Remarks

ON

THE STUDY AND TEACHING OF PAEDIATRICS.*

BY

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WHEN Professor Joanovitch, Dean of the Faculty of Medicine, along with the President of the Yugoslavian Medical Association, did me the signal honour of inviting me to address my Serbian colleagues, I had considerable difficulty in deciding on a theme. There are very many subjects on which an interchange of our views would be of mutual benefit and interest. However, I ultimately decided that it might be of more general interest to the medical faculty of Belgrade if I were to say something regarding the teaching and study of that branch of medicine to which I have devoted most attention.

Paediatrics not a Specialty.

You will notice that I have spoken of it as a branch of medicine. I used this phrase advisedly, because I did not wish to employ the word "specialty" so often adopted when referring to the subject. Paediatrics, or diseases of children, I protest most emphatically is not a specialty. A specialty suggests the study of a particular organ of the body—as, for example, the eye or the ear—or a special method of treatment of disease—for example, surgery or electro-therapeutics—but paediatrics is general medicine practised during the earlier, and one might make bold to remark the most important, years of life, at least so far as prophylaxis and cure are concerned. The true and ideal paediatrician is a general physician with a full knowledge of disease at a certain period of life, just as a neurologist is a general physician who has paid particular attention to diseases of the nervous system.

Disease Influenced by Many Factors.

Disease is influenced by many factors—for example, environment, climate, age, and sex—and he who only considered one factor would have a narrow outlook of his subject. Certain diseases, such as developmental errors, it must be admitted are peculiar to infancy and childhood; but even in this field of clinical pathology age is not an absolutely sharply differentiating feature, because some varieties of the condition—for example, aneurysm and morbus cordis (cyanose tardive)—may not declare their presence until adolescence or adult life. Some diseases are specially prone to occur during infancy and childhood; in fact, so much more commonly do they happen during the early years of life, that the adjective "infantile" is almost invariably prefixed. "Infantile paralysis" is a good example, as also is "infantile diarrhoea," which, at least in Britain, is a synonym for epidemic diarrhoea—British cholera—acute gastro-enteritis and intoxication of Finkelstein. Other diseases, again, occur at all ages, but vary so much in their manifestations at the different periods of life that they are looked upon, or at least have until recently been looked upon, as quite different pathological entities. Rickets and osteomalacia are the conditions which in this connexion I have in mind. It is simply because the diseased process is occurring during the period of growth in the one case and after growth is complete in the other that such different pictures are produced. It is possible, as Dr. Harry Hutchison, who worked in my department, has shown, to trace all gradations—from typical infantile rickets, through late rickets occurring in older children and adolescents, to osteomalacia in the fully grown adult.

Medicine cannot be divided into compartments according to whether the patient is 5 years of age or 50 years of age. The same disease affects all ages of man, and in order to

have a true appreciation of that disease it is essential for us to study it under all conditions. In Berlin, where specialization had run riot, at least before the war, I knew doctors who from the day of graduation had never seen a patient of greater age than 1 year; and in America and in England, too, there is a tendency to follow along similar lines. Nor can we satisfactorily classify our patients according to which organ is apparently involved, and relegate the diagnosis of disease to this or that specialist. Yet patients are wont to choose their medical attendant according to whether their discomfort is in their head or their heels, a practice which we know is often fraught with disaster. The whole body works in harmony; and we know only too well that though the disease may be situated in one viscus, the symptoms are referred to another.

The Specialization of Disease: Is it Detrimental to the Medical Student?

Of late there has been a tendency to go even further astray in the specialization of disease and to limit attention to the study of the effects of one particular micro-organism. I am, of course, referring to tuberculosis and venereal disease. If ever there were conditions which have demanded a general knowledge of disease for their full appreciation, and consequently for their proper treatment, and which are thus quite unsuitable for specialization, these conditions are tuberculosis and syphilis. How can a physician ever become satisfactorily acquainted with pulmonary tuberculosis and its diagnosis unless he has opportunities of seeing all varieties of mischief in the lung? Fortunately, in the case of syphilis there is a specific test to keep the physician on the right lines, but in the case of tuberculosis there is no such controlling factor, with the result that we are only too familiar with the diagnosis of tuberculosis when assuredly there is at least no active mischief present.

