

## **On medical education at Cambridge / by Michael Foster.**

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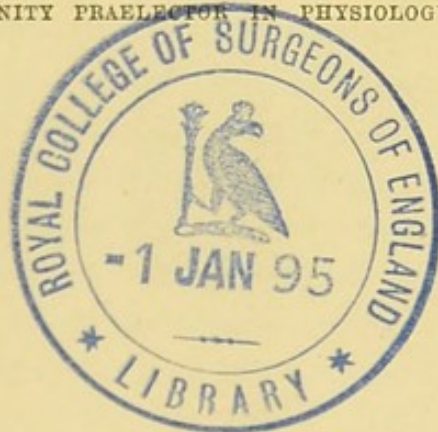
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ON MEDICAL EDUCATION  
AT CAMBRIDGE

BY

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## ON MEDICAL EDUCATION AT CAMBRIDGE.

FROM very early days the Medical Art has been an object of special care in the old Universities, and until very recent times, the most eminent men in the profession (or at least the most eminent physicians, since surgeons have had a very distinct origin) have been usually graduates of Cambridge or Oxford. During the last few years, however, a marked change has taken place. The present distinguished leaders of the profession, whether we measure their distinction by success in practice or by their contributions to the advancement of the art, are notoriously men who for the most part have not been trained at the ancient seats of learning; and I am informed by those competent to form an opinion that of the rising younger men of the present day, of those who will in a few years be at the head of the profession, a very small number, an insignificant minority in fact, hold the degrees either of Cambridge or Oxford.

This state of things is the result of many influences of various kinds. It is undoubtedly in large measure due to the establishment of the University of London, whose medical graduates are now so largely filling the places formerly held by men from Cambridge or Oxford. It is also in some measure due to the social changes of the past half century. But, whatever be its immediate causation, it must be taken as a clear proof that the old Universities have lost their hold upon the

profession; and the question arises whether that loss is an accidental and avoidable one, or whether it follows from the nature of things and therefore, however much to be regretted, must be submitted to as something which cannot be helped. A little reflection will shew that this question may be reduced to very narrow limits in the following manner. During the last half century the profession has, from an intellectual point of view, undergone an almost complete revolution. The leaven of new science has leavened the whole of it. In every department, inquiry is being pushed forward with such accelerated activity that the energies of the doctor of to-day, to whatever branch they may be turned, are strained to the utmost in mastering the new additions to knowledge, the new ideas and new methods which spring up at almost every moment. Added to this, the competition between man and man is daily becoming more and more keen in the medical as in other professions and in other means of livelihood. It is the increasing intensity of this double struggle, against the advancing flood of knowledge and against his brother practitioner, which has so changed the character of the modern doctor. The days of scholarly repose are over; in its place there has come the restless activity of the emulous scientific pioneer. And the question whether the training to be obtained at this or that institution is likely to bring future success, must depend largely upon the extent to which that training equips and strengthens the pupil for this double struggle. I propose in the following pages to attempt briefly to discuss the question whether the system of education in general and of medical education in particular now existing at Cambridge (confining myself to the University which I know, though probably what I have to say will, *mutatis mutandis*, apply equally well to Oxford) possesses this quality or no; and if not, whether it may, by practicable changes, be so modified as to have a fair chance of regaining its ancient usefulness.

It will I think in the end save time if I commence with some general considerations on the distinctive features of the medical art, and the requirements for its successful cultivation.

Perhaps the most salient character of the practice of medicine is the fact that it employs the energies of almost every part of the human organism, both mental and bodily. It is not enough that the doctor should be simply a man in good health; he must, to have a fair chance in the struggle for existence, possess a body every part almost of which must be well trained and in good functional condition. His organs of sight, touch, hearing, and even of taste and smell, must be free from blemish; and his brain must be nimble and ever on the alert to receive and appreciate the varied impulses streaming inward along his nerves. He must, whether he be a physician or surgeon, possess a fine muscular sense, and in many instances he will feel the need of a masculine strength of wrist and arm. Nor are his purely mental requirements less multiple. He needs the faculty of quick and accurate observation, a fertility of imagination to fathom the obscurity of intricate cases, a clear logical habit of thought, a retentive memory to gather facts to form the basis of his reasoning, a readiness of resource that he may make use of every passing help, a decisive presence of mind that he may snatch a momentary chance, and last but not least, he must possess that delicate flower of the mind, a judgment which can arrive at a safe and practicable conclusion in the midst of conflicting evidence, which can accurately weigh opposing arguments and decide on which side is the greater, and how much the greater force.

These may seem to be the qualifications of an ideal rather than of an actual doctor, but assuredly professional success will be proportionate to the extent to which they are present. And if this is the case it is clear that the special training of the doctor ought if possible to begin early in life, or at least ought not to be delayed until his nervous system has become rigid and preoccupied with unsuitable habits. Just as in many handicrafts the hand of the apprentice can never gain the cunning necessary for a successful following of the craft unless the training be begun in youth, while the body is still so supple and the brain still so informed that the needful manual dexterity becomes, by habit, an integral part of his frame, so also in the

craft of healing there is a similar mental dexterity which needs a like early use and practice. I can confidently appeal not only to those members of the profession itself who have meditated over their own qualifications, but also to those who have been in the habit of observing medical men, or who have studied the mental requirements for a medical career, to bear me out when I assert that the most characteristic feature of a successful doctor is the possession of what, for want of a better word, I will call "medical instinct." I need not enter here into any psychological discussion as to the nature of this instinct, or into any justification of the use of such a term. I employ it simply to illustrate the habit of mind by which a doctor may form an absolutely correct opinion without being able to offer a satisfactory logical defence of his position, and often without having been distinctly conscious of all the individual steps which led him to the right result. A doctor's life is largely passed in deciding partly cases of emergency which demand a rapid judgment, and partly cases of doubt in which the evidence is very equally balanced in reference to conflicting views. There are men who in the first class of cases will at once jump to a right conclusion with the least possible logical delay, and in the second class of cases will boldly seize the right view by an almost unconscious appreciation of points in the evidence which they would find difficult distinctly to formulate. The habit of mind which keeps such men right is what I mean by medical instinct, and the men who possess this habit of mind are the men whom patients early learn to trust. The bodies and minds of such men in fact are in the condition of organisms which have been so thoroughly trained for the special work which they have to do, that they do it almost without knowing it. They have become efficient engines working with the least possible friction. It is obvious that the training which is entered into with the view of establishing such a habit of mind, must be begun early in life; or perhaps to speak more exactly, it being granted such a medical instinct exists, an early initiation into professional training must be regarded as one of the greatest helps to the building up of an efficient doctor. No one doubts that the training of a musician ought to begin quite early in life, and there are many analogies

between his life and that of a doctor. I do not say that the habit can never be acquired in later life, but I do unhesitatingly assert that the longer the entrance into the profession is delayed, the greater is the difficulty of acquiring the habit, and the larger the chance that it may never be caught up at all. Experience fully confirms this view. The most successful practitioners are for the most part those who have entered early into the profession; perhaps the most successful of all have been those who have stood within the gates from their boyhood upwards. The old apprenticeship system possessed many drawbacks, and on the whole it is well that we have abolished it; but it was not an unmixed evil. I am aware that many men have achieved great eminence in the profession who did not join it till late manhood, but these exceptions do not disprove the rule for the majority; and many of these exceptions enjoyed the advantages of an early training in body and mind which greatly resembled the medical training. I shall have occasion to return to this point and still further to insist that the lad who is to become a doctor should begin his special training in quite early life, and should not be allowed, still less encouraged to defer his distinctly medical studies till the flexibility of youth has vanished.

