MEDICAL EDUCATION IN ENGLAND.

A NOTE ON SIR GEORGE NEWMAN'S MEMORANDUM TO
THE PRESIDENT OF THE BOARD OF EDUCATION.

BY

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MEDICINE, as a function of civil society, has come late into the field. The Church, on its secular side, and the Law gained power and influence while room and gear were yet ample. Late comers at a feast have a cool reception; the seats are occupied, and the best victual has been served. Medicine, depending as it does upon the attainment of large and exact knowledge, could not make itself felt in the State until not only were the physicians thus equipped but the laity also sufficiently educated to hear its message and to recognize its powers. The physician and the public must be ready together to realize the meaning of Medicine in civil society, to claim its services both for municipal and private interests, and to call for physicians armed with trained intelligence and exact knowledge to respond to these needs. As regards the immediate present, let us compare for a moment the health of the armies now campaigning in East and West, I will not say with the condition of those of Marlborough, but even with those but lately stricken by disease in the fields of South Africa. A Pharmacopoeia of our great grandfathers rather resembled the collections which children gather on the seashore; here and there something curious or useful, for the rest scraps of seaweed, dead star-fish, pebbles, and empty shells.

Again, the late arrival of Medicine as an organ of society was due in large part also to the custom of regarding it as no more than a traffic between individuals. The sick man went to the doctor to buy a remedy, an antidote, natural or magical. The notion was of life as a spirit shut up in a tabernacle, and of disease as an intrusive "morbid entity"—a phrase not unheard to-day—to be driven out of the tabernacle. The broad relations of man to his circumstances, that life is no independent activity but a reaction between two surfaces, inner and outer, body and milieu, and a function of the two, was not conceived. Hippocrates, as we see in his treatise on *Airs, Waters, and Places*, knew better, but the idea was shortlived. Even yet we have to learn that Medicine is as much a condition of a stable society as Law, and deserves no less an homage. There is, it is true, a private medicine, as there is a private law, but in both cases subsumed under far larger issues.

Medicine is awaking to these great issues, vindicating its authority, and claiming its place in the great councils of the realm; not without the jealousies of old placemen, old customs, old ideas. And the public is rubbing its eyes to see this new champion, to hear the new herald, to be aware of a new birth—for it is no less. The rude physiological adaptations of man and his circumstances, with their hideous material waste and spiritual agonies, have to give way to rational combinations and harmonies.

We cannot hesitate to say that to-day is the most critical moment of all past time in the history of medicine. Are we ready for it? Schools are roused, hospitals are awakening to larger views, science is finding in medicine some of its most intricate and interesting problems, as, for example, the interpretation, and by it the illumination, of such problems as those of physical chemistry; theories of vitality and other mysterious forces are being deserted for the chemistry of colloids, the properties of surface tension, of osmosis, of ionic streams, and other functions of molecular modes of energy, which can be tracked out and measured. When we contemplate what is before us, tasks which we cannot evade by calling them academic and going our way, when it is perceived, even by thoughtful laymen, that we must master these problems for which the advances of science has given us the keys, or be run down, we must ask, Are we ready? Are we to be cowed by the war, or roused by it to the larger ideas and director lines of work which, I repeat, science is now marking out for us? Shall we take the tide?

THE MEMORANDUM ON MEDICAL EDUCATION IN ENGLAND.

This is the question which is set plainly before us in the epoch-making report—I say epoch-making if the epoch

make it so—on medical education which is just published to the world; not in a corner, nor to doctors only, but as a memorandum to the President of the Board of Education by Sir George Newman.*

For this report or address—it is modestly called "Notes"—teachers have been in some measure prepared by that of Professor Flexner; this appeal however is concerned with us in England; it is no general exhortation, but a homethrust.

Its contents are briefly as follows: After the introduction are considered—first, the function of the medical practitioner; secondly, university education in medicine—a point made crucial by the author; then follow five chapters on the preliminary sciences; and then the clinical subjects and their teaching, preventive medicine, the place of research, graduate studies, are discussed. There is a concluding chapter of great importance, reinforcing the lessons to be pondered and digested.

