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THE PLACE OF ANATOMY IN MEDICINE.

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THE life of a medical student, especially in its earlier years, is full of novel experiences and strange adventures. There is, for example, the October morning when he shyly pushes open the dissecting room door and, putting on an outward air of bravado to cover his inward trepidation, advances in search of the subject which is to afford him his first practical experience of human anatomy. As he discovers the object of his search we see him don immaculate apron and sleeves, undo the lid of a brand new case of knives, and seating himself by the subject, open his dissecting manual at the section devoted to the arm, impatient to commence operations. As he makes these preparations a sense of deep satisfaction takes possession of him, for he feels that at last he is to begin the real study of his profession. He had listened, but with only a half-hearted acquiescence, when his lecturers on chemistry, physics, and biology had claimed that theirs were the basal subjects of scientific medicine. But now all doubts had vanished; the stark subject which lies stretched on the table beside him measures the limits of his life's work; it is the field of all medical and surgical endeavour. No wonder, then, that the young student, as he makes his first incision and meets with those mysteries spoken of as superficial and deep fascias, feels that at last he has entered his profession. It was thus, in October days long gone by, that young medical students named William Harvey, Thomas Sydenham, John Hunter, Edward Jenner, Charles Bell, Marshall Hall, James Paget, and Joseph Lister entered the profession of medicine. Their first incision was also their blood-baptism to the profession of medicine. And so it will be in the future. Scalpel and forceps can never become antiquated, for as long as medicine endures, its practitioners must learn, by their use, the structure and working of the machine they would mend.

It is difficult for us who have grown grey in the service of medicine to recapture the enthusiasm, resolution, and outlook with which we first entered the dissecting room. The task ahead seemed so simple; the kingdom we had to conquer, the human body, had but a few parts—a head and neck, thorax, abdomen and pelvis, upper and lower extremities, and some special organs of sense. Its bones and muscles had been duly numbered and named; the shape and surfaces of its organs fully described; all its vessels and nerves had been charted. With

the optimism of youth we felt certain that before another October came round we should be masters of anatomy; by that time we hoped to have built up in our minds a picture or lay figure of the human body. This lay figure, reared in the dissecting room, we proposed to carry with us to the physiological theatre and laboratory, and there, as it were, have its machinery set in motion. It was to be for us what Maconochie became for Sir James Barrie—an *alter ego* which was to keep us company every day and everywhere. This anatomical Maconachie was, in due season, to go with us to the pathological department, and there his inward parts were to suffer all the diseases to which human flesh is liable; when the time came all the remedies of the pharmacopoeia should be tested on him and all his systems marked with therapeutic tags. He was to accompany us to the wards—if we ever got so far—there to serve as a lay figure on which we should graft experience gleaned from surgical and medical cases. Nay, in the distant future, when we had become practitioners, we conceived this lay figure, first built up by scalpel and forceps in the dissecting room, as the companion of our rounds—an epitomized embodiment of our medical knowledge—a representation of our whole stock-in-trade.

Why is it that in so many of us the zeal and enthusiasm with which we entered the dissecting room fade so soon and the anatomical "Maconachie" of our dreams is dead before the morning dawns? The art of dissection is laborious; the accounts given in textbooks are accurate, detailed, and prolix, but as dead as the parts described. Very soon, unless a teacher is at hand, the youthful student of anatomy becomes submerged in a chaos of fact. Some of the best minds which enter the profession of medicine turn from anatomy with contempt; for them it is but a catalogue of names. Besides, the student who would realize his early ideal and the teacher who would willingly help him, have to keep an eye on examination papers. In every question the candidate is desired to "describe" or "enumerate" or "give an account of" shapes, relationships, and attachments of certain structures. All references to the purposes these structures serve in the living body are excluded. The student, in such circumstances, abandons his earlier and truer ideal and accepts the conditions which tradition has made for him.

British teachers of human anatomy have realized more fully than those of any other country what is

wrong with their subject. Their subject has been killed by tradition, and if it is to take its place as the fundamental subject of medicine, they have to make it alive again. They are now revivifying it in many ways—by using living models as the subjects of their demonstrations and lectures, and by applying the discovery of Röntgen to the study of the living body. They desire that their students should carry from the dissecting room, not a memory of dead subjects, but of live men and women. No matter how high the ideals of the professor may be or how actively the demonstrator may supervise dissections, if this aim is to be attained—if the dead subject is to be made alive—each student has to do it for himself or herself. No one can perform this miracle for them. It is an easy matter to reflect skin, separate parts, and give a neat and clean demonstration of structures; to memorize descriptions is, at most, only a mechanical art, but to build up a living picture of each part as it is dissected, to ask and answer the questions What is the use of this structure? Why is it shaped so? entails real mental labour. Without this travail of the mind the labours of the dissector are thrown away and his time is largely wasted. It is this latter aspect of his work in the dissecting room which the modern student of anatomy fails to appreciate, and towards which his best books give him so little guidance. He clings to the hope that there is some easier way—some short cut—some system of mnemonics which will resolve his difficulties and assist him to satisfy the demands of his examiners. Sooner or later he will discover that in anatomy, as in all other branches of knowledge, there is for him but one royal road to learning—a diligent and intelligent application of all his mental powers.