But a doctor is not simply a scientific engine, he is also a social factor; and the social qualifications of a candidate for professional success are scarcely less important than his mental or corporeal advantages. It was once said of a very eminent member of the profession, that he knew enough medicine to ensure his being successful if he had known nothing of the world, and that he was man enough of the world to have secured success even if he had known nothing of medicine. This indeed is the real "double qualification" for which every medical novice should strive. Every one who has lived long enough, must have seen really distressing cases of men of scientific ability unable to secure a clientèle through the lack of knowledge how to manage their patients, and cases equally, though for a contrary reason, distressing, of doctors commanding success by their mode of dealing with men and women, in spite of the most glaring professional incapacity and ignorance. Social



qualities such as these come, it is true, by nature and cannot be made by art; but it is equally true that they may be either encouraged or depressed, and that to a very large extent, by suitable opportunity and training. Not the chief but still a large part of the power which a doctor acquires over a patient is dependent on the possession of qualities which are frequently spoken of as "good manners" or "good address," and these are proverbially just such qualities as may be largely increased or even be created by cultivation. A doctor who desires to have a firm grasp of, to secure the full confidence of his patients must learn to become all things to all men, he must know with whom to smile and with whom to be grave, whom to cheer and whom to frighten. This art no one can teach him; he must learn it by himself, he must learn it in the world, and he will never learn it at all unless he possess a natural facility; but his progress will be all the more rapid if he starts with the advantage of a good address, and the habits of a cultivated gentleman.

The preparation of a doctor then runs in two lines more or less antagonistic. Viewed as a scientific engine, it is good for him to be thrust early into the specific training of his profession; on the other hand, in prospect of the future social demands which will be made upon him, he ought even in early youth to mix largely with the world. The one will form and sharpen his intellectual and corporeal faculties after the desired fashion but will tend to make him narrow, and even rude; the other will equip him with the requisite manners, at the expense of his more strictly professional ability. And one important problem of medical education is how to combine and harmonize these conflicting influences.

Starting from these general considerations I may now go on to inquire into the nature and effects of the medical teaching at Cambridge. And first let me briefly state what is the extent of the apparatus for medical teaching at present existing.

Putting aside the purely preliminary studies of Physics, Chemistry, Botany and Comparative Anatomy, there are, in the introductory subjects of Anatomy and Physiology, the lectures on

Anatomy and on Physiology by Prof. Humphry, with demonstrations and practical dissection under the direction of Dr Creighton, lectures on physiology by Dr Bradbury and by Mr Saunders, and lectures with practical instruction on physiology by myself. The more strictly professional teaching consists of lectures on Medicine by the Regius Professor, Dr Paget, on Materia Medica and Therapeutics and on Medical Diagnosis by the Downing Professor, Dr Latham, on Pathological Anatomy by Dr Bradbury, and of Medical and Surgical practice at Addenbrooke's Hospital with clinical lectures on Medicine by Drs Paget, Latham and Bradbury, on Surgery by Prof. Humphry and Messrs Carver and Lestourgeon. There is also clinical instruction in mental diseases by Dr Bacon at the neighbouring Fulbourn Asylum. There are no lectures whatever on the Theory and Practice of Surgery<sup>1</sup>, on Midwifery, on Medical Jurisprudence, or on Sanitary Science. In Addenbrooke's Hospital there are I understand no dresserships or clinical clerkships, no practical offices in fact which can be held by students, for the House Physician and House Surgeon must be qualified men.

It will be seen from this that the school is not a complete one. Owing to the absence of instruction in the important branches just mentioned it is impossible for any one to receive his whole medical education at Cambridge. In order to attend the full course of instruction prescribed by the College of Physicians, the College of Surgeons, and other bodies, and even to acquire the knowledge needed for the Degree in Cambridge itself, the student must seek some other school. And such teaching as exists is curiously unequal: owing to the undignified origin of the Surgical Art there is no Professor of Surgery, though there are two Professors of Medicine. Of the practical results of this arrangement I shall have occasion to speak later on.

Let me now trace out the history of a lad 'of parts' who comes up to Cambridge, with the view of studying for Medicine. His first desire will be to graduate as B.A., in one of the Honour Triposes (preferring this to taking an ordinary degree). In

<sup>1</sup> This may seem startling, when it is remembered that one of the most distinguished of British surgeons lives at Cambridge. But Prof. Humphry's surgical lectures are clinical lectures only.

old times he would have taken the Mathematical Tripos, nowadays he will probably take the Natural Sciences Tripos. Owing to the advice of friends who have urged him not to go up to Cambridge too early or for other reasons, he will most likely be at least 18 years old before he begins residence<sup>1</sup>. If he be competing for a scholarship he will probably delay his arrival for still another year. Let us suppose then that he goes into residence in October 1877, at the age of 18 or 19 years. In January 1881, that is after the lapse of over three years or ten terms, he will be able to take his degree. If he is to take any honourable position in the mathematical examination for that degree, he cannot possibly begin any medical studies till after the examination is over, *i.e.* till February 1881, when he is at least 21 or 22 years of age. Some desire to take the Natural Sciences Tripos after the Mathematical Tripos. This they cannot do until after the lapse of one year; so that those who adopted this course would not begin their medical studies before 22 or 23 years of age.

Those who select the Natural Sciences Tripos alone have this advantage, that they can begin their anatomical and physiological studies as soon as they are prepared for so doing by having previously acquired a satisfactory knowledge of Physics and Chemistry; for Physiology has long been one of the subjects of the Tripos, and Human Anatomy has recently been added to the list. But even these would be unable, in justice to themselves, to devote any time to clinical or strictly professional studies until the conclusion of the Tripos, *i.e.* until they had reached the age of 21 or 22. I have purposely taken what I believe to be an early date. As far as my experience goes 23 years more closely approaches the average age at which the student turns from his Tripos to his profession, and in my short stay at Cambridge, I have known not a few cases where the change was made at 24 years, 25 years or even later. Moreover the student finding when he escapes from his Tripos in December or in January, that the professional year has already been broken into, not unfrequently squanders the remainder of it in

<sup>1</sup> This is an under rather than an over-statement. At Trinity more than half the men enter at between 19 and 20 years, and not a few enter at a still later age.

a dilettante fashion, and delays his serious entrance into the profession for yet another year.