In the case of the child there is perhaps no more frequent mistake than the confusion of chronic pneumonia, with or without bronchiectasis, and pulmonary tuberculosis. I have often visited sanatoriums and have had healthy-looking, at least well-nourished, children shown to me as examples of pulmonary tuberculosis. I well remember having submitted to me a series of twelve children from a neighbouring sanatorium for the demonstration of chronic phthisis pulmonalis in the child. Not one single child, however, was suffering from pulmonary tuberculosis, but each was an example of unresolved or chronic non-tuberculous pneumonia. How is it possible for the physician to learn to differentiate between the various types of chronic pulmonary disease, and, what is of greater importance, to educate the student in their diagnosis, unless he has opportunities of observing them? Unfortunately for the student, and also for the teacher, there has grown up a custom in our general hospitals at home not to admit examples of pulmonary tuberculosis, so that there are two fields of study so far as disease of the lungs is concerned—one for tuberculous material and another for non-tuberculous—without any point of contact, and the differential diagnosis, at least in the student's mind, thus comes to depend more on the geographical situation of the patient than on the history of his illness and the physical examination of the chest. The educational loss to the student in this way is enormous. I consider it fortunate that neither I nor my medical colleagues at the Glasgow Children's Hospital believe that we are competent to diagnose with certainty in the receiving room of the hospital the tuberculous lung, so that much tuberculous material finds its way into our wards, and the students, as well as ourselves, benefit so far as our diagnostic acumen is concerned.

This artificial division of diseases into specialties may have brought about some little increase in knowledge, but it has not to any great extent been for the benefit of the individual patient, as it has narrowed the outlook of the family doctor, and, to my mind, has had a very serious effect on the teaching of the medical student. It may be argued that in the special department where the clinical material is concentrated the student gets the best opportunities of becoming acquainted with the particular disease, but I hold that he is being taught by a biased individual whose exposition will tend to be lop-sided and

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reveal defective perspective, and the very real difficulty of differential diagnosis, as you and I meet with it in our daily work, will be insufficiently illustrated. In any case these special courses are of short duration and form a small fraction of the student's total clinical instruction. These objections are no idle theories, for, to judge from my contact with the final year medical student, this pernicious system is having a very detrimental effect on his outlook, and one cannot wonder at it. Without a Wassermann reaction, a barium meal, an electro-cardiogram, or an x-ray examination of the chest, the modern student seems unable to consider the pros and cons of a case, and cannot even hazard the likely diagnosis.

Thus you see that I consider as very ill-advised the attempt to split up general medicine into separate compartments or fields of study. By all means let each of us, as did the late Sir James Mackenzie and Sir Jonathan Hutchinson, choose one type of disease for special and intensive study, but in order that we may retain a sane outlook our survey of the physiological and pathological must be as wide as possible. Even in the academic field we find the same dangers of specialization. We have now in the domain of physiology the elevation of biochemistry into a separate field of study, so that the all-round physiologist is disappearing. In pathology, too, the divorce of histology and bacteriology, with the birth of the misnomer "pathological chemistry," will have a serious effect on our future teachers and students.

But, after all, the most important argument so far as diseases of children are concerned is the difficulty, in fact the absurdity, of speaking of the daily work of the family doctor as a specialty. Is it not true that children form the largest proportion of our patients, and hence if it is anything of a specialty it is one which every medical man must be expert in? There are some branches of work of which the average doctor sees so little that he cannot be expected to develop a special dexterity, but in his daily task, and the bulk of his daily task, who should be more expert?

One very serious consequence of the idea of paediatrics being a specialty would be that the unsatisfactory state which has up till now prevailed in our medical schools would be continued. From the day of our graduation it must have struck us all as almost Gilbertian that the very duties that in practice we are called upon most frequently to perform—the delivering of women and the care of children—were the very subjects on which we had obtained the least instruction. I do not deny that within the last fifty years there have been changes in the medical curriculum to meet the needs of the times. The subjects of pathology and public health have been introduced, and the teaching of chemistry and physiology has been revolutionized, but within the present century the clinical side of medical education has suffered, and until very recently the teaching of midwifery and diseases of children was really non-existent.

Prevention of Disease in Childhood.

In fact, medical education has simply been a reflection of the general outlook on the value of the child. It is difficult for us to-day to understand the long neglect of child life. We now see that the child is the best asset we have for the guarantee of a healthy future race, and that the cheapest way to treat much of the invalidism of the adult is to prevent the disease in the child—if I may be permitted to use what we at home call an Irishism. During the later years of last century it became appreciated that though the improvement in public health had brought about a great reduction in the general death rate the loss of infant life continued at the same high figure. As a result of these various considerations there has been a development of multifarious infant and child welfare schemes throughout the whole civilized world, and it is a moot point if they are being carried out as efficiently as they might be.

Unfortunately in our country the medical student has not been trained for this work, so that it has in great part been taken over by the health authorities and given into the hands of pseudo-specialists dealing with children under 1 year, and another group dealing with

children from 5 to 14 years of age. Children from 1 to 5 years are at present not provided for. In any case we are developing the very class of specialists that I have deprecated. I can picture no more demoralizing sphere of work for one's medical outlook than to be condemned to do nothing but supervise healthy infants and direct their feeding. What medical philosophy can be built on such a foundation?

