physicians who maintain that mineralized eliminant waters, such as those of Harrogate and Cheltenham, do good, whilst diuretic calcium waters, such as those of Bath and Buxton, are of service in plethoric, sedentary, and constipated types, as well as in some pale, thin, and nervous subjects.

As regards control in general, the idea that a high pressure must immediately be lowered by active drugs is wrong, and leads to drastic attempts to reduce it by means of nitrites, which, as I have said elsewhere, "in action are evanescent, and in removal of the underlying causes are futile. The opposite view that nothing can be done to relieve high pressures is equally erroneous."

Touching diet, my own belief is that far more benefit accrues from diminishing the total food intake to the minimum metabolic needs of the body than by rigid restriction of protein. Apart from cases in which renal elimination is at fault, ingestion of protein has little effect on arterial pressure. Similarly for salt, which in simple hyperpiesis does not raise the pressure, but is best avoided in cardiac, cerebral, or renal affections. Plenty of fresh fruits and vegetables should be given, always remembering that a well-balanced vitamin content is the important end at which to aim.

Diathermy and ultra-violet radiation have their appropriate uses. Lumbar puncture is of service in threatened or actual cerebral hæmorrhage, severe headache or uræmic convulsions, whilst in renal disease, venous stasis, and acute pulmonary œdema, rapid venesection to 300 c.c., or more rapidly, brings down heightened pressures by 5 to 30 mm., the effect being maintained for a longer period by starvation for twenty-four hours.

Within the compass of a short paper one can but skim lightly, as it were, over the surface of a vast ocean, and, although fain to dive deeper beneath the surface, one can but take a bird's-eye view of the numerous rocks and shallows and trust that, in spite of baffling winds and cross-currents, one may yet succeed in reaching shore.

TUBERCULOSIS: THE SUBJECT FOR TEACHING MEDICINE.

By S. VERE PEARSON,

M.D.CAMB., M.R.C.P.LOND.,

Physician to the Mundesley Sanatorium.

THERE is an excellent maxim that "the whole art of medicine lies in observation." The undergraduate student must be trained in his powers of observation and must be grounded in certain broad principles which will guide him throughout his career. At present he knows a good deal about disease when he becomes qualified, especially about the pathological conditions which are associated with gross changes from the normal; but he is usually largely ignorant about health, and about its maintenance, and he is uncertain in his ability to detect the manifestations of early departures from health. In spite of the modern tendency to call attention to early disorders of function together with normal conditions of the body, he still remains largely incapable of knowing when an early disorder of function—or of structure, if he can detect the latter—signals a true departure from health. Yet after qualification, when a general practitioner's advice is sought, more often than not it concerns a slight and perhaps trivial departure from health. General practitioners still form the bulk of the profession. Furthermore, doctors in other branches of medicine are ever striving to prevent disease and to aid in the alleviation of suffering by discovering how to bring to light the earliest manifestations of disease so as to meet disorders in their curable stage. To these ends the science of medicine must always be searching out the causes of ill-health, and elucidating how symptoms are produced and classified.

The late Sir William Osler once said that if a student knew thoroughly all the manifestations of syphilis, he would be well grounded in medicine. Syphilology has

changed very appreciably since the day that that remark was made, and the remark is no longer so applicable. But there is another disease, namely, tuberculosis, a comprehensive study of which embraces the whole of medicine. It is time such a study was used as a basis for the training of undergraduates in the science and art of medicine. Moreover, there is amongst the general body of the medical profession a woeful lack of knowledge of the principles and methods of diagnosing this disease early and treating it efficiently. If there were a much wider comprehension of these principles and methods, probably nothing would contribute so much to a lowering of the morbidity and mortality of what is still, unfortunately, all too common a malady. The ills which tuberculosis produces could by degrees be eradicated probably better by such education than by any other means, and in the train of such reform would come a lessening of most of the other preventable diseases. A wider grasp of the science and art of medicine would result. Medical students would acquire a fuller comprehension of the causes of disease. They would gain a deeper knowledge of the problems of immunity, of the mechanism of the production of symptoms, of the interplay of mind and body, and of the first principles of personal hygiene. For tuberculosis above all other diseases is intricate in its ætiology, and in the peculiarities whereby immunity is produced. It is complicated in the modes and methods whereby its symptoms are produced. It shows the influences of the mind on the body and vice versa, as clearly as, or perhaps more clearly than, many other disorders. And it exhibits more distinctly than almost any other disease how the maintenance or restoration of health is dependent upon a proper observance of fairly simple and straightforward rules of living. There can, therefore, be no better disease than tuberculosis to use as the groundwork upon which to educate medical students.