I venture to think that in this tardy assumption of professional studies lies the secret of the comparative professional failure of Cambridge men at the present time. The day of grace has gone by before they knock at the door. By the time they begin to study actual disease their minds have become mature and rigid: they have lost the receptivity and the versatility of youth; they have become too old to acquire what I have previously called the true medical instinct. And the lack of this more than counterbalances the advantages which they may have gained by their mathematical or scientific training. Such men, even though they may have been high wranglers, as a rule fall short of becoming true physicians. They may achieve respectable positions in the profession, they may even become eminent in the eyes of their brethren as pathologists, they may contribute to the advance of Medical Science, but they never acquire that insight into disease, that as it were intuitive perception of what is wrong in a patient and how it can be set right, which is the token of the real doctor and the secret of professional power. They work by science and logic, and are often led by apparently right reasoning to unhappy conclusions, in cases where the true physician feels, as we have said, his way to the truth, though he cannot give an explicit logical statement as to how he has reached it. It is only in exceptional cases that men entering into the profession late in life or with minds preoccupied by other studies are able to catch up this professional instinct; and such men have the quality which Goethe recognized as the true mark of genius; they carry on into their later years that freshness and plasticity of mind which in ordinary men is characteristic of youth.

It comes to this then that men coming to Cambridge for the sake of a broader culture and a wider mental training, let slip their opportunity for being fashioned into real doctors; they sell their professional birthright for a little mathematics and a little general science. As far as professional success, and all the good to humanity which professional success entails are concerned, the loss of the former is far more than the gain of the latter; and the effects of the loss are more obvious the greater

and the more open the professional competition; hence they are felt much more at the present day than in former years. Culture and science are good, but they are bought too dearly when they are paid for at the price of the professional instinct. Is it possible still to gain the one, without missing the other?

The Regius and Downing Professors of Medicine see as clearly as I do the evil effects of this postponement of purely medical studies; and strive to remedy it by insisting that the medical student should attach himself to the hospital and enter upon clinical studies as soon as he has made up his mind to adopt the medical profession, or at least immediately he has escaped from his tripos. Thus by the regulations of the University the medical student on emerging from the Mathematical Tripos is invited or compelled to study cases of disease and injury in the Hospital, and indeed to attend lectures on Pathology or on the Theory and Practice of Medicine, before he has acquired even elementary notions of Anatomy and Physiology. In my humble opinion this course, without really meeting the evil which we are discussing, introduces fresh evils and tends to lower still further the quality of the Cambridge medical graduate. Before the student has formed even a superficial acquaintance with the complex phenomena of the body in health he is plunged into the still more complex phenomena of disease; he is urged to observe how far this or that organ or function has swerved from the norm, before he has the faintest idea what the norm really is. I need not press this matter here. I may content myself by saying that strongly as I feel the importance of an early entrance into the profession, I object to the system of premature clinical instruction at present adopted at Cambridge, and that chiefly for two reasons. In the first place the shortening of the delay thus effected is too small to be of any avail, the men are already for the most part too old, their period of docility is gone, the critical point has been passed before they enter the Hospital; and it makes but little difference whether they postpone their entrance another year or no. In the second place the system leads to a waste, and frittering away of time. I need not argue here in favour of the view that the man who looks forward to eminence or even

to success in the profession must lay a sure foundation in the shape of a sound real knowledge of anatomy and of physiology. But these are studies which take up the greater part of a man's energies during two years, and cannot be satisfactorily carried on at the same time with serious clinical observation. Hence many of the students are led by their hospital practice to neglect their anatomy, and a still larger number, their physiology; indeed were it not for the strictness of their impending anatomical examinations they would probably remain as ignorant of anatomy as, owing to the lack of a similar strictness in the various physiological examinations, they do of physiology. Some men, I know, do try to carry on all three studies at the same time, and I frequently witness the miserable result. They flit from the dissecting room to the hospital and from the hospital to the physiological laboratory; and they cannot find time to grasp any one of the three subjects on account of the pains they are taking to lay hold of the other two. In the end they find they have learnt none of the three, and it is not until they leave Cambridge for London or elsewhere that they begin the serious study of any of them. Their real entrance into the profession is still further delayed.

I venture to think that the evil can only be satisfactorily dealt with by going more to the root of it. The problem before us is—How can the maximum of general culture and strict mental training such as is afforded by University studies be combined with as early an entrance as possible into a practical acquaintance with the phenomena and treatment of disease? It is obvious that the apprenticeship system or any imitation of it is incompatible with a University career, and probably no one would wish to revive that system anywhere. The student when he commences his clinical studies, should attack them seriously and be prepared to devote his whole time and attention to them. Hence practically the problem, at the outset, resolves itself into the inquiry, To how late an age may the clinical studies be deferred without fear of the student losing the chance of acquiring what we have called above the professional instinct? It appears to me that, in the majority of cases, about nineteen years of age marks the point beyond which it would

be unsafe to go. In some instances the lad of twenty or even beyond is still malleable and ductile; in other instances, again, whatever of character has to be formed, must be formed by eighteen years or even earlier. But these are exceptional cases: the vast majority of lads are at nineteen years of age still capable of being moulded by proper care; indeed, the three years from nineteen to twenty-two are perhaps the most directive of a man's whole life. Taking nineteen years as on the whole a satisfactory limit, the problem still further reduces itself to the question, Is it possible so to arrange the studies of the University that a lad may be prepared to enter upon his clinical studies at nineteen years of age? It, I believe, might be done by adopting the following plan.

In the first place, the student must enter the University at sixteen years of age, already prepared by his school-teaching to pass satisfactorily the Previous Examination with the additional subjects. I know there are many who are opposed to so early an entrance into the University, but I have never heard any arguments against such a practice which were at all conclusive; and I have yet to learn that collegiate life at Cambridge, whether from a moral or from an educational point of view, is less suited to a youth of sixteen than life in one of our public or private schools. On the contrary, as far as I can learn, nine out of ten lads of that age would be infinitely better for the change. It would lead me too far away from my immediate purpose to discuss this matter more fully here; but I venture to think that the onus probandi lies with those who believe that the older practice of the University was essentially wrong, and that the modern state of things, which is the result of an undesirable system of competition, is in itself good<sup>1</sup>. It is obvious moreover that the medical profession is not the only calling which demands an earlier entrance into the University than at present obtains. Nor is there anything exorbitant in

<sup>1</sup> One is struck in reading the lives of eminent men from Milton down to Arnold, with the fact that they entered the University quite early in life; thus even Arnold was not sixteen when he joined Corpus Christi College, Oxford. Of course these may have been exceptions; that they were not is rendered probable by the nature of the machinery of discipline which has been handed down from old times, and which is certainly more adapted to boys than

the demand that a lad of sixteen should have acquired that moderate amount of knowledge which is necessary to satisfy the examiners at the Previous Examination. One may even go farther and expect that he will possess as well an acquaintance with Elementary Science, such as Physics and Chemistry, and in nine cases out of ten a lad of decent ability will know very much more Mathematics and Mechanics than are required as additional subjects.

