THE SCOPE AND EQUIPMENT OF AN ANATOMICAL INSTITUTE:

THE PROPOSED INSTITUTE OF ANATOMY AT UNIVERSITY COLLEGE, LONDON.

By G. ELLIOT SMITH, M.D., F.R.S.,
PROFESSOR OF ANATOMY IN THE COLLEGE.

I CAN best explain the aims of the new Institute of Anatomy which it is proposed to build at University College by referring to certain phases of the history of anatomy during the last eighty years or so.

The impression seems to have got abroad that the unprecedented gift of the Rockefeller Foundation to University College Hospital Medical School and to University College was a matter of pure chance. But it was the result of a deliberate choice made by a body of trustees which, from the nature of its activities, has a fuller and more intimate acquaintance with the state of medical education and research throughout the world than any other single authority. It is necessary to emphasize this in order to appreciate how and why this great gift came to be made and the programme of reform it was intended to help.

The Rockefeller Foundation was eager to give some striking expression of American friendship to the British Empire; it was also anxious to enlist the help of British medical men in its great world-wide schemes of stamping out such diseases as ankylostomiasis, for efforts restricted to a few localities are not likely to effect any radical purpose in preventive medicine; it also realized that unless the standard of medical education was raised throughout the world and the true spirit of research more fully developed, its great programme was foredoomed to failure.

At the end of last year two representatives of the Rockefeller Foundation, Dr. Wickliff Rose (General Director of the International Health Board) and Dr. Richard M. Pearce (Adviser in Medical Education to the Foundation), were in London on their way to Belgium to report on some educational problems in that country. They visited University College, and were informed by Professor Bayliss of the new developments in medical education which had taken place in London, and that several of the hospitals had started the system of clinical units. The fact that some of the London hospitals had adopted this plan excited the lively interest of the two representatives, as the Rockefeller Foundation had played a large part in the encouragement and endowment of this system of medical education in America.

The Rockefeller Foundation, founded by Mr. Rockefeller, has for its object "the promotion of the well-being of mankind throughout the world." Its interests are truly world-wide, and at the present time it is engaged, among other enterprises, in work in a campaign against tuberculosis in France; the control of malaria in the Southern States of America; the control of hookworm disease in twenty-one foreign states and countries, and in twelve states of America; in the improvement of public health organizations in Brazil and Australia, and in the setting up and equipment of a large medical centre in Peking. It is also playing a very large and important part in the promotion of medical education, and more especially of medical research, in the United States.

The two representatives of the Foundation visited the various schools in London which had set up the unit system, and came to the conclusion, after a critical review of the situation, that of these hospital schools the one that had adopted the whole-time system in the most whole-hearted way was University College Hospital. At the same time they recognized fully our difficulties, and appreciated very clearly that if the units were to make good, it was necessary that they should be supplied with a larger number of beds for the use of the Directors, larger and well equipped laboratories in the hospital for clinical and research work, and more liberal financial support. They felt that the whole scheme was one which would appeal to the Rockefeller Board of Trustees, and one to which they might well recommend the Foundation to give its financial assistance so that the unit system of clinical teaching might receive every possible chance of attaining the fullest success. Their hope was that assistance from the Rockefeller Foundation might relieve the units from all embarrassments, and secure for this school a completely

equipped staff of whole-time teachers in all subjects from the earliest to the final years.

University College is the training ground in pre-clinical subjects for the majority of the students who later enter the hospital school, and it was therefore necessary to ensure that any improvements needed by the medical faculty of the College should be realized coincidentally with the changes in the school of the hospital. In pursuance of this policy the Rockefeller representatives visited University College and investigated the facilities available there for the training of medical students in the preliminary and intermediate studies. With the former they were well satisfied, with the latter they found little wanting in the institutes of physiology and pharmacology, but they found an entire absence of any adequate provision for the work in anatomy. The need for a new Institute of Anatomy worthy of the College had long been recognized by the College Committee, who realized that they must, in the near future, provide a properly equipped institute for real teaching and research work, and indeed, they had already set aside a site for the building, but so far had not raised any of the funds.