It does not seem natural that the study of function should be separated from structure in the dissecting room, and it may happen that some student who reads this article will care to find out how anatomy became divorced from physiology. If he turns to the writings of John Hunter, which cover the latter half of the eighteenth century, he will find that anatomy, physiology, and surgery were taught by one man. John Hunter was a splendid anatomist, but when he dissected, his aim was to find out, not what an organ looked like, but what it did. He studied anatomy and physiology to get help in diagnosing and treating his patients. He studied dead things to understand the living, and observed living things to understand the dead. Then if the inquirer wishes to know how anatomy and physiology were taught early in the nineteenth century he should consult a textbook which was bought and read by medical students one hundred years ago. On its title-page this textbook is described as: *The Anatomy and Physiology of the Human Body*, by John and Charles Bell (sixth edition, in three volumes, 1826). These two brilliant brothers, like Hunter, taught anatomy and physiology and practised surgery. In their great textbook anatomy and physiology are blended to their mutual advantage. When the textbooks which were used by students of the following decade—the “thirties” of last century—are consulted it will be seen that a “judicial separation” by mutual agreement had been effected between anatomy and physiology. Not a teacher of the time, so far as one can find, entered any form of protest. Indeed, we have only to turn to a book which every student of medicine should read—*Memoirs and Letters of Sir James Paget*—to see that the change received an enthusiastic welcome. The passage which I quote relates to 1842, when Paget was 28 years of age, and

just beginning to get a foot on the first rung of the professional ladder:

“The time had come, in fact it had long ago come, when it was necessary to separate the teaching of physiology from that of anatomy. The separation had been made some years before at University College, and at the Aldersgate School, the rival neighbours of St. Bartholomew's, and in some other schools. It was now resolved to make it at ours; and my election to the physiological lectureship was sure. The plan was to have a lectureship on descriptive anatomy and another equal in rank and pay on general anatomy and physiology.”

In this way anatomy became divided into two branches—descriptive anatomy and general anatomy—physiology being appended to the latter. Very soon descriptive anatomists were named *anatomists* without any qualifying adjective, and general anatomists became known as *physiologists*. No doubt the separation of anatomy into two branches had become inevitable, but the student of to-day may wonder why cleavage took the line it did. He may wonder still more how it was that the anatomists of that time were content to hold the husk of the human body when other anatomists ran away with the kernel and called it physiology.

A search for an explanation will carry the inquirer into one of the most interesting episodes in the history of medicine. A reference to the writings of Dr. Robert Knox—a brilliant if somewhat unbalanced exponent of the anatomy of his time—throws much light on the matter. Knox was never tired of extolling the marvels of the new science invented in the schools of France—the “science of descriptive anatomy.” The anatomist's sole business, he held, was to give an accurate description of structure. There was also a science of form—“morphology”—but that, he held, had nothing to do with so mean an aspect of matter as function. Probably British anatomists would not have been content to remain mere “describers” had not Sir Richard Owen, during the “forties” of last century, leavened their subject by infusing into it his archetypal speculations. Owen's speculations were dying when, in 1859, Darwin led anatomists away on a new and very interesting chase—the search for the origin of man's body. Then, later in the nineteenth century, came the study of the human embryo, and the light that it threw on man's evolution. More and more the anatomist became the historian of the human body and concerned himself less and less with the action of its parts.

Without doubt anatomy as a subject has prospered and attained enormous proportions since the disruption effected almost a century ago. Its sister subject, physiology, has thriven out of knowledge. But the student of to-day, when he becomes the medical man of to-morrow, and has to relieve the ever-growing congestion in medical education, will doubt if anatomy and physiology have developed along the lines which are most profitable for medicine. For if he surveys the real additions which have been made to human anatomy in recent years he will see that they have been made, not by anatomists, but by physiologists. Gaskell, Langley, Ferrier, Sharpey-Schafer, Sherrington, and Head have been the best British anatomists of my time. Indirectly Joseph Lister has done more than all of them for the progress of practical anatomy, for he it was who gave the surgeon access to all parts of the body, and with every departure in surgery there opens up a new field in practical anatomy.

A renaissance is on foot in human anatomy. For

the good of medicine and the right progress of their own subject teachers of anatomy are no longer content to confine their efforts to mere description. They feel that the man who describes the anatomy of the brain and central nervous system must also, if labour is to be saved and time economized, deal with the mode in which its several parts perform their functions. Who could describe the human heart intelligently unless he explains its uses as a pump? Any account of the lungs, thorax, and respiratory passages is useless if the mechanism of the act of breathing is omitted. Sooner or later—and the sooner the better if the student is to be served—a new dividing line has to be drawn between the departments of anatomy and physiology, and that dividing line should not separate structure from function.

