. To the true colouring matter of blood he has given the name of cruorine ; and this exists in two forms, the scarlet and purple cruorine, having their peculiar spectra, and capable of mutual conversion by the presence or absence of oxygen.

Among the causes of the recent progress of the healing art is the use of auscultation, which, though known to Hippocrates, was neglected until the time of Avenbrugger, and which is now applied to the diagnosis of disease in every cavity of the body. Yet in this direction there is much to be done, and the whole subject of vital acoustics must be gone over with all the assistance to be obtained from an intimacy with the laws of sound. Already Skoda has done much, and we may hope for a great advance in this direction. No doubt, true diagnosis must ever depend on the combination of vital and physical phenomena; but it is plain that the more we understand of the latter, the more shall we increase the certainty of Medicine.

But acoustic science is now being applied to the solution of most difficult questions in physiology, as shown in the researches of Collonge, of Professor Haughton, and of Helmholtz. By observing the character of the muscular susurrus, Collonge believed that he had discovered a means of estimating the nervous energy of the entire system in health and in disease; while Professor Haughton, by determining the tone or pitch of the susurrus on the musical scale, and by referring to the number of vibrations necessary to produce the note in question, has arrived at a new mode of estimating the amount of force in the muscles of the body, which may ultimately lead to our being able to determine that amount with mathematical exactness.

In confirmation of the value of this method, it is interesting to observe that between his calculation of the amount of work done by the human heart in a day, which we may term the *acoustic* method, and that of Hales, which we may call the *hydraulic*, there is an agreement so close as to be strongly confirmatory of the value of these researches. Now, if we bear in mind the extent of muscular structure in the great organs of life, we may estimate the value of a means which not only will throw light on the lesions of this structure, but which has added a new set of physical phenomena to our means of diagnosis.

Did time permit, I might speak of other appliances of physical laws, all tending to the certainty of Medicine, and all based on the knowledge of physics,—the laryngoscope, the electrometer, the sphygmometer, and the sphygmograph. But I have said enough for our purpose: yet let me refer to the great work of Donders, on the accommodation and refraction of the eye, lately translated by my distinguished friend, Dr. Moore, and ask whether any of the curricula of special education could produce men capable of bestowing such a boon to science, and such an honour to Medicine.

Before concluding, let me read for you two extracts which have an especial bearing on the subject of this Lecture. One is from a pamphlet by a member of this University, entitled "University Education in Ireland, in the Year 1860."

"Of the one hundred Medical students attending the Trinity College School, eighty are graduates or undergraduates in Arts. These students, only one-tenth of the whole, have shown a determination to enter the medical profession with the advantages which a combination of a liberal with a professional education can give. We wish their numbers were tenfold greater, as we believe the prevalent custom of educating young men for the medical profession on the basis of an exclusively professional training must result in this profession, as it has done in others, in the creation of a narrow-minded class, separated by professional prejudices and interests from the other citizens of the commonwealth in which they live, and capable of forming only a partial and one-sided view of any topic outside the narrow limits of their caste."

The second extract which I shall read is from the Address of Sir John Shaw Lefevre on Education. This address is to be found in the "Transactions of the National Association for the Promotion of Social Science." Speaking on the Competitive Examinations for the Indian Civil Service, Sir John S. Lefevre says:—

"It is not only that Ireland has contributed a much greater number of successful candidates than her proportionate share, compared with her population, but the number of her unsuccessful candidates as compared with the successful is much less than in the case of candidates from England and other places. To

what is this to be attributed? In searching for its cause I naturally look to the place where the Irish candidates received their education, and I find that most of the Irish candidates came from Trinity College, Dublin. I look a little further, and I find, not merely that they passed a certain time in that place of education, but that almost every one of them had given previous proof of ability and industry in his education there, by obtaining scholarships, prizes, and other honourable marks of university or college distinction. The instances are too frequent and too numerous to be ascribed to chance, or to an accidentally large number of clever young men being simultaneously at Trinity College, Dublin. For my own part, I do not entertain a doubt that the cause of the remarkable success of the Dublin students is to be found in the excellence of the system of instruction pursued there, and in the high intelligence and conscientious exertions of those who are engaged in the tuition. These gentlemen do not limit themselves, as is the case in some places of education, to forcing on a few promising youths to a pitch of high excellence, so as to do credit to their instructors and to the University; but they perform the real duties of instructors of youth, bringing forward, more or less, all who are confided to their care, according to their relative talents and capabilities, and launching into the sea of Indian Civil Service a fleet of goodly and well-found vessels. I trust these conscientious persons may receive their

reward in the success of their pupils in the important positions in India which they may be called upon to occupy, and that those pupils may never forget what they owe to their instructors and to Trinity College. I have made these remarks with all the greater satisfaction, because I am a total stranger to almost every one engaged in the administration of the University. I have wished to make known my impressions on the subject, and it gives me unfeigned pleasure that an opportunity has been thus presented to me in this place, and before this Association, of testifying my deep respect for the University of Dublin."

Gentlemen, I have spoken of the views held by the heads of this University, by its medical professors, and by the tutorial body of Trinity College, as to your true interests; they are taking the right way of making the profession more useful and more respected. In their name, I exhort every one of you to remember that "art is long, and life short," yet not so short but that each of you may bring some offering to the altar of that science which has already so enriched you. Remember that your Alma Mater has done her best to qualify you for occupying the higher ranks of the profession, whether in Medicine or in Surgery; remember that a noble ambition, working by noble means, rarely fails to obtain its reward; remember that Medicine is no solitary science, but rather a group of various branches of knowledge, for the successful exercise of which is required that tutelage of the mind only produced

by education in its fullest sense; for the paths of science and discovery are like beams of light radiating from the centre, and the farther you follow them, the wider and more glorious will the regions to which they lead appear to you: but never forget that it is only by honourable labour, and by the practice of the Christian virtues, as far as the frailty of human nature will permit, that you can hope to earn that esteem of your professional brethren which, while it will aid you in your progress through life, will be your just pride when that life draws to a close.

THE END.