Apart from the fact that Dr. T. R. Elliott's scheme for the reform of clinical education in the medical school, and Professor Starling's great achievement in building up the Institute of Physiology in the College were the solid reasons for the choice made by the Rockefeller Foundation, it is singularly appropriate that the attempt to institute radical reforms in the teaching of anatomy and in the provision of the facilities for real research should be made in University College. For, paradoxical though it may appear, the reforming zeal of Sharpey seventy years ago had as one of its ultimate results the crippling of anatomical effort in this country, and it is proper that the College which created a physiology so vigorous as to seize the more vital and progressive parts of anatomy should be the institution to right this ancient wrong by restoring to anatomy the opportunities for teaching and research in histology and practical embryology, and for the experimental study of the factors that influence growth and development.

It is important to remember that Sharpey succeeded Jones Quain, the author of *Quain's Anatomy*, in the chair of anatomy and physiology at a time when physiology was a mere appendage of anatomy. He developed the practical teaching of physiology, and was the first in this country to give really comprehensive courses of instruction in physiology and minute anatomy. The fact that he was Professor of Anatomy afforded him the opportunity of devoting his attention to the really interesting parts of anatomy, leaving Richard Quain only the dead corpse of macroscopic anatomy. And when Sharpey's disciples, Michael Foster and Burdon Sanderson, went from University College as physiologists to spread the new gospel in Cambridge and Oxford, they followed their master's example and annexed to physiology the most vital and progressive branches of anatomy. As England did not produce any anatomists of the calibre of Sharpey, Foster, Sanderson, and their brilliant followers to resist this unnatural divorce of microscopic from macroscopic anatomy, this arrangement, which has worked such grievous harm to anatomy, became stereotyped and expressed in bricks and mortar, so that the anatomist has had no laboratories in which to teach histology even if he had the wish to do so.

The great advances that have been made in anatomy during the last thirty years have been effected mainly by the use of the microscope. Yet microscopic anatomy, without which macroscopic structure is not really intelligible, has been taught by the physiologist; and in many departments of anatomy there is no provision of any sort even for demonstrating microscopic preparations, much less for the study of minute structure by the students. Although in every department of anatomy some pretence is made of teaching embryology, in no school is adequate provision—in most there is none at all—made for practical instruction.

It is a fundamental vice of any system of education in science merely to give the student the results of other people's work and not to give him the opportunity of observing the facts himself by studying the material upon which our knowledge is based. It is essential that adequate facilities should be provided in every department of anatomy for the student to study the minute structure of

the body and the facts of development, and that rooms and equipment should be set apart for research in these subjects. It is important to emphasize the fact that it is not a question of depriving the physiologist of anything he has or wants to keep. At University College the reform has been facilitated by Professor Starling's offer to give up to the anatomist the subject of microscopic anatomy. But every teacher should be free to teach his subject—or, as I should prefer to express it, to provide his students with the facilities for studying—in the way that he thinks fit. Histology is vitally important in the real study of anatomy; but if the physiologist wants to use a microscope to demonstrate physiological facts there is surely no reason why he should not continue to do so when the anatomist comes into his own and recovers the lost members of his subject.

The structure of the nervous system, gross and fine, its developmental history and the connexions displayed by degeneration and experiment, are all subjects which should be studied as one connected whole in the department of anatomy; and if the complexities of the nervous system are to have any meaning or make any intelligent impression upon the student, the functional significance of the arrangements must be discussed and the effects of damage to the nervous system must be used, not to pretend to teach the student clinical medicine, but to give him some satisfying explanation of a complex and otherwise unintelligible mechanism. It is necessary, then, in any properly equipped institute of anatomy, to provide a neurological department fully equipped with sets of slides of adult human and embryonic material and of the brains of other vertebrates, and with laboratories for the experimental study of the results of degeneration.

In making these claims I am not setting up an extravagant demand, but am simply stating what is done in properly equipped medical schools in other countries and what I have been striving to do in this country and elsewhere for a number of years.

In most of the progressive medical schools of America great activity is being displayed (in the anatomical departments) in experimental investigations of the factors which influence growth and development and of the causation of anomalies and monstrosities. Such researches have led to results of enormous importance from the insight they afford into the underlying principles of development as well as in explaining the causation of pathological conditions. The equipment of laboratories for such experimental work is an essential part of the scheme for the new Institute.

It is gradually being realized how great and important is the knowledge of the structure of the living body that can be acquired by the use of the x rays. At present a student is called upon to interpret radiograms long after he has left the department of anatomy, and when his practical familiarity with the arrangement of the structures he is endeavouring to disentangle has grown dim. Obviously the proper time to acquire an understanding of x -ray appearances is when the student is actually studying the things of which the x rays cast shadows. But such studies also teach him his anatomy, and are a valuable means of instruction. Moreover, the equipment of a department of radiology in the Institute opens up a most promising field of anatomical research, which is bound to become increasingly fruitful year by year as the technique of radiography is improved.