I seem to have struck a note of discontent with the present state of anatomy. An impression of this kind is not the one which I wish to convey to young men and women who are now beginning the study of the human body. A knowledge of how this body is made and how it works must provide the basis for all the more practical subjects of medicine. The beginner has to face the fact that to attain such a knowledge requires regular and unrelenting application. Application, however, is not enough to attain success; toil soon degenerates into sheer drudgery unless interest is stimulated and maintained. How is this interest to be maintained?

There are many ways. One of the best is to acquire the habit of reading medical journals; never a week passes but there are reported clinical and other cases which have a bearing on anatomy, and in this way students come in touch with the latest applications of their subject to medicine. Besides, this habit of keeping in touch with medical literature is one worth acquiring for its own sake; it will stand students in good stead when they have become busy practitioners or have joined the ranks of consultants

or of specialists. Another way of maintaining interest in anatomy is to make occasional visits to the operating theatre, to out-patients, or to the x-ray department. A visit to the *post-mortem* room will often give a practical bearing to what the student may have observed in the dissecting room. A glimpse now and then at the pages of *Proceedings* and other publications issued by anatomists and physiologists will place him in touch with subjects which are interesting his teachers and reveal the lines along which new fields of research are being opened up. At least a pastime of this kind will remove from the student's mind a delusion widely held by the public at large—that all worth knowing about the human body has been discovered long ago.

I would not take away a single moment of the leisure which the student proposes to give to general literature—nor to amusement or sport—but there are many books on medical biography which will well repay study and help to maintain interest in anatomy and physiology. Especially would I commend the lives of Harvey, Hunter, and Marshall Hall. Every student should get to know John Hilton's book on *Rest and Pain*, not only for what he has to say, but also for the way he says it. Then there are a number of excellent modern books which deal with the evolution of the human body, and explain the history of its many curious structures. For my part I still find great profit in reading Archdeacon Paley's *Natural Theology* and Sir Charles Bell's Bridgewater treatise. The explanations they give may have become antiquated, but the facts and contrivances they describe are still before our eyes, and the manner in which these authors place their facts before the reader has a charm and clarity which are still unexcelled. By such diversions the student will relieve the monotony of the more routine studies required of him by teachers and examiners, and qualify himself, not only for the work of life, but to take a wide and permanent interest in the welfare of his profession.

The Profession of Medicine.

INTRODUCTORY.

OUR present issue, in accordance with long-standing custom, is the annual Educational Number of the **BRITISH MEDICAL JOURNAL**, and the remarks that follow, on the profession of medicine, are addressed more particularly to intending students and their parents. In an article of this kind it would be out of place to discuss medical politics, but the occasion may be taken again, as in past years, to touch on a few current matters affecting professional study and practice. Our object in doing so is to put certain considerations before those who think of devoting themselves to medicine, and thus help them to judge of their fitness for the profession and of the prospects it holds out. It seems appropriate, therefore, to quote here from the opening words of a valuable paper on "common sense" by Dr. L. G. J. Mackey, which appeared in our columns early this year.¹

"From the very outset of the student's life common sense is necessary; in fact it is needed before a parent can come to a decision as to the suitability of his son or daughter for a medical career. It would be an act of common sense for a boy or girl who wishes to become a doctor to ascertain the conditions of medical practice, its labours and rewards, its openings and its opportunities; yet in far too many instances the student toils through years of arduous work to find himself at last a member of a profession for which

he has neither the taste, temperament, nor physique. Common sense will tell the medical student whether he has embarked on the right career; when to work and when to play; how to choose his teachers and his books; how best to gain the necessary knowledge; how to distinguish essentials from trivialities; it will prevent him being led away by new and unproven things from simple, sound, established principles and facts; and will finally be of great help to him in passing his qualifying examinations."

THE GROUNDWORK OF MEDICAL STUDY.

The Educational Number is largely a guide to the steps that must be taken and the studies that must be pursued in order to become a legally qualified practitioner. With the passage of years the form and contents of this issue have undergone changes, but its primary object remains unaltered. It contains also certain sections intended for younger members of the profession who may be in doubt as to the path in medicine they should choose as a career, and a section on the existing opportunities for post-graduate medical study in Great Britain. The particulars given are founded for the most part on official information, and are arranged along the customary lines. Apart from these and other special articles, the prospective student will find in subsequent pages an account of the course of training required of him, the places where it can be obtained, and the universities and other licensing bodies which test the knowledge gained and issue degrees or

¹ BRITISH MEDICAL JOURNAL, January 30th, 1926, p. 211.