The right personnel for such schemes can only be recruited from the family doctors in the neighbourhood. They are engaged by the better classes to do this work, and surely they ought to be able to do it for the public authorities. Unfortunately, however, they have not been trained or introduced to this sphere of medicine, and it would seem that the average man or woman cannot pursue any line of study without preliminary instruction, and, further, unless he is examined on this training, that he will make little or no progress. Thus this branch of medicine must form an important part of the medical student's training.

The subject of infant feeding is perhaps the best example of the results of this want of education. In agricultural communities where life is simple the question of infant feeding is not so clamant, but in industrial countries like England it is one of great importance. On the Continent wet-nurses simplify it somewhat; but with us, where the wet-nurse is practically unknown, artificial feeding is the commonest occurrence, not because of bad habits, but from sheer inability of the mother to perform this natural function. As one who has many examples of nutritional diseases in infancy referred to him I have come to the conclusion that the average medical man is very ignorant of this subject. He has no general principles on which to base his practice. He simply chops and changes without rhyme or reason from one type of food to another, and while he appreciates that his motor-car will not go without petrol—or in other words food—he seems to think that the infant body, which not only must incessantly keep working but increase its size at the same time, will exist on air and water. A child cries because it is not getting enough; the doctor concludes that it is the strength of the milk which is at fault and orders dilution; still cries from the baby and further retrenchment by the doctor until the child is only getting one or two ounces of milk in the day.

Study of Paediatrics by the Medical Student Essential.

How does such a state of matters arise? Simply because the doctor does not know the food requirements of the baby. This and such general principles of infant feeding have not formed a sufficiently prominent part of the medical curriculum, and yet it is no more complicated and no more difficult to learn than the rate of the pulse or respirations. In difficulty it cannot be compared with the physical examination of the chest.

In order that a student may be fitted to enter on medical practice it is essential that he learn how to examine a child. This I consider one of the most important lessons which the student must learn. The examination of a child requires an amount of tact and experience not necessary in the case of the adult. The adult, for the most part, can direct his physician's attention to his complaint, whereas all he may get from the child is a cry or a wail of pain. The child cannot tell his symptoms, and hence in this branch of medical practice physiognomy of disease is all-important. This can only be learned from prolonged study. The typical pictures of broncho-pneumonia, meningitis, pyogenic infection of the urinary tract, gastro-enteritis, scurvy, acidosis, and alkalosis all occur at once to the mind.

The physical examination of the child also requires special experience. The limits of the child are such that our examination should be carried out very gently, and any manipulations likely to cause pain should be performed last. Further, as all methods of examination applicable in the adult are likewise applicable in the child, but as the instruments are smaller and the fields of view more restricted, greater dexterity is necessary, and therefore more practice. Again, in diseases of children a knowledge of their life-history is of paramount importance. It is often possible, from the ungarnished story of the mother or the nurse about the behaviour of the child from the first

day he did not seem to be his usual self, to obtain the life-history of some malady exactly as described in our systematic textbooks. More mistakes in diagnosis of diseases in childhood are made through inattention to this point than to any other factor.

Educational Value to the Student of the Study of Paediatrics.

It is thus seen that the mere study of diseases of children has an important educational value, and even on this ground alone paediatrics should be given a prominent place in the medical curriculum. By the study of paediatrics the student is bound to become more observant, more expert, not only in the use of those instruments with which he has been provided by nature, but also in the use of those which he has made for himself, and better acquainted with the life-history of disease because of the absolute necessity of this knowledge in the examination of the patient. Far from being one of the least studied branches of his work it should be one of the most studied.

If this decision regarding the value of paediatrics in the teaching of the medical student is accepted, then a very radical change in our medical course is necessary. I would not, of course, advise that the student be put right away to the study of disease in childhood. As I have already said, the limits of endurance of the child are sooner reached than in the case of the adult, and for the training in the elements of physical diagnosis the adult must still be the subject of election. It is only after the student has acquired a certain facility in the technique necessary for this purpose that he should be allowed to enter on the study of paediatrics.

Nursing of Sick Children.

What applies to the training of the medical man also applies to the complementary service in the treatment of the sick child—namely, the nurse. In English-speaking countries the nursing of sick children labours under a great disadvantage in that the training in a children's hospital does not count as that gained in a general hospital. In consequence, the staffing of a children's hospital is handicapped, and a sufficiency of nurses can only be obtained by enrolling women of a younger age than are eligible for the nursing of the adult. Thus it comