The Opportunities that a Department of Anatomy can provide in a new Faculty of Medicine

An Inaugural Lecture

GIVEN IN THE UNIVERSITY COLLEGE OF RHODESIA

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UNIVERSITY COLLEGE OF RHODESIA

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I take this opportunity to express my thanks to the authorities of the University College of Rhodesia and of the University of Birmingham for the opportunity they gave me to participate in setting up a new Faculty of Medicine in the College.

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An Inaugural Lecture
given in the University College
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by

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NOTE.—This lecture was delivered without a script. It comprised quotations from papers which were either already published or were in the course of preparation. These papers are contained in the References.

THE OPPORTUNITIES THAT A DEPARTMENT OF ANATOMY CAN PROVIDE IN A NEW FACULTY OF MEDICINE

THE opportunities that a department of anatomy can provide in a new Faculty of Medicine must be seen against the general policy of the Faculty of Medicine in respect to teaching, research and administration, and in the context of current ideas surrounding progress in teaching and research in anatomy. The extent to which those ideals and ideas can be implemented will indicate the opportunities that the department of anatomy, University College of Rhodesia, can provide for its staff and students to the benefit of those in the department, the faculty, the college and, eventually, the general public at large.

A few years ago I arrived at a workable formula that would guarantee a pre-eminent University medical school and teaching hospital,[1] and this provided the background to my thinking about my own department, the Department of Anatomy. In that paper I suggested that everyone interested in the business of setting up a new University medical school and teaching hospital should feel obliged to consider afresh the purposes of such an institution, to reflect best how its aim might be achieved and to ponder the formula that would determine its reputation. I also pointed out that such an exercise would also serve as a means of developing personal attitudes to many aspects of medical education. I considered the factors which affect the quality of medical graduates, the quality of academic staff as teachers, the kind of curriculum which the members of the faculty must elaborate and, in addition, the physical environment in which the students study and the teachers teach.

I was forced to conclude that I could not pretend that I had devised any revolutionary formula which would guaran-

tee an outstanding medical school and teaching hospital. But I had learned a great deal on the subject. It was clear that serious consequences would attend a faculty of medicine if it neglected to cultivate any of the communities of which it is a part. It appeared to me that there was considerable danger that the faculty might become pre-occupied with what might all too readily be regarded as its only duty of intramural activities of teaching, research and patient-care to the neglect of equally important extramural considerations and relationships. It became clear to me that the formula which would guarantee a pre-eminently successful university medical school and teaching hospital was really quite simple. Without equivocation the prosperity of a faculty of medicine depends on the quality of its academic staff and in their ability collectively and as individuals, first to formulate clearly their aims and responsibilities; and second, on the vigour and manner with which the faculty works as a team and as individuals to discharge their duties satisfactorily.

No two faculties of medicine anywhere have had precisely the same beginning or the same history. Nor do any two faculties anywhere have the same problems in kind and number, the same virtues, the same defects, the same potential or the same future. In an effort to discover the uniqueness of the Faculty of Medicine, University College of Rhodesia,[2] I found that three events were paramount in the contribution that they had made. First was the association that the faculty had with the Nuffield Foundation. When the establishment of the faculty was being contemplated the college authorities turned to the Nuffield Foundation for means to allow a small planning committee to prepare detailed proposals. This committee was appointed in 1956 with the following terms of reference:

"To advise the University College of Rhodesia and Nyasaland on the desirability and practicability of establishing a medical school as an integral part of the College; to prepare proposals for the training curriculum, postgraduate training, the research facilities, the buildings, equipment and staff required, including those required for a suitable teaching

hospital and other centres for clinical facilities; to prepare estimates of the capital and recurrent costs involved and a phased timetable for development; and to make any other proposals and suggestions for the development of medical education and research under the auspices of the College."

The proposals that the committee made were hailed by medical educationalists everywhere as embodying the most imaginative and up-to-date ideas and ideals, all of which were judged attainable within the concepts of a faculty of medicine planned from the very beginning. The excellence of the end result would depend only on the quality of the men engaged on the task and on the means available.

The second consideration paramount in the uniqueness of the faculty of medicine was, and is, its relationship with the faculty of medicine of the University of Birmingham, England. I have told the story of the connection between these two faculties of medicine elsewhere.[3] Three important things amongst many should be noted about this relationship: (a) so long as the University continues to award its degrees to students in the new faculty of medicine, then the University must have the right of veto on all syllabuses and proposals for individual courses made by the medical school of the College; (b) that the faculty of medicine of the University of Birmingham is under no obligation to provide the college with any monies or facilities in respect to the faculty of medicine in Salisbury; and (c) that the relationship is working with astonishing good will and mutual co-operation. Visitors and examiners from Birmingham are frequently in Rhodesia. Advice is as frequently offered and it is sought on setting up new departments in the faculty here in Africa, on other administrative matters and on research. Already Birmingham examiners have visited Salisbury and have been more than satisfied with the performance of the students in their professional examinations. The faculty of medicine in Birmingham is itself engaged upon a colossal reorganisation of its hospitals. Its ideas of a community hospital have been given practicality with financial support from the Nuffield Foundation and co-operation from the Ministry of Health in the

United Kingdom. The faculty of medicine in Birmingham has already demonstrated more than once—for instance, at the Intergovernmental Conference here in Rhodesia in April 1964 on the future of the college, medical school and teaching hospital—that she has an unique and decisive part which she means to play in the development of the faculty of medicine in Rhodesia.

The third important respect in which this faculty of medicine is unique was the award of travelling fellowships from Rockefeller Foundation to enable three of the first professors appointed to visit selected centres of medical education throughout the world. The centres which were chosen fell roughly into three categories: first, those which had been in existence only for a few years in order that a visit might discover what their authorities considered that they had done well and what they would wish to do over again in a different way if they got the chance to start afresh; second, those schools located in geographical areas where the problems in medical education, disease and research could be expected to reflect closely the environment of Central Africa; and third, those medical schools of international repute where it was hoped that the secrets surrounding their success might be revealed to those who were planning the faculty of medicine in Salisbury.

In all these important centres actively engaged in furthering medical education it was discovered that the plan in existence for the faculty of medicine in Salisbury including the shape of the curriculum based on the Nuffield report; the phases for the development of the medical school and teaching hospital based on the consultant architect's plans; and all their attendant implications, could not be faulted in regard to any single major decision that had already been taken or was being contemplated by any of the several authorities involved in the planning of the faculty of medicine here in Salisbury.

A working formula had been established that would guarantee a pre-eminent university medical school and teach-

ing hospital. How would the department of anatomy fit into the formula?

The world trip, sponsored by the Rockefeller Foundation, gave me the opportunity to visit some thirty medical schools around the world and to discover that (a) many of the problems which today beset university education, for instance, the grievous load of factual knowledge that scholars in VIth Forms have to carry, apply with equal force to certain aspects of medical education, in particular, the problems affecting the position of anatomy in the curriculum of progressive medical schools; and that (b) there were four major trends which had been operating for different lengths of time, affecting the place of anatomy in teaching programmes of faculties of medicine.

The first of these trends concerned the efforts being directed towards the reduction of the amount of factual anatomical detail which students have been expected to remember in the past; the second dealt with measures designed to make clear the relevancy of the study of morphological, surface and radiological anatomy to other parts of the medical course, and in particular to the premedical sciences, namely, physics, chemistry and biology, as well as to physiology and to clinical studies; the third trend revealed attempts to introduce the student to modern concepts of cellular morphology and cellular physiology during the course of his anatomical studies; and the fourth trend related to ideas concerned with arrangements affecting anatomy in professional examinations as well as in class tests.

It is an almost universal view today amongst medical educationalists that too much time has been devoted in past curricula to the study of morphological anatomy. Nearly everywhere successful attempts have been and are being made against the resistance from anatomists to cut down on the amount of detailed anatomical knowledge that the medical student was once expected to carry in his head. While there are still many medical schools in which students spend upwards of a thousand hours studying topographical anatomy in the dissecting room and in the lecture theatre, many

faculties of medicine have managed to reduce teaching time in their departments of anatomy to around a minimum of three hundred hours. But it should be noted that not every department of anatomy that purports to have reduced its teaching time adheres strictly to its apparent quota. It has been considered necessary by some departments to resort to a number of devices, for instance, keeping the dissecting room open in the evenings and at the weekends, so that students have sufficient time to complete their work in the dissecting room according to the instructions in the dissecting manual recommended for use by the students in the departments concerned.