To attempt even a survey of this large and rich contribution to the new birth of medical education is out of the question; all we can do is to consider a few leading features of it. In a chief place I would welcome the emphasis laid upon the general practitioner as the foundation of medicine in this country—a principle I have often tried myself to reinforce. Almost unawares a contrary process, that of gradually eviscerating the general practitioner (I wish he had a better name, such as the good old name of physician, still preserved to us in the United States), has been, and is, at work; tuberculosis has been taken from him, the infectious fevers, venereal diseases, child-birth and child-care, and so on; so that general practice may become but a gleanings after the reapers. Sir George tells us truly that this tendency is a grievous mistake. Let us hope that these and like cuttings are but removed for the moment, in order to strike them anew with the intention of restoring them as vigorous saplings to the old gardener with his varied experience and intimate touch. But Sir George hastens to add that the old gardener, now well aware of his highest need, is calling for a larger and deeper education—that for him a university education may be made accessible and efficient. Such a purpose, as we shall see, is not to pull down the high standards of our universities; on the contrary, their methods are to be enlarged and enkindled, but at the same time to educate the physician in a new climate; to add depth to the breadth of general practice. In a phrase, we have to begin in earnest to dig for new foundations.

And the family physician needs something more than technical education; he needs a larger and less wasteful life. Sir Robert Morant begs him to make himself more felt in public affairs, especially in those in which his testimony is invaluable; but, as things are, how is a man in practice as it is to-day, even if not a very busy man, to avoid those incessant interruptions and petty cares which so break up his days and hours that he has no time even to think, still less to enrich his mind by reading and debate? Not only so, but he is now almost compulsorily unprogressive; even his weekly journals too often lie in unopened piles, medical societies are a rare enjoyment, and those advantages of advanced and special study, which, as Sir George says, are essential to his professional life, are out of his reach—nay, out of his sight. Can we wonder if in these circumstances he may be something of a bat when compelled to stand in the glare of a public platform? We may be proud that when called upon he acquits himself so well; not rarely remarkably well.

Graduation Study.

On graduation study much is said in the address which is imperative. If the family physician is to do more than mark time, he must have opportunities of entering, for not inconsiderable vacations, on instruction in new methods and introduction to new principles; also for converseance in his daily work with the scientific methods and equipment of district laboratories. These are demands which not only ought to be met, but which must be met, if medicine is to hold its own. No trades union methods, no Ministries, no severity of examinations—some of which may indeed be degrading—can in any way make

* *Some Notes on Medical Education in England.* A memorandum addressed to the President of the Board by Sir George Newman, K.C.B., M.D., F.R.C.P., Chief Medical Officer, and a Principal Assistant Secretary of the Board of Education, and Medical Assessor of the Universities Branch of the Board. H.M. Stationery Office, 1918. (8vo, pp. 129. To be obtained through any bookseller. Price 9d.)

up for or prevent intellectual stagnation. How such a revolution is to be made possible is shown in part in the Memorandum; and by chance in another address recently given by Sir Bertrand Dawson, in which like warnings and like encouragements are set forth. In both the documents means for compassing something of these ends are foreshadowed; and we must learn, so far as may be, to help ourselves, but private enterprise is unequal to the reform.

The Preliminary Sciences.

From these general but fundamental considerations we must go on to more specific counsels. Upon each of the preliminary sciences Sir George has much to say, and not a little to teach, even to our teachers. He points out that without a solid ground of anatomy, physiology, chemistry, and pathology, no useful practice of medicine can be built. The current methods of teaching these sciences are fully brought out, and much credit given to the progressive systems now pursued in all university laboratories.

Pathology in a Balloon.