Having passed the Previous Examination, the student would next turn his face to the Natural Sciences Tripos. His first year he would devote to Physics and Chemistry, especially to the former, carrying on, if his talents and disposition permit, his mathematical studies at the same time, but not allowing himself to be led astray into any competition for mathematical honours. In the May term he would take up Elementary Biology. At the end of the year, if the University adopt the suggestions offered by my friend Mr Coutts Trotter in his pamphlet on University Examinations, he would pass an Examination in the subjects which he has studied, viz. Physics, Chemistry and Elementary Biology<sup>1</sup>.

In the second year, while still continuing the study of Chemistry, he would begin that of Anatomy and Physiology. I need not enter fully here into the nature of his anatomical studies, suffice it to say that they should include an elementary course of animal morphology, and a special course of vertebrate zootomy, the latter serving as a preparation for the study of Human Anatomy, the outlines of which would also be mastered before the

to grown-up men. The irksomeness of the conditions of the status pupillaris from the Bachelor's to the Master's degree, so striking now-a-days, becomes intelligible and even commendable when regarded as applicable to lads of from 18 to 21, instead of to men from 23 to 26. I have it on the authority of an influential member of the University that since he came up, *i. e.* during the last fifteen years or more, the average age at entrance has increased by about six months. There can be no doubt that this is a direct result of our present system of scholarships (the chief effects of which have apparently been to delay the entrance of the student, to increase the price of living, and to render "cramming" more profitable than study), and cannot be in any way regarded as a proof that the world at large approves of a tardy entrance.

<sup>1</sup> This examination would differ but little from the first M.B. examination at present existing.



end of the year<sup>1</sup>. These studies would prepare him for passing the Examination in Mr Trotter's scheme, which corresponds to that of the first three days of the Natural Sciences Tripos.

The third year he would devote exclusively to Human Anatomy and Physiology, passing at the end of the year an examination in these subjects corresponding to that of the last three days of the Natural Sciences Tripos. His preliminary studies would then be ended, and the following year, equipped with the necessary training in Physics, Chemistry, Anatomy and Physiology, he could, free from all distractions, begin his clinical studies at the Hospital under the most advantageous circumstances possible.

Such a scheme involves, as far as the machinery of examinations is concerned, simply that the two (or three) examinations for the Natural Sciences Tripos, when Human Anatomy and

<sup>1</sup> The study of Human Anatomy has a double function, as far as the medical student is concerned; it is both the acquisition of a quantity of useful knowledge and a training in scientific methods. If we look back at the history of the profession during the past century, we become convinced of the incalculable benefit which by virtue of this latter function the diligent study of simple topographical Human Anatomy has conferred on the raw untrained medical student. But this appreciation of past good ought not to blind us to the fact that times are now changed, that at the present time though not in former days the same powers (chiefly those of accurate diligent observation and of memory) may be cultivated by means of Physics, Chemistry and Physiology (when these are intelligently taught) as well as by Anatomy, the not less important faculty of reasoning, which finds no scope in Anatomy, being exercised at the same time. The overweening importance still attached to Anatomy in our medical schools, to the utter depression of Physiology, is a remnant of conservatism from which a liberal education ought to free itself. As regards the acquisition of the facts of Human Anatomy viewed as simply useful practical knowledge, I would earnestly urge on all medical authorities the unprejudiced consideration of a plan (first suggested to me by Prof. Huxley, and which I trust some day to have an opportunity of developing) by which the student, with the help of a previous exercise in the anatomy of the dog, might acquire an exact topographical knowledge of the human frame in less than half the time which is now devoted to it. This would leave him ample opportunity to make himself master of physiology, which is obviously becoming day by day the real foundation of medical science. Should any of my readers be led by this last sentence to urge against me the argumentum ad hominem, that a physiologist naturally lauds his own studies, I would ask leave to reply with an equally personal argument, that it was a conviction of the medical importance of physiology which years ago converted me from a country practitioner into a physiologist.

Physiology are taken as subjects of the last three days, should be regarded as the equivalent of the first and second M.B. Examinations. And those who, like myself, have seen men pass a satisfactory examination in Human Anatomy and Physiology at the Natural Sciences Tripos, and a few months after pass another examination in the same subjects in the second M.B., and others pass the M.B. before they pass the Tripos in the same subjects, will not regard this as any revolutionary change. It is true that the subjects of the second M.B. also include Comparative Anatomy and *Materia Medica*; but I venture to regard it as a signal merit of my scheme that from it both these subjects (with the exception of the elementary animal morphology spoken of above) are absent. In old days, when comparative anatomy was a very different thing from what it is at the present time, it was doubtless a wholesome thing to insist that the medical student should possess something more than a mere technical knowledge of anthropotomy; but both comparative anatomy, and the previous training of the medical student, are greatly changed. To compel nowadays every medical student who aspires to a medical degree to shew a real acquaintance with so vast a subject as animal morphology is nothing less than a cruel and injurious imposition. If, on the other hand, the examination in comparative anatomy be only a nominal one, or if it be carried out on the ridiculous view that the medical student ought to be acquainted with the anatomy of those animals the products of which are used as therapeutic means, the sooner it is omitted the better. *Materia Medica* again ought not to be made a subject of examination, apart from Therapeutics, and, when joined with Therapeutics, must in any rational programme appear at a later period.

According to the foregoing scheme a lad will be able to enter into and devote his whole time to clinical studies at the early age of nineteen years. And my contention is that, in the vast majority of cases, his organism bodily and mental will be still so plastic that he will be in a most favourable position for being moulded by the hands of judicious teachers into the form necessary for the successful practice of the medical art. Nay more, his previous studies will, so to speak, have rough-hewn

him already to the desired shape. In his physical, chemical, anatomical and physiological studies he will have learnt the use of instruments, and acquired a certain tact and delicacy of manipulation. His anatomy and physiology will have taught him the rudiments of that art of observation, in which he will have all his life to strive to become more and more a master; and in his physiology he will have had abundant opportunity of exercising that power of judgment, that art of snatching a practicable conclusion amid conflicting evidence, upon his skill in which his success in after life will greatly depend. The clinical art will not appear to him, as it does to a lad coming straight from mathematical and classical studies, something strange and singular; on the contrary, he will welcome it as an old friend, and feel a peculiar delight in being able to employ the well-known means on new problems. He will recognize that, from a merely practical point of view, apart from all examinations, his last two years have not been wasted: he has been learning medicine though he has not seen a patient.

The important question now comes before us, Is it advisable that the student after passing his second M.B. Examination should carry on his clinical studies at Cambridge, or should he transfer himself at once to the large clinical schools of London or elsewhere?

At first sight there is much to be said in favour of the second plan. The Hospitals of the Metropolis are in most instances so much larger than those of small provincial towns such as Cambridge, the variety of clinical phenomena spread out before the student is so distinctly greater, he is brought so much more under the direct influence of the rising and of the risen leaders of the profession, that the arguments in favour of a speedy removal from Cambridge seem almost irresistible. And yet there are weighty arguments why the student should remain for at least a year, or even longer, at Cambridge, if it can be shewn that it is possible to offer him proper professional instruction at the University.