Vigorous attempts are everywhere being made to relate the study of anatomy to the rest of the medical course. One hears on every side of attempts being made to integrate the study of morphological anatomy with the study of physiology. These attempts range between the production, on the one hand, of a single syllabus combining the study of anatomy and physiology by systems which make up the body, and, on the other hand, the complete temporal separation of the study of morphological anatomy by regions of the body from the study of physiology by systems. However, the majority of faculties of medicine through their departments of anatomy and physiology now practice some degree of co-operation in teaching anatomy and physiology to undergraduate medical students either by association in the teaching of certain systems of the body, notably the nervous and the endocrine systems, or by a manipulation of the timetable.

There exist, however, some staunch anti-integrationists as far as morphological anatomy and physiology are concerned. Some hold that they would find it difficult to integrate, even within a single department, the teaching of morphological anatomy with the teaching of other disciplines, for example, embryology and histology. Some medical schools favour a block allocation of time for teaching anatomy separately from physiology. This is in support of the view that the study of morphological anatomy should be over and done with as

soon as possible. In any case, a block allocation of time for the teaching of anatomy, or of any other subject for that matter, in the medical curriculum works to the advantage of the subject, whereas an integrated system of teaching seems to offer advantage for the curriculum if the curriculum is viewed as a whole. It is, however, important to ask when the students should learn the anatomical relationships which are so important clinically in certain regions of the body. From everybody's viewpoint perhaps the real answer is for the medical student to dissect two cadavers, the first one by systems in a course of human biology and in close collaboration with the physiologists in the early part of the course, and the second one by regions in a syllabus designed to emphasise in close collaboration with the clinicians, anatomical relationships of clinical significance.

The relevancy of an understanding of anatomy and physiology to the clinical disciplines is a "sine qua non," yet many devices need consciously to be used to make the student continually aware that the study of anatomy and physiology is necessary for an intelligent comprehension of pathology and the clinical disciplines. Some medical schools have found it necessary to establish special committees whose job it is to devise ways and means which will ensure that the undergraduates appreciate the connections, academic and applied, between the preclinical subjects of anatomy and physiology and the subjects taught later in the clinical part of the course.

Forward looking departments of anatomy that have the resources in money, material and manpower have mounted courses designed to instruct the undergraduate student in modern concepts of the morphology and physiology of the living cell. In fact, one professor of anatomy in an American school consciously trains his students for doctoring as he imagines doctoring will be in twenty years' time by making the student aware of disease at cellular level, employing the electronmicroscope, X-ray crystallography, histochemistry, etc., in the courses of study which he provides in the department of anatomy.

Arrangements for testing students' knowledge of anatomy vary tremendously in medical schools from tests every ten days or so throughout the course to no examinations whatsoever. The usual type of "viva voce" examinations, spot tests, and written papers, both essay and multiple choice, are all employed. A few schools still include a set dissection in the professional examination. These several kinds of tests all have their critics. One trend affecting examinations in anatomy is to allow marks gained by students in the course of their class work to contribute substantially towards the marks that may be awarded to them in the practical part of their professional examinations. There is a trend here towards continuous assessment of the work which the students do during the time they spend in the department of anatomy with a parallel reduction in the significance attached to the performance of the student in the professional examination. This trend could lead towards the eventual elimination of the professional examination. Another variant affecting the importance of the outcome of class examinations may prevent a candidate from appearing in the professional examinations if he has failed to reach a prescribed minimal performance in his class work. There is some measure of agreement that departmental assessments of student performance in class examinations provide good indications as to how the students will perform in their professional examinations. Many schools make the second professional examination a definite barrier to progress in the medical course. A number of schools restrict to two the number of attempts that each student may have to pass the subjects which comprise the second professional examinations. In some schools the examinations in anatomy and physiology are taken separately; in other schools they are taken together.