To-day medical students, and to a less extent their teachers, are groaning more than ever under the burdens that are imposed upon them. They are apt to become submerged under a deluge of facts, not always even very well selected ones; and both pupils and teachers get impeded in their progress like travellers in boggy country. However well-informed a traveller may be, if his footsteps are clogged he cannot get on well even over familiar ground, and if he gets into a strange country, however complete a list of names of mountains, capes and rivers, he may have learnt he cannot advance easily without a map. In medicine the traveller must be provided with a map to steer by. He must have a good grasp of clear first principles to guide him on his journey amongst symptoms; and he must not be harassed by having to memorize a fearful string of facts. He must realize how departures from health come about, and how to bring the sick back to health. Also he must receive such a grounding in the science of medicine—which is still verily in its infancy, though Hippocrates and James Mackenzie have lived and died—that that spirit of curiosity upon which all true science depends is not killed before he has been traversing the path of medical study and practice for a few years.

The attempt to develop a scientific turn of mind by administering smatterings of the ancillary sciences ought to be abandoned. The science of medicine must be founded upon a study of human beings, and the future of medicine is closely associated with a proper study of the early departure from health, especially such manifestations of slight ill-health as are associated with some of the commoner maladies. All that can be done in the undergraduate years is to instil principles, to put the student on the right path, to give him methods; in other words, to teach him how to study and how to discern between essentials and non-essentials. The late Sir Clifford Allbutt (*British Medical*

Journal, 1919, i, 433) wrote: "My pupils leave Cambridge for London and . . . lose the vision of medicine as a science. The pupil returns to us for examination an excellent apprentice, but no longer of the company of the prophets. . . . He throws up the mediation between his art and its sciences, all effort to tear her secrets from Nature, all hunger for things to come, to bury these talents in practice."

The strain which is thrown upon a medical student to get through his qualifying examinations before he is about 24 or 25 is now greater than ever; and the expense entailed excludes from medicine many a youth or maiden whose bent is towards "the noble art." It should be possible to recruit doctors from other classes than those who can afford the cost of the long training. Yet to-day it is infrequent for any outside a limited class to find facilities, through scholarships and other aids, to get trained. It would be easier to get suitable recruits, to train the born doctor, if the course of medical education were shorter and simpler.

Again, as doctors grow older, though they may take an occasional dip into a medical journal, they tend to throw aside deliberate and purposeful study. It is true that the mind becomes less pliable as age advances. But this tendency to damp down the spirit of disinterested curiosity which is at the bottom of all genuine research is also due to early training being ill-founded. Medical education should be founded on principles which would foster curiosity and research throughout life.

A study of tuberculosis involves all aspects of the science and art of medicine. An attempt to unravel the complicated factors leading to tuberculosis leads the student's mind into all the various ætiological influences which are responsible for diseases of one sort or another. The day has gone by when the cause of tuberculosis is summed up in the two words "tubercle bacillus." The sociological defects in society to-day, for which remedies are frequently being

sought, call attention to the political and medical demands of the public health services. Preventive medicine finds a clear nexus with curative medicine in the problems of tuberculosis. So, too, when the bacteriological and immunological problems connected with this disease are investigated, education in the practical side of these branches of medicine must be thorough. Immunity in tuberculosis has to be looked at both from the individual and from the racial standpoint. Training in the principles of the ætiology of disease would come to well founded if tuberculosis were used for groundwork.