In the first place, if the student after passing his second M.B. is expected not to pursue his clinical studies at Cambridge, then there will be no need of the offices of either the Regius

or Downing Professors of Medicine, or of any other clinical teaching. I have already said so much concerning the ill effects of mixing up clinical and preparatory studies that I need say no more concerning the undesirableness of either of these professors addressing themselves to men who as yet have not passed the second M.B.; and if what I have said is convincing, these professorships would be rendered sinecures by the flight of the student immediately that he passed that examination. In other words, the professorships ought to be converted to some other purpose. But this I venture to think would be nothing less than a calamity for the University. Without going so far as to argue that the students ought to be retained for the sake of the professors, it may at least be held to weigh somewhat against the proposed course, that it would entail the obliteration of a chair<sup>1</sup> which is one of the very oldest in the University.

In the second place, both the student and the University would lose much by the departure of the former at the very commencement of his professional studies. I have throughout been arguing on the supposition that at nineteen years of age, on passing his second M.B. Examination, the student's character is not yet fully formed, that he is still plastic and still susceptible to wholesome as well as to unwholesome influences. That is to say, he is still in the condition in which he will gain much by residence in the University, and possibly lose much by changing to some other sphere.

If I understand the function of the University aright, the great advantage which a lad who is destined to enter a practical profession like that of medicine, gains by coming to Cambridge at all, is that he has there an opportunity of getting a wider culture, of being trained to broader views than if his education were entirely carried on in such a distinctly technical institution as a medical school attached to one of the London Hospitals. But if this view is correct, then assuredly at no time of his life has he greater need of these widening and elevating influences than in the first years of his more strictly professional studies. It is just at this epoch of his life,

<sup>1</sup> The Regius Professorship of Physic was established by Henry VIII. in 1540. The Downing Professorship was not established until 1800.

from nineteen to twenty-one years of age, that his character solidifies; it is just at this time that the narrowing influences of professional ideas are most likely to leave their impress on him. If at this epoch he is suddenly torn away from his old associations and plunged into a wholly new kind of life, the effects of the previous two or three years' training run a great chance of being largely neutralized if not wholly obliterated. If, on the other hand, he is introduced into his more strictly professional studies, while still surrounded by all the old influences, he may fairly be expected to carry on into his new occupations the habits which were just beginning to lay firm hold of him. In short, almost every argument which can be brought forward in favour of the medical student coming to the University at all, can be applied with increased cogency in favour of his at least entering upon his strictly professional studies there also.

Reasons such as these will hold good even if the training to be obtained at Cambridge continues to be in the future very much the same that it has been during the past generation, i.e. a training in which the mathematical and classical elements preponderate over those of the sciences of experiment and observation. Should the impending changes in the University result in a large increase of activity in the direction of natural science, should the learning and teaching of the University become, in a few years, truly catholic by a growth of the newer branches unaccompanied by any check to the old ones, then the reasons for the continuance of professional studies at Cambridge would be so greatly strengthened as to be indeed absolutely convincing. For, I imagine that, under such circumstances, the function of the University would not be to compete, *par inter pares*, with the Medical Schools of the Metropolis, for the production of ordinary practitioners. On the contrary, her efforts would be directed to use her great advantages to send into the world the best trained and most able doctors possible. She would desire to draw to her bosom men whose natural qualities marked them out for the practice of the healing art, and to equip these men with all the advantages which can be derived from a broad general culture and a thorough scientific training. For the production of such men, it would be absolutely

necessary that they should not be cut adrift from the scientific influences of the University until after they had been carried some way on into their purely professional studies.

Nor would the gain in such a case accrue to the student only, or to the University only indirectly through the student. The presence in the University of a strictly professional and technical element would be, as indeed it in past times has to some measure been, a direct benefit of no small amount. From the very constitution of the human mind the pursuit of knowledge for its own sake when carried on by means of any complex organisation, is apt to become degenerate. The individual inquirer is in most cases preserved by the salt of his own enthusiasm from decomposing influences, but not so societies. There is always a tendency in an institution devoted to pure learning either to exaggerate the repose which the pursuit of knowledge needs until it becomes absolute stagnation, or on the other hand to fret the wholesome discussions which stimulate inquiry into idle disputations about trifles. Where the spur either of some practical object or of an irresistible personal impulse is wanting, the means always runs the chance of being honoured as much as or even more than the end. The practical man to whom the end is all and all, and the means only a means, is in such an assembly a corrective of almost inestimable value. And the University in this respect obeys the law of other societies. Granting that there is amongst us a very large amount of rightly directed intellectual activity, we must all confess to the existence of a tendency to academic repose broken by academic wrangling. Speaking for my own line of work, I feel convinced that the future study of physiology will suffer greatly at Cambridge unless it be kept straight by the presence of a practical medical element; and what is true of one branch of learning is probably true of all. When we look around we see that business is no less the nurse of science than science is the mother of business. What nature has joined together, the University should not strive to keep apart. It is better, both for abstract knowledge and useful application, that they should not be divorced; and though it may, from one point of view, seem better for the University that she should

pursue truth for its own sake only, in a repose unbroken by practical cries, a larger conception will bring the conviction that it will in the long run be to her benefit that practical studies should as far as possible be carried on under her auspices, in order that the work of the abstract inquirer may be stimulated and guided without being hampered by the needs of daily life, as it certainly will be to the benefit not only of the medical profession but also of all other technical occupations, that the men employed in them should be brought up side by side with those to whom abstract truth or general culture is all in all.

If I have carried my reader so far with me, we have arrived at the following conclusions.

1. It is absolutely necessary, for the successful formation of the medical character and for the acquirement of medical skill, that the strictly professional studies should begin early in life.

2. Since general culture and scientific preparation are no less necessary than the actual clinical and practical training, and since it is undesirable that the preparatory and clinical studies should be carried on at the same time, or rather since it is impossible that the two can be satisfactorily carried on at the same time, arrangements ought to be made (and might by a minimum of change be made) in order that the preparatory studies, including anatomy and physiology, may be completed at an early age, say in the majority of cases at that of nineteen years.

3. It is desirable, both for the sake of the student and of the University, that not only the preparatory studies but also the strictly professional studies should if possible be carried on at Cambridge.

There remains now to be discussed the important question, Is it possible to teach at Cambridge in a thoroughly satisfactory manner the more purely technical branches of professional learning? I believe that it will be possible if the following plan be adopted.

I suppose that a lad, properly trained in Physics, Chemistry, Anatomy and Physiology, presents himself at the commence-

ment of the Michaelmas term, or rather let me say in the beginning of October, at Addenbrooke's Hospital, to begin his medical studies. His whole time is now at the disposal of his teachers. He can devote the whole winter (and he at least need not lose the greater part of December and the whole of January in a vacation of preposterous length) to the study (1) of Elementary Pathology, (2) of the Elements of Medical Diagnosis and Treatment, (3) of the Elements of Surgical Diagnosis and Treatment.

With regard to the teaching of pathology there can I imagine be no difficulty in the mind of any one. The pathological material can be collected by the teacher from other sources than the Hospital. Moreover, the pathology which would be taught would be, if I may be allowed the expression, a progressive pathology, a pathology in which the results of natural disease and of artificial experiments would be used to illustrate the same truths. I need I think say no more on this head except perhaps to remark that pathology would of course be taught in the same practical manner as anatomy and physiology. Indeed it is obvious that pathology is as it were a special kind of physiology.