Of minor and easily remediable defects I may dwell on the circumscription of each science in too exclusive a department; the want of free currents between each and all. This defect I may illustrate by the divorce a *thoro* of pathology and clinical practice, and the want of penetration of pathology by physics; nay, the want of full penetration of biochemistry by physics. In these words, of course, I am not speaking of individual professors, which would be unjust indeed, but of the general conceptions which even the advanced student brings away with him. And the pathologist, not by any means of his own fault, is compelled by his divorce from the clinical wards to work in a balloon. He is not familiar with the instances of the very *pathos* which it is his business to interpret. In private practice likewise the pathologist is made to live on scraps which fall from the doctor's table, instead of being called in to co-operate on equal terms. His contributions are "riders," not a central part of the problem. Sir George puts the interesting question whether the student could have an advanced course of physics, connected, let us say, with his biochemistry, at a later period of his curriculum. Let me give an instance of such need: in the current teaching we are told in respect of renal dropsy to administer diuretics, purges, sweats, and other eliminants—to get rid of the fluid. Now, whatsoever aid may be found in these auxiliaries, it seems certain that such treatment is superficial; it is not in accordance with the principles of the malady, which lie in some perverse relation between the fluids and the tissues, or their constituent elements, so that the scientific treatment must be by physical or biochemical methods, and consist in such modifications of diet as may alter these relations favourably. Drugs play a secondary part. All such considerations impress upon us the warnings of the Memorandum—that our departments are too watertight. In Cambridge we are building bridges between physics, biochemistry and clinical medicine, which we believe will open out new routes. May I venture to say here how great is the advantage of a degree in medicine to a teacher of the ancillary sciences; time after time one is struck with the facility thus given to him in approaching these borderland problems.

The Medicine of Prevention.

Another cardinal feature in the Memorandum is the insistence on the medicine of prevention; and here again we are held up by opaque walls between the various lines of research. Preventive medicine also by this disadvantage is in peril of sterility. All medicine should be "preventive"; we are concerned with prevention, not only of the initiations of disease but also of every phase of it; too often we are summoned to appear only in the fifth act. Sir James Mackenzie has strongly urged the instant duty of attending to the beginnings of disease, and thinks that little in this sphere is being done. I suggest, and I think Sir George Newman will agree with me, that the fault is not so much that little has been done, as that the really large researches which have been made on preventive medicine—as by bacteriologists on the laws of immunity, of antitoxins and serums, by the physiological interpretation of symptoms, and so on, and again by the biochemists and physiologists on animal physics, relations of proteins, sugars, and fats, and the like—are lost in the almost total

lack of co-ordination of their results with clinical methods, and in the relegation of many of these researches to municipal and departmental laboratories. But how great are the issues which lie hid yet from us, while such spectres as Cancer and Insanity stalk unbound in our midst.

I must not pass on from pathology without insisting on the urgent duty of providing for comparative pathology by the establishment of the laboratories and staff required. That as yet we are in the Ptolemaic stage of pathology, almost wholly anthropocentric, is a text from which I have, I fear, only too often preached; most welcome then is this same counsel from Sir George Newman.

The Study and Teaching of Clinical Medicine.

But it is impossible to touch on many even of the important proposals and criticisms in this part of the Memorandum; I must hasten on to the section on Clinical Medicine. Here there is room for some controversy; personally I agree with the suggestions of the author. There is much anticipation of gathering to the English schools of the foreign students, graduate and undergraduate, who before the war betook themselves to German and Austrian schools. These hopes, in my opinion, are as yet too sanguine. Why have foreign students passed over our shores to frequent Continental schools? Because in them there are for the most part, even in the smaller cities, organized systems of clinical science and research; in the English schools we have nothing of the sort. It is, however, one of the many merits of the report that its criticisms are broad and impartial. While deciding that on the present lines clinical teaching and research cannot get forward, the peculiar merits of the English system—such as it is—are notwithstanding forcibly presented. The Briton is a practical not a logical person. He feels that organizations must be elastic and adaptive, and can only be so if they grow. If imposed by drill they choke spontaneity and stop initiative. The logical man drives a main principle through the host of contingencies reckless of the frictions, and no little devastation by the way.

