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

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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

wall in young people is so easily retracted to the side of the operation.

In one patient the top of the urinary bladder entered the canal and was firmly incorporated with the neck of the sac. This is a complication not uncommonly met with, and makes radical treatment of the neck of the sac difficult and inefficient when the operation is performed by the ordinary method. By the method I have described the bladder was placed easily and efficiently in its normal position, and the peritoneal opening of the sac was closed at the peritoneal surface. The appearance of the parts in this patient suggested a congenital malformation in the relation between bladder and peritoneum in this region. In one patient suffering from a femoral hernia I performed practically the same operation. It was easy of accomplishment. I turned up a square inch of periosteum from the underlying pubes and attached it to the under surface of Poupart's ligament and the outer margin of Gimbernat's ligament.

The operation would not be so applicable to inguinal hernia in which intestinal adhesions existed within the sac. So far, I have operated on selected cases.

The operation is conservative. I have made no allusion to its performance by other surgeons because I can find no records. I hope I have not overlooked any record of this kind.

OPEN ETHER, WITHOUT CHILL.

BY

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THE advocates of warm ether have shown that the best temperature for the vapour is about body heat. If a thermometer be placed in the wool face-piece of an ordinary open-ether mask, with the bulb projecting over the patient's mouth, it will be found to rise to about 98° or higher, according to the patient's temperature. That, of course, is the maximum, and will occur on expiration; the minimum will occur when the intake of the patient's breath draws air through the half-frozen lint. If this inspiration temperature could be avoided, and something approaching the expiration temperature maintained, the administration of open ether would be freed from one of its chief objections. With this object, I tried a mask with a double dome of gauze, and intervening cavity in which the cold vapour and warm expired air would mix. The patients seemed less to resent the induction of anaesthesia than with the ordinary single dome.

Further experimentation, with the help of Mr. Harold Behrens, resulted in a metal chimney, about 8 in. high, built upon an ordinary mask. The open top of the chimney, 4 in. in diameter, was closed with a "drum" of gauze (two thicknesses of the material as it unrolls from the packet, or, for a robust patient, three thicknesses) clamped by a ring. This is kept just saturated with ether. The chimney narrows in the middle to a "waist" 2½ in. in diameter; and here is another "drum" of gauze, a single layer only, clamped between the upper and lower halves of the chimney. A third layer of gauze, also single, forms a dome in the lowest part of the chimney. Between the top "drum" and the "waist" the vapour is cold, as is indicated by condensation of moisture on the outside of the chimney. But the lower half of the chimney is free from condensation, and comfortably warm to handle, for the vapour within it is automatically warmed by its admixture with expired air.

In actual use anaesthesia is very smoothly induced and maintained with this mask; and I think that ill effects of ether—salivation, bronchial secretion, liability to pulmonary disorders—are reduced. (The aid of atropine is assumed.)

A small point in favour of the method is that the ether is kept from contact with the face. A more important advantage of this apparatus is that it induces deep breathing; the percentage of CO₂ in the chimney ensures that; but no cyanosis occurs, and there is less of the suffocating sensation caused by the gauze drums than by the ordinary lint mask. The sustained, deep, quiet breathing, noticeable when this mask is used, must be valuable as a cardiac auxiliary; and, by aspirating blood from the abdomen into the great veins in the thorax, must help to prevent shock.

The mask can be obtained from Messrs. Browne and Sayer, 30, Highbury Place, London, N.5.

EIGHTY-EIGHTH ANNUAL MEETING

OF THE

British Medical Association

Held at Cambridge, June 30th to July 2nd.

PROCEEDINGS OF SECTIONS.

SECTION OF PHYSIOLOGY AND PHARMACOLOGY.

Professor F. GOWLAND HOPKINS, F.R.S., D.Sc., F.R.C.P.,
President.

DISCUSSION ON ACIDOSIS IN DISEASE.

OPENING PAPERS.

I.—Professor F. GOWLAND HOPKINS, M.B., D.Sc., F.R.S.

OUR discussion, if its scope is to correspond with what is indicated by its official title, will deal with two related but sufficiently different sets of phenomena. We are faced, indeed, at the outset with some questions of nomenclature.

As a result of historical developments the term "acidosis" has come to have at least two meanings, and as consistency in nomenclature is a matter of real moment it would be satisfactory if discussion to-day could secure as one of its results the final removal of any ambiguity in the use of the term. This outcome would add to the comfort of those who think and write about such matters and prevent confusion of thought among others less well informed.

The first use of the term "acidosis" is usually ascribed to Naunyn, though I think it was in use for a year or two before, in 1906, he applied it to that condition of arrest in metabolism which leads to the circulation and excretion of hydroxy-butyric and diacetic acids. The use of the term in Naunyn's sense became well established, and, in clinical writings at least, it is frequently so used to-day. Such is the nature of the word, however, that it is not surprising that it should have become gradually applied to other conditions in which increased production in the body of acid substances of any sort is suspected. Finally, we find it applied to all conditions in which the acid-base equilibrium of the blood is upset in the sense of a diminished reserve of available base.

While the appearance in the blood of the special acids just mentioned does, under conditions, seriously alter the acid-base equilibrium, the disorder in metabolism which produces them may exist without leading to any significant disturbance in this sense. Van Slyke and Cullen state, for instance, that they have observed the excretion of 20 grams of acetone bodies (calculated as hydroxy-butyric acid) per litre of urine without the coincidence of an abnormally low plasma bicarbonate. It is clearly undesirable therefore that the same word should cover states of the body which may in effect be very different.

Every one, I think, will agree that, logically, the term "acidosis" should be confined to conditions which involve changes in the reaction of the blood, and since "acidity" in the older sense of the word is so rarely, if ever, established, we shall do well, in my opinion, to accept—as so many authors have now accepted—the definition of acidosis as a condition in which, even though the actual hydrogen-ion concentration (the "reaction") of the blood is little altered, or unaltered, there is a diminution in its potential neutralizing power, a lessening of its "reactivity." We may do well to go somewhat further and speak of "uncompensated acidosis" (Hasselbalch and Gammeltoft) when there is actual increase in the hydrogen-ion concentration C_H and of "compensated acidosis" (Van Slyke) when there is none.

Although it needs an actual change in the C_H of the body fluids to produce an immediate result of any sort, it is, I think, quite wrong to speak of a depletion of the alkali reserve (unless it be a wholly temporary phenomenon) as though it were of no importance. It affects potentialities. An individual displaying diminished alkali reserve is not in a position of equal safety with one in whom the reserve is normal. The former, unlike the latter, may, for instance, become perceptibly dyspnoeic on slight exertion, and he will become more intensely