With regard to the teaching of medical and surgical diagnosis and treatment, an objection might be made on the ground that the Hospital was too small. A little consideration will shew that this objection is an ill founded one.

In the first place, Addenbrooke's Hospital contains about a hundred and twenty beds, and is therefore not so very much smaller than University College Hospital in London, a hospital which not only has attached to it about the third largest medical school in the metropolis, but, if I may be trusted to speak of my own alma mater, is second to none in point of success of training eminent practitioners<sup>1</sup>. Of course a metropolitan Hospital has a greater opportunity of selecting cases of clinical interest than has one in a provincial town. Still there can be no doubt, considering the wide area from which Addenbrooke's draws its patients, that a very large amount of selection would be made when the necessity for so doing arose. And there

<sup>1</sup> The number of beds in this Hospital is even now only a hundred and sixty. In my time the number was about a hundred and twenty.



is this also to be considered, that a subsidy from the University might be used to increase the number of beds. Moreover, by arrangements judiciously introduced the infirmaries of Cambridge and Chesterton Workhouses might either be used as clinical schools, or cases of disease transferred from them to Addenbrooke's. It might be urged on the other side, that the beds in Addenbrooke's Hospital are not always filled<sup>1</sup>, and that the establishment of County Hospitals such as that at Huntingdon and elsewhere, and especially the institution of village Hospitals, has largely diminished the supply of cases to Addenbrooke's. I am further well aware of the unwillingness of poor people to exchange their own dwellings, in times of sickness, for a hospital of any kind. In answer to these objections, I would remark that the number of cases which solicit entrance into a hospital depends on the reputation which the hospital bears in the eyes of the public. I trust I shall not appear to be saying anything discourteous to the present staff of Addenbrooke's (of whose skill I have had subjective as well as objective experience) when I suggest that the already high reputation of that Hospital would become still higher, if the clinical teaching were carried out on a more systematic plan, and developed to an extent which would place it on the same footing as that of a London Hospital. If under present circumstances the Hospital is nearly full, it is surely not too much to expect, with an enlarged staff and increased clinical activity, Cambridge with its more than thirty thousand inhabitants, and its surroundings of numerous villages and towns, could support and fill a hospital with even a considerably larger number of beds. There is a danger doubtless in comparing anything in England with what may be seen on the Continent; but if such small towns as Heidelberg and Würzburg, or even a village like Jena, can afford clinical material for complete medical schools, it is not too much to expect that Cambridge can do the same.

In the second place, and this perhaps is the matter of most

<sup>1</sup> I find to-day (Jan. 14) that the number of medical cases is forty-six, of surgical cases forty-seven, so that the Hospital is at the present time certainly not full; but it must be remembered that a number of beds must always be kept empty, in provision for emergencies. A very slight increase of admissions would therefore render the Hospital practically full.

importance, a large hospital is not needed for elementary clinical teaching. On the contrary, it might perhaps be urged that in this aspect the advantage is on the side of the smaller hospital. It is far better that the beginner should limit his studies to a few cases and get to comprehend these thoroughly, than to flit from bed to bed, seeing many cases but understanding none. I am supposing of course that the student will, under supervision of his teacher, thoroughly investigate each case, and taking that as a type, learn from it the general truths of pathology, of diagnosis, and possibly of treatment, which it may in the hands of a skilful teacher be made to illustrate. Here indeed as elsewhere the progress of the student will depend not so much on the abundance of material as on the manner in which the material is used by the student. In Anatomy the abundance of 'subjects' beyond a certain limit is at all events to the beginner of little use, or may even by encouraging a lax mode of working become injurious; and an able teacher may be most successful with scanty material, provided that the scantiness does not pass a necessary limit. So also is it with clinical cases; if the student thoroughly studies under the careful guidance of his teacher each case brought under his notice,—observing all the phenomena, making careful notes, examining the temperature, urine, &c., watching the effects of the remedial measures, and all the while reading what has been written concerning the disease and comparing his case with the recorded typical or the aberrant cases—it will be impossible for him to take in hand more than half a dozen cases at a time. But if he has studied these six cases thoroughly, he will already have learnt a great deal of Medicine and Surgery. Let us suppose that the six cases were in the medical wards pneumonia, acute rheumatism, advanced phthisis, mitral disease, hemiplegia, and Bright's disease, or in the surgical wards, erysipelas, tumour of the breast, fracture, hip-disease, harelip, and some vesical or urethral malady. The student who in the course of two or three months or even longer had been taught in such a way that he had really mastered a dozen or more such cases, would already be far on the way to become a doctor. And if in the course of the winter session he were able to take in hand some

three or four such series of typical cases, he would have laid a foundation of practical knowledge capable of bearing a superstructure of almost any extent. I think I need not pursue this argument any further. Enough has, I trust, been said to prove that the resources of Addenbrooke's Hospital are sufficient to give even him who aspires to be afterwards a leader in the profession, as much medical or surgical training as he needs in his first winter<sup>1</sup>.

Prepared in this way with some knowledge both of disease and of its treatment, he will now be in a much better condition, than he was at the beginning of the winter, to follow a course of systematic lectures on Therapeutics. These would naturally come in the summer term, during which time also he might profitably listen to lectures on Medical Jurisprudence, and on Hygiene. Together with the lectures he would also go through a short practical course, which might be made to serve at the same time as instruction in Pharmacy, Toxicology, and in Sanitary Science. While attending to these matters, he would have but little time left for exact clinical studies, though he would still visit the Hospital. There would be no harm however in so condensing these collateral matters that they might all be mastered in the Easter Term; the student would then have a very considerable portion of the Long Vacation, in which again to give his undivided attention to clinical studies. Without any doubt the work of this Easter Term and Vacation might be profitably carried on at Cambridge.

But now comes the important question, Can the student stay yet another year or at least another winter at Cambridge? I shall point out presently reasons which render it desirable that he should, if possible, pass his Official (Conjoint Board) and his 3rd or final M.B. Examination before he leaves the School. Meanwhile, supposing it is in some respects an advantage for him to stay, he will at least suffer no loss by

<sup>1</sup> Through the great kindness of the House Physician and House Surgeon I have obtained a list of the medical and surgical cases this day (Jan. 14), present in Addenbrooke's Hospital. I need not reproduce the list here; but I may state that the clinical interest of these cases fully bears out what I have stated above.

remaining if the following events could in any way be brought about.

1. The establishment of a Lying-in Hospital and the setting on foot of arrangements for obstetric practice. About neither of these ought there to be any difficulty. The former is really needed in so large a town as Cambridge, and the latter might be instituted after the manner of the London Hospitals; possibly also the Workhouse Lying-in wards might be made available.

2. The establishment of Ophthalmic, Aural and Dermal Cliniques in connection with Addenbrooke's Hospital. About this too there need be no difficulty.