These then were the major trends discernible in a world trip affecting the place of anatomy in the medical curriculum. But what do doctors now in practice in Africa think of the training they received as undergraduates in the departments of anatomy of their faculties of medicine?[4] How did that training in anatomy fit them for the work they found they

had to do when they first started to practise in Africa? About the end of March 1963 I sent the following circular to all the doctors in practice in what were the three territories of the former Federation of Rhodesia and Nyasaland:

"Recent events in the history of some medical schools in Africa make it quite clear that as soon as it is created a new faculty of medicine must start to design its own curriculum against the day when the faculty no longer depends on an institution overseas for its degrees. In this connection I believe that you could help the faculty of medicine in the University College of Rhodesia and Nyasaland by allowing the faculty to draw upon the experience you have had in the practice of medicine in Central Africa. For example, it would be extremely valuable for the faculty to learn in what ways you judge that your own undergraduate training especially fitted you for the work you did in your early days, and, conversely, in what ways you found your training as a doctor fell short of your needs to practise medicine when you first started in this country."

The attention of the practitioners was drawn to the first and second reports of the Nuffield Committee which were published in the Central African Journal of Medicine.[5,6] It was indicated that these reports contained what the University of Birmingham, England, whose medical degrees would be awarded to the successful students in Salisbury, was prepared to consider as an essential basis for a medical curriculum in Central Africa.

About two hundred and fifty out of four hundred doctors replied to the circular letter, some at considerable length. The comments of these men in practice in Africa are important and provide much information that the faculty must take into account in its deliberations affecting the shape of the curriculum here in Salisbury.

Numerous doctors reported that anatomy and physiology were taught "in splendid academic isolation," not only as between anatomy and physiology, but also as disciplines entirely divorced from the rest of the course. This situation was worsened by the assertion that teaching in the preclinical

years appeared disjointed and uninteresting because the information presented to the student seemed both irrelevant and unnecessary. Anatomy and physiology were completely forgotten almost as soon as the examinations were over and certainly long before the students reached the qualifying year. Some freshmen were disappointed soon after they joined the medical school because they somehow expected from the very beginning of their training to see patients and to deal with living people and their problems. Instead, all they saw for two and a half years were dissecting room subjects and pathological specimens. Teachers in some departments of anatomy were accused of providing over-emphasis in topics which the lecturers were currently investigating, and, in some instances, of not providing a suitable tutoring service in the dissecting room.

An interesting attitude towards the preclinical course which some doctors had as students was expressed in a belief that sheer work at anatomy and physiology and the assimilation of multitudinous facts (and the ability to reproduce them) would make them good doctors. The same practitioners have now changed their minds. They believe that their preclinical training contained too much detailed anatomy which was more suited to postgraduate candidates for higher qualifications in surgery than to preclinical undergraduate medical students approaching their second professional examinations. The course in anatomy was taught and learned as a great memory test without relevancy to function or application and, for those reasons, anatomy was forgotten as soon as the professional examinations were taken.

In contrast, some doctors now in practice in Africa deplored their lack of anatomical knowledge after they had qualified and felt that this deficiency had on many occasions hampered treatment and operating. This view was also expressed in another way. It was very important, according to some doctors, that a medical graduate in this part of the world should have a sounder knowledge of anatomy than his opposite number in the United Kingdom I was also pleased to note that one group of doctors gave consideration to their

teachers in anatomy in that the group felt that their teachers need not have been frustrated in trying to teach their pupils "the details of the six articular facets of the capitate bone, since all the members of the group, with the exception of the surgeon, had forgotten their anatomy and did not feel any the worse." (I had to point out to this group of doctors, including the surgeon, of course, that the capitate bone has seven articular facets.)

I must draw special attention to the comment of the doctors on the question of embryology in the preclinical curriculum, for I am responsible for that aspect of the local teaching. Apparently in some schools embryology was badly taught either by brilliant lecturers who could not put the subject across to their pupils or because the subject was misplaced in the timetable. Perhaps I had better not know what views are held by our own undergraduates in respect to teaching embryology in the College. Some doctors thought that embryology would have been better appreciated at the end of the medical course rather than at the beginning.