The vast importance and urgency of such reforms as I have outlined are revealed most strikingly if one compares the history of British and American achievement in anatomy during the last thirty years. On the one side inertia and retrogression—on the other an unprecedented development of teaching and research, a broad outlook and tremendous vitality. The great reform of anatomy in America began in the Johns Hopkins medical school in 1893, when the late Professor Franklin Mall set up a department of anatomy which, in defiance of recent British and American tradition, aimed at educating the student and teaching him to observe, rather than providing him, in innumerable lectures and demonstrations, with the conventions that examiners may expect him to reproduce. Mall's influence in rescuing anatomy from the scholastic method soon spread to other subjects of the medical curriculum and to other medical schools in America; and the vast reform of medical education and research in America is in large measure the result of his pioneer work

in the anatomy department at Baltimore from 1893 onward. It has been the great incentive of the Rockefeller Foundation's schemes of medical work from which we are now about to benefit.

Realizing where and how this great movement began, the appropriateness of the selection of University College for the Rockefeller Gift is suggested by the circumstance that it was a former student of University College who played a not inconsiderable part in preparing the ground and in developing the proper atmosphere at the Johns Hopkins University for the great developments to which I have referred. From 1876 until the coming of Franklin Mall in 1893 Henry Newell Martin, who had been a student of University College with Michael Foster and afterwards his right-hand man at Cambridge, filled the Chair of Biology at Baltimore and exerted so significant an influence that when Dr. William Welch and Dr. William Osler were brought to the Johns Hopkins University, twelve years after Martin had begun to create a school of biology and physiology there, they found the conditions ripe for the building up of the great medical school which will always be associated with their names. Thus University College can regard the Rockefeller Gift as the repayment, no doubt with considerable interest, of the debt biological and medical education in America owes to Newell Martin and University College.

If the facilities for research and education which the erection of the new Institute will afford result in even a fraction of the effects produced by a similar development in America twenty-seven years ago, it will amply justify the expenditure of labour and time which these new developments will entail. For the fuller understanding of the meaning of the body and the factors that influence its growth and development must be the foundation of the newer science of medicine of the future—the prevention of disease. If America has had a start of a quarter of a century in instituting these vital reforms, which affect not anatomy only but the whole of medical education, we can profit from her experience both by adopting many ideas that have been tested and found good and rejecting others that have failed or are not suited to our circumstances. It is hoped to build up here an Institute that will afford students and investigators the means to obtain a broad outlook on the problems and a thoroughly practical knowledge and understanding of human structure, and be a powerful instrument for the advancement of knowledge.

For the opportunity of attempting this great reform it is difficult adequately to express our gratitude to the Rockefeller Foundation for its enlightened generosity.

AN OPERATION FOR THE RADICAL CURE OF INGUINAL AND FEMORAL HERNIA.

BY

SIR G. LENTHAL CHEATLE, K.C.B., F.R.C.S.,
SURGEON TO KING'S COLLEGE HOSPITAL, LONDON.

FROM the experience gained in operating recently upon eight cases for the radical cure of inguinal hernia at King's College Hospital the following operation has been evolved.

The patient is placed in the Trendelenburg position, an incision is made to one side of the middle line, the rectus abdominis is split longitudinally, and the abdominal wall is retracted to the side of the operation. The peritoneum is smoothed away by a dry swab from the parietes. The operation is conducted without opening the peritoneum. The sac between the internal ring and the surface of the peritoneum is delimited by insinuating the forefinger between it and the external iliac artery and vein. The sac is ligatured at the peritoneal surface. The part of the sac that extends into the inguinal canal is pulled up into the subperitoneal space as far as it will come, tied as low down as possible and then it is allowed to slip back (or is replaced) into the inguinal canal; so that it cannot act as a guide for a recurrent hernia.

The delimitation of the sac in the subperitoneal space is simplified by packing back the peritoneum with gauze in a direction upward and away from the seat of operation. The muscle fibres and their sheath are separately sutured. There is nothing to stop a surgeon occluding the internal ring by suture should he desire. The deep epigastric artery and vein could be retracted inwards to allow occlusion of the ring. The younger the patient the greater is the simplicity of the operation. The abdominal