3. The establishment of either an independent children's Hospital, or of a children's ward attached to Addenbrooke's. It is hardly necessary to insist on the immense advantages which the student who has already mastered the elements of surgery and medicine may derive from opportunities of studying, under appropriate tuition, the diseases of children. I imagine that all practical men will bear me out when I assert that a children's ward or a children's out-patient's room surpasses in value an adults' ward as a means of clinical instruction.

4. The introduction of some system by means of which cases might be entrusted, under supervision, to the senior students. Much might be done in the Hospital itself, by allotting a limited number of cases to a senior student who would act as a demonstrator, as far as these cases were concerned, to the junior students studying them at the same time; but still more might be done by an increased development of the out-patient system. I would also like to suggest the following plan. If the parish medical officers could be associated with the clinical teaching, each such officer might have entrusted to him for a limited time, say a month, two or more senior students who would assist him in the care of the sick both in the Workhouse and in out-door medical relief. Such a connection would be to the advantage of both parties. The hard-worked parish officer would have an efficient assistant (and possibly an emolument as well), while at the same time he

would feel that his own position was raised. The student would have the opportunity of seeing those forms of disease which appear neither in the wards nor in the out-patients' department of a Hospital, and yet are exactly the cases which form a large part of private practice. He would see them too under what are in reality favourable circumstances. In his care of them he would be largely thrown on his own resources, and yet could always appeal for assistance to his superior the parish medical officer, and when necessary to his clinical teachers; and the accuracy of this clinical work might be guaranteed by a system of careful reports. The poor too would indirectly gain by such an arrangement. I merely throw this out as an idea which, if accepted, would need a fuller and very careful development. The difficulties of such a plan will be understood at once by any one who has had experience of the poor law medical system; but my experience as an old poor law medical officer justifies me in believing that those difficulties would not prove insuperable. I might even go so far as to say that some such a plan, while largely increasing the clinical resources of a provincial medical school, would possibly afford a happy solution of some well-known poor law medical problems.

5. The systematic development of clinical teaching at the Fulbourn Asylum. This has already been begun by the able superintendent Dr Bacon.

I venture to think that under a system of teaching thus developed, even a large number of students might be fully employed during the whole not only of their second winter but also of a portion of their second summer. I will go so far as to say, that they might in this way gather such a sound knowledge of medical and surgical practice, as would enable them to pass the final Examination of the Conjoint Board. They might in fact learn all that an Official Examining Body has a right to demand of those seeking a license to practise medicine and surgery. And I think the University would do well, if it were prepared to admit such men at once to the 3rd or final M.B. Examination. The pupils of the University would then at the age of 21 or 22 years leave the University as qualified medical

men. The M.B. (as distinguished from the M.D.) might profitably be used to denote not men of unusual medical ability, but men who, being qualified to practise medicine, had enjoyed the advantages and presumably manifested the benefits of a University career.

But I imagine that not one of these pupils, certainly not one of those who were seeking the higher prizes of the profession, (and it is in the production of such men that the Medical School of Cambridge ought to look for its *ratio existendi*) would imagine that his medical education was therefore finished, or that he ought at once to exercise the power given to him by his licence. There would of course be exceptional cases; a man through some family disaster or for some other reason might desire at once to use for bread-winning purposes the licence which he had properly gained; and it would be a hardship that he should not be able to do so. But the majority of men would determine to spend at least one and probably two or more years in further study at the larger or at the special Hospitals of London, Edinburgh, Paris, Vienna, or Berlin. And for carrying on their studies in these large or special Hospitals, they would be placed in the most favourable position. They would not be hampered and worried by the prospect of an inevitable cramming for any Examination. They would have had a sound and general training in the essentials of all branches of the profession. Each would have by this time discovered any leaning he might possess towards this or that speciality. And last though not least they would all have acquired, especially if the plan suggested above were carried out, a practical professional habit of mind. I am free to confess that two such Wanderjahre, following upon two years of careful home training, appear to me to be in the highest degree likely to produce on the one hand sound general practitioners, and on the other men fitted to become leaders of the profession<sup>1</sup>.

<sup>1</sup> Probably there would be no difficulty in coming to some arrangement with certain large or special London Hospitals by which Cambridge men might readily obtain temporary positions as House Physicians or House Surgeons. Possibly also studentships might be awarded after the 3rd M.B., which would enable deserving students to spend two or more years abroad without pecuniary trouble.

In order to afford a wholesome stimulus during this one, two or more years of foreign study, i.e. of study away from Cambridge, the M.D. examination should be made a real and indeed a difficult one, so that the man who wasted this precious time would have to be contented with the lower title of M.B. The M.D. examination might be either general or special according to the tendencies of the candidates, but should in all cases be thorough, searching and, above all things, practical. The thesis which at present forms part of this examination might profitably be retained if the useless disputation in the schools were omitted. The title of M.D. should in fact be not a natural sequence of the M.B., but one of real distinction only to be gained by men who have devoted themselves with vigour to the study of the profession.

Of course it should be in every student's power not to follow the plan just sketched out, but to leave Cambridge at the conclusion of his first year of purely medical studies; and some authorities would I know be content that this should be the prevailing custom. My desire to keep the student if possible at Cambridge during the second year as well, is based on the following considerations, which also have led me to urge what may seem to many a premature bestowal of the third or final M.B.

No school can ever be a thriving one which does not give birth in the minds of the pupils to a feeling of filial affection; and it is impossible that these feelings can spring up and grow strong in the course of a single year's tuition. At the present moment there is no filial feeling whatever towards the medical school at Cambridge. The men who bear the degree of M.D. Cantab. however great their affection for their University, and however strong the personal attachment which they must all feel to the staff of Addenbrooke's, look upon Bartholomew's or St George's or some other London Hospital and not upon Cambridge as their medical alma mater; and so it will always remain until men receive what is practically the bulk of their medical education here. Conversely, enthusiasm in teaching is sure to flag when the teacher knows that he is but laying foundations on which some one else will build. No school can flourish which lacks that double spring of action, the enthusiasm of the scholar for his teacher, and the attachment of the teacher

to the scholar. A single year is all too short for the development of this double attraction; it may spring up, but it comes forth only to wither and to disappoint. It is because I greatly desire to see a veritable Medical School, with its traditions and its individual character, leaving its special impress on all its students, creating and let us hope satisfying a home enthusiasm, giving rise to a *genius loci* in teachers and scholars alike, that I would strain every effort to establish the custom of the whole curriculum up to the winning of the official license to practise, being carried on at Cambridge and Cambridge alone. Our pupils will then regard Cambridge as the place where they were really taught, and they will possibly often return with gladness to Cambridge after their sojourn in London or the Continent. The pupils will be proud of the school, and we shall have no difficulty in the choice of able men to fill such vacancies as may occur in a school proud of its pupils. In the feelings with which Cambridge men in memory of their general culture look back upon their University and College, there is a sufficient indication of how easy it would be to raise an enthusiasm for the medical school.

It remains for me now to point out as briefly as I can what additions to our present staff would be needed to carry out such a scheme as I have unfolded.