The two common forms of tuberculosis, the pulmonary and the so-called "surgical" involving chiefly bones and joints, are unsurpassed fields for training students in chest signs and in orthopædics. Observation of the normal and abnormal physical signs of the chest can be learnt better in hospital or sanatorium for pulmonary tuberculosis than anywhere else. Similarly, what better ground is there for learning the healthy and the abnormal, slight or grave, phenomena connected with the action of bones, joints, and muscles than is to be found in the wards of an institution for surgical tuberculosis? There, too, the dire effects of septic infection are learnt. These remarks apply, too, to a study of radiographical observations, an essential part of medical education. Students can be taught in such places to detect early departures from health. They would also be led to investigate what really constitute the manifestations of such early symptoms, how these manifestations are produced, and how to classify the mechanisms of their production. Pulmonary tuberculosis, for example, upsets the breathing apparatus, the cardiovascular system, and produces fever, night sweats, hæmorrhagic tendencies, digestive disturbances, &c. In order to diagnose it in its early stages a knowledge of normal chest radiological appearances must be acquired, and of normal chest signs. But students

dealing with tuberculosis would be bound to be taught that symptoms of ill-health, fever, for example, or pain, are more important than physical signs, and that a study of symptoms must in the end be the chief guide to a patient's condition and the chief aid in his treatment. A too glib dependence upon laboratory tests, often misnamed "clinical methods," cannot co-exist with a proper understanding of how to arrive at the diagnosis of tuberculosis and how to treat the patient successfully when it is present. Again, the psychology of the patient must be studied if there is to be any thorough grasp of the ætiology of the malady, or any effective effort made to treat the sufferer. Not only must his or her mental contentment be brought about in order to accomplish a sound cure, but he must also be instructed by his medical adviser in the simple rules of personal hygiene, often so difficult to inculcate and carry out. To this end the young doctor must learn well the great principles which underlie the rules of personal hygiene, and there is no better school for teaching those principles than the sanatorium. There what a man should or should not eat; what amount of bodily rest and exercise he should take, how much sleep he requires, &c., can be supervised, and a love for clean, fresh air instilled.

EDITORIAL NEWS.

WITH October the medical schools are starting a new year, and the Fellowship wishes to draw the attention of its members to the programme of post-graduate work which it has prepared and to the facilities for study at the various hospitals.

A second course of lectures for the M.R.C.P. examination is being held, and those who wish to attend should send in their names as soon as possible to the Secretary as there is a considerable demand.

In addition to the lectures a special demonstration of morbid anatomy will be held for this examination.

We are asked to bring to the notice of our readers an International Medical Tour of Education to Egypt (Palestine), with an extension to India.

About six of these tours have been held under the original suggestion of Primarius Dr. Friedrich Barach, of Vienna.

The next journey is planned to leave Trieste on December 12, by steamer via Venice, Fiume, Bari, Brindisi, Patras, Piraeus (for Athens), Canea, Candia to Alexandria and Cairo. After a stay of several days in this latter town the party will separate. Whilst one part will travel to Upper Egypt (Luxor, Assuan), and possibly continue to Palestine, the second part will embark at Port Said on December 25 for Karachee, via Suez and Massaua. The intention is to visit the towns of Lahore, Delhi, Jaypure, Agra, Bombay, and amongst other items inspect Lady Dufferin's Hospital in Karachee, Lady Hardinge's Medical College and Hospital in Delhi, the Eye Hospital in Agra, and the Arthur Road Hospital in Bombay.

Anyone wishing to join this tour is invited to apply by letter for further information to Aertzliche Auslands-Studienreisen, Wein I, Biberstrasse 11, Austria.

POST-GRADUATE NEWS.

IN October there is a large choice of Special Courses for post-graduates. From October 7 to October 18 the National Hospital for Diseases of the Heart will hold an intensive course. Fee £7 7s. From October 7 to November 2 an afternoon course will be undertaken by the staff of the Central London Ophthalmic Hospital. Fee £3 3s. On October 8 a series of lecture-demonstrations—eight in number—will begin at the