The Briton has a profound sense of contingency as against nude principles and is an artist in providing for it as he goes on. Hence his amazing success as a politician. But he has the defects of his qualities. We suffer from a lack of organization, an imperfect inspiration of the clinical work with scientific principles; a lack of continuous research in diagnosis and therapeutics. The earlier phases of disorders, as seen in the out-patient room, are not linked up with the later phases in the wards, and so on. Yet with all this, wherein no individual is to blame, the author finds that, so far as it goes, the English method carries out old and sure principles of English medicine. The student observes Nature for himself; he is counselled and supervised, but is himself the workman. Things are taught which cannot be taught by lecture or demonstration—the sense of touch, the handling of instruments, the relation between student and patient. But there is a considerable account to the contrary. Medicine is taught almost wholly as an art rather than as a science; a larger measure of the scientific or research spirit is needed. If clinical medicine is to progress, professors of medicine, surgery, and obstetrics must be endowed who will devote the greater part of their time, at any rate, to teaching and investigation; and the professors must be provided with adequate staffs and laboratories. Promotion should be not by seniority, but by merit and natural aptitudes. I have often spoken of Harley Street as the grave of the great clinical teachers of the London hospitals. A teacher of personal ascendancy, a master of the sciences of medicine, a man to organize team work in research, may almost from the beginning be obliged for his livelihood to provide for his entry into consulting practice; and at his time of maturity, even if he does not retire from teaching altogether, that career has to be his first consideration.

How the several branches of clinical medicine are to be developed and co-ordinated must be left for the reading of the report itself. Under the head of Graduate Study, also, these divisions and reintegrations receive a full exposition.

Finance.

But let it be clearly understood that all these betterments of medical education will cost money, and let us not hesitate to say so. The matter is, indeed, quite plainly stated in the Memorandum. The first of the remedies

there suggested is the need of further financial assistance, for it is recognized that it is impossible to-day to teach medicine, as it ought to be taught, out of students' fees or uncertain endowment. As on the Continent, so in England there must be more substantial aid from the State if the undertaking is to be placed upon a satisfactory national basis, and it is a matter in which the nation is greatly concerned. The Board of Education has, indeed, made a beginning by means of grants in aid now amounting to upwards of £40,000 a year, but it is certain that these grants must in future be on a much more liberal scale. It is true that the acceptance of such financial assistance by the medical schools involves the acceptance also of the supervision and advice of the Board of Education, functions which the Memorandum assures us are to be exercised with due regard to the freedom of the university or medical school and in co-operation with their medical faculties. One of the objects which the Board assures us it has in view is the maintenance of the university standard, character, and freedom of teaching; an attitude which ought to allay any apprehensions that may be felt lest the State should desire unduly to interfere with the freedom of education.

The Curriculum.

The reader will ask, What of the loading of the curriculum? The author of the Memorandum is well aware of this difficulty, and hopes to lighten the burden, but he hardly answers the inquiry. It is suggested that by unloading much of the memory work, by reformation of the examination system, and by infusion of the spirit of study instead of much of the drudgery of it, a good deal can be done to lighten the ship. Of the evils of the present examination system we are all of us only too well aware; moreover, I find that teachers, being unused to undertake the responsibility of judging of the attainments of their pupils, shrink from the exercise of it, although much time and stress, some of it actually unwholesome, might be saved by class conferences and certificates. At later stages the Cambridge system of theses for degrees is most valuable; the man who has been thus obliged to undertake a subject of research and submit himself to discussion of it, is from that time a different man.

CONCLUSION.

Painfully aware as I am of the imperfect indications I have been able to give of this broad, wise, farseeing, and impartial Report on Medical Education, I have said enough, I hope, to send my brethren to its perusal. I trust that in it we may rely upon finding in the Board a spirit not of the bureau; that the Board of Education, so long at any rate as it is inspired by its present staff, will encourage and develop that training of the young physician on liberal lines, and make for those progressive methods, which must arm us all for that greater future which—in the Ministry of Health and in the growing needs of the public—will in the near future throw upon our profession a far wider sphere of usefulness, and draw into our ranks men capable of carrying medicine to that higher destiny which we believe the future has in store for us.

Rebuelz.

GAS GANGRENE.

A MONOGRAPH from the Pasteur Institute is always received with respect, and that on gas gangrene, its bacteriology, experimental reproduction, and serotherapy¹ is so apposite that it will certainly obtain immediate attention. The authors, MM. WEINBERG and SÉGUIN, have already published many articles upon special aspects of the subject, but this volume is something more than a mere war manual; it is a conspectus of the bacteriology of the subject.