It was clear from the replies received from these doctors now in practice in Africa that their undergraduate training in respect to anatomy ill-equipped them for their life's work. I should not omit to say that this applied with equal force to other parts of the curriculum.

It is pertinent to ask how the faculty of medicine in Birmingham is itself facing up to these trends in the curriculum for medical students. The recommendations of the General Medical Council as to the medical curriculum in 1957 intensified the efforts that the board of the faculty of medicine was already making to improve the curriculum, particularly towards reducing the factual load in the syllabus and by the provision of interdepartmental courses of instruction. The board of the faculty of medicine so welcomed the exhortations of the General Medical Council "to instruct less and to educate more" that recent changes in policy relating to medical education have influenced the whole of the medical course from start to finish. The changes which I described in detail elsewhere[7] embraced the requirements for admission

to the first year of the courses as well as affecting the pre-medical, preclinical and clinical phases of the undergraduate's career. As far as memorising facts of topographical anatomy was concerned, there was a continuation, by means of a variety of procedures, of the reduction of the student's burden. The procedures included the abolition of systematic lectures; teaching students in small groups; a substantial reduction in the amount of detailed anatomy that students need to learn and a consequential reduction in the amount of time that students spend in the dissecting room. Interdepartmental courses in (a) neurology were continued with contributions from anatomy, physiology and experimental psychiatry; (b) endocrinology, where reproductive endocrinology was taught by members of the department of anatomy while non-reproductive endocrinology was taught by members of the department of physiology; (c) histology taught by academic members of staff both from physiology and anatomy; and (d) a new course, named the Living Cell, provided by members of the departments of anatomy, physiology, medical biochemistry and pharmacology, social medicine (all in the faculty of medicine) and the department of genetics in the faculty of science.

Against the tapestry provided by world trends in medical education, against the comments of doctors who practised in Africa and against the background of the changes in the curriculum already decided on by Birmingham, what are the opportunities that the department of anatomy here in Salisbury can provide in a new Faculty of Medicine? The answers are to be found in the annual reports that the head of the department of anatomy, in common with his professorial colleagues, has to provide the board of the faculty of medicine.

The courses provided by the staff of the department of anatomy comprise morphological, radiological and surface anatomy, histology and embryology. The students attend sessions at Harari Hospital to see clinical material relevant to the dissecting room programme; several field trips are made each term to St. Joseph's School, Chikwakwa Reserve, for practical experience in methods used in physical anthropology.

Close liaison has been effected with the department of pathology in respect to the provision of normal human tissues for teaching purposes and in respect to members of the department of pathology giving short demonstrations of pathological organs and tissues appropriate to the programme in the practical histology classes.

One yardstick, not necessarily the best, which can be used to measure the effectiveness of teaching in the department of anatomy, is the outcome of the second professional examination (Part I) for the degrees of M.B. and Ch.B. (Birmingham). To date not a single student has been required to withdraw from the second year of the course on the grounds of academic insufficiency. This is a fine tribute to the mode of selection of students, to the teachers for and examiners in the first professional examinations; to the students who reach the second year of the course, and, not least, to the quality of the academic staff as teachers in my department.

I intend to make the department of anatomy a centre for training undergraduate medical students in research.[8] I agree completely with the authors of the second report of the Nuffield Planning Committee that a good doctor should have "the capacity to look, observe and deduce, and to decide when a proposition is proved, to share in the excitement of discovery and to remain aware of the imperfections of belief, clarity and logic of thought to learn by the conclusions that others have drawn, and the ingenuity and application to devise new methods." I contend that one of the most effective ways of realising these attributes is through a period of training in research and in research methods. Successful instillation of such attitudes of mind into undergraduate medical students simply cannot fail to produce medical graduates of above average ability.

The elimination of the faults and the exploitation of the virtues of the undergraduate curriculum lie in the hands of the academic staff of the faculty of medicine. They must see to it that the courses of instruction which they devise provide as close an image as practicable to the kind of medi-

cal practice that the majority of the graduates from the school will meet in the community which they will serve. Some of them will return to the department of anatomy as teachers and research workers. When that happens the department will have come of age.

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