We already possess a Regius Professor of Medicine, Dr Paget, who would continue to deliver the systematic as well as clinical lectures on Medicine. Clinical medical lectures are at the present time also given by Dr Latham, and Dr Bradbury; each of these ought in virtue of his work to bear the title of Clinical Professor. An increase in the number of students would necessitate additional clinical professors; but beside these there should be a number of junior clinical teachers corresponding in rank to the demonstrators in experimental science. In this way the clinical teaching might be thoroughly systematized.

A Professor of Systematic Surgery would be needed with two or more Clinical Professors and the requisite number of surgical demonstrators.



We possess at the present time no professor of Pathology; we could however well afford two, one junior to the other, and bearing to him somewhat the relations borne by a Professor Extraordinarius to the Professor Ordinarius in a German University. The senior or chief professor would of course have charge of a Pathological Laboratory, and demonstrators in pathology would also be needed.

A Professor of Therapeutics we already possess in the Downing Professor of Medicine, Dr Latham, but we should also need a special Professor of Pharmacology combined with Toxicology—for there is no physiological separation between a medicine and a poison—who would probably also deliver the lectures on Medical Jurisprudence, or at least the toxicological portion of these lectures. The latter professor would need a demonstrator or perhaps more than one.

A Professor of Obstetric Medicine, with possibly an assistant professor and certainly a number of clinical assistants would also be required.

Lastly, there would be needed a lecturer or better a Professor of Hygiene, and a Professor of Mental Diseases.

The question as to what emoluments ought to be attached to these various offices, is one demanding serious attention, as is also the further question, From what sources are these emoluments to be derived? It is impossible to discuss these questions fully and satisfactorily here. I will therefore content myself with making the following observations.

In the first place every effort ought to be made to prevent these offices from being regarded as stepping stones to a future permanent practice in Cambridge, and this may perhaps be best effected by creating a habit of regarding them as stepping stones to future lucrative practice in London. In the life of every successful physician or surgeon there is a period, say from twenty-five to thirty-five or forty years of age, during which he is arduously studying disease, waiting the while for the fruits of his labours. It is precisely during this period that he is most valuable as a teacher. As he grows older, he becomes doubtless richer in a wise experience, but his energies while growing less become more and more absorbed in the duties of private practice.

As a matter of fact the great mass of the medical teaching of London is done by the younger men while waiting in the outer courts, disturbed by but few patients. In very many cases this waiting might be done quite as well in Cambridge as in London. Looking at the matter on all sides, I see no reason why a young man of power, who is aiming at the higher posts of his profession, should not spend his ten or fifteen years of creative labour at Cambridge, and there having achieved a reputation in the profession, move up to London, in order to enjoy the fruits which would come when his reputation had spread from his brethren to the public at large. If such younger men were by the moderate endowment of their posts secured a satisfactory income during their stay at Cambridge, Cambridge would soon be able to bid against even London for able men to fill for a while her chairs. Naturally some of these men would from time to time be induced to choose Cambridge as their ultimate sphere of practice, and a happy mixture would be arrived at of a fixed senior element rich in accumulated experience but not so overburdened with work as to be cut off from serious teaching, and a transient junior element full of hopeful activity and impulsive energy. I can hardly imagine a state of things more conducive to the interests of a medical school, and I need hardly point out with what success a plan similar to but more general than this is carried out in Germany.

In this way the several chairs and offices belonging to the strictly practical side of the profession, those viz. of medicine, surgery, and midwifery would or might be filled.

The cases of the teachers of Pathology and Pharmacology seem to me to be on a different footing. These chairs are, or ought to be, scientific and experimental rather than practical. One would rather look forward to seeing them held by men who had devoted their whole life to inquiry for its own sake, and not as an introduction to a remunerative career; and the question might be raised whether the Professors in these two branches should not be formally debarred from active practice (except perhaps that the Pathologist might fill that office of Public Pathologist which the recent experience of courts of law has shewn us must in various districts be sooner or later

established, and the Pharmacologist might hold a similar Toxicological post), their emoluments being in return proportionately increased. Prejudiced as I am, on general grounds, against legal restrictions not absolutely necessary, I still feel that much may be said in favour of such a plan. In any case the emoluments of these chairs ought to be so large, whether practice be allowed or not, that the most eminent Pathologists and Pharmacologists in the country might desire to hold them for the sake of being able to pursue their respective inquiries unbroken by the demands of private practice. Almost the same might be said of the Professorship of Hygiene. And in endowing these posts liberally Cambridge might feel assured that she was doing the very best for medical research. The practical art of Medicine is eminently a remunerative calling, and it cannot be expected that the professorships and other teaching posts of practical Medicine and Surgery should be in themselves lucrative positions. The men who hold them have their reward in future professional success. All that the University has to do, is to compete in a business fashion with rival institutions, in order that she may secure the most efficient men. And in that case her outlay will meet with a not inconsiderable compensation in the fees of the larger number of students which will be attracted by her teaching; for there can be no reason why the candidates for a money making profession should be instructed in a lucrative art without adequate payment. Very different is the case of the men who give themselves up to abstract pathological inquiry: they labour, but the fruits of their labour are entered into by the practising physicians and the patients. They have the same claims on the endowments of learning as have all those who are engaged in unremunerative investigation; and yet they are placed in a dubious position on account of their apparent connection with a profitable art. Perhaps of all the wants of science in England at the present moment, none is more urgent than that of suitable posts for men who are willing to devote their whole time to the theoretical as distinguished from the practical study of disease. Cambridge could in no better way fulfil the duties which the gifts of the past and the expectations of the present have imposed

upon her than by devoting some of her funds to the establishment of a pathological school. Whether the abstract interests of science or the practical interests of "suffering humanity" are regarded, no step would seem more likely to be productive of good.

Let me now in a few words sum up the arguments which have been urged in the preceding pages.

1. An early initiation into practical medical studies is above all things necessary for the growth of that professional instinct, upon which success in practice so largely depends.

2. It is possible to combine such an early initiation with the fair amount of general culture, and all the other advantages to be gained by residence in the University, if the student be encouraged to enter the University at a somewhat earlier age than is customary at present, and if the necessary preliminary studies in physiology and anatomy be carried on as part of the Natural Sciences Tripos.

3. By the establishment of a complete medical school at Cambridge, the student might, while still young and plastic, enter with energy into practical medical studies, after passing the Natural Sciences Tripos, without leaving the University. By this plan the student would continue for some time longer to be influenced by the general culture of the place, while the University itself would benefit by the awakening impulses of a practical profession.

4. In order to give such a medical school a firm independent existence and a reputation worthy of the University, every effort should be made to provide sufficient teaching power and opportunity to enable the student if he sees fit to remain with profit at Cambridge until he receives his license to practise, every encouragement being subsequently given to induce him to pursue his professional studies for two or more years in the large hospitals of London or the Continent.

5. The expenditure necessary to equip such a school need not be great, the largest sums being those required for the more

abstract scientific departments of Pathology, Pharmacology, and Hygiene.

6. In establishing a school of investigation in these branches of knowledge, Cambridge would be fulfilling a duty which cannot be so well fulfilled by the busy metropolitan schools, and which is to a certain extent imposed upon her by her traditions and by the wishes of her pious founders.