The first part of the book is devoted to a review of the whole subject of gas infection, with an attempt to disentangle the nomenclature of the organisms discovered and described in France, Germany, America, and else-

where, and to identify similar strains masquerading under different names applied on mixed principles. Their historical work is so detailed and so well tabulated that the authors have probably settled the matter once for all. The upshot is that before the war but two varieties were recognized as associated with gas infection—*B. perfringens* (*B. aerogenes capsulatus*) and the *Vibrion septique* (*B. oedematis maligni*); each was supposed to act alone. The war had not proceeded far when it was realized that gas gangrene of typical clinical form is not always produced by the same organism, is often caused by several associated, and is often a complex result of the combined action of the principal agents with numerous other organisms playing an accessory or indeterminate part. The authors, moreover, are moved to deplore the futility of all clinical classification, since symptoms and signs have no constant relation with bacterial findings. It must be admitted that their own line of approach leads but little further on this road. They conclude that gas gangrene is not a morbid entity of specific pathogeny; it is a syndrome, in the forefront of the causation of which are the *B. perfringens*, *B. oedematis*, and the *Vibrion septique*, but with which very many others, aerobic and anaerobic, are associated. Latent or atypical forms occur, and own the same bacteriological initiative. Part II, filling some 170 pages, is devoted to a minute and complete description of all the many important organisms concerned in the infection, and will be an indispensable work of reference for every laboratory.

Part III is devoted to a study of the gas infections in their origin and evolution, and sets forth the preponderant influence of the anaerobic organisms which frequently co-operate, though it is rare to find more than two associated in the presence of organisms of suppuration. A study of the toxicity of the principal anaerobic organisms leads the authors to conclude, as clinical evidence suggests, that death results from intoxication. In the form definitely "toxic" the organisms are rarely to be isolated from the blood, and not generally is there a true septicaemia. The authors consider those cases "classical" in which emphysema predominates over oedema; those cases "toxic" in which the converse holds, and admit a third or "mixed" group, whilst noting that all these forms may have a subsidiary "putrid" character, due most often to association with *B. sporogenes*.

There follows a detailed study of a number of cases chosen from their material, and a description of the experimental reproduction of the clinical forms in animals. The short section on etiology adds nothing to the fuller accounts in recent clinical manuals.

Part IV deals with serotherapy, and gives an extremely interesting account of most patient and painstaking work, but does not, so far, carry conviction to the clinical mind. The authors are convinced that the promise of real service will be fulfilled; they admit that the curative power of serums is limited by the rapidity with which the toxins are fixed in the nerve centres. They do not despair either of a preventive serum, and, indeed, have some evidence to show already. The difficulty seems to lie in this, that by their own showing the serums are absolutely specific, and the organisms incriminated are multiple. This review by no means does full justice to a volume which is a mass of facts, records, and observations. We can only repeat that every bacteriological laboratory will find it indispensable. It should be added that the plates are very fine—worthy of the publishers—and that there is a full bibliography.

NOTES ON BOOKS.

DR. F. PEDRAZZINI'S little book on cerebro-spinal commotion² contains a painstaking analysis of much of the literature of this frequently discussed subject, together with a few new observations made by the author himself. The first forty pages are concerned with the physics and mechanics of these forms of commotion and the author's experimental production thereof in animals. We do not find any striking novelty in the book, which, none the less, gives a clearly written and adequate account of the whole subject. The author holds that the treatment of cerebro-spinal commotion should be medical and that to open the skull or dural sac is unjustifiable.

¹ *La gangrène gazeuse: Bactériologie, reproduction expérimentelle, sérothérapie.* By M. Weinberg et P. Séguin. Monographies de l'Institut Pasteur. Paris: Masson et Cie. 1918. (Roy. 8vo, pp. 444; 45 figures, 16 plates. Fr. 20.)

² *Commozione Cerebro-spinale.* By Dr. F. Pedrazzini. Milano: Ulrico Hoepli. 1918. (Fcap. 8vo, pp. xv + 170; 13 figures. L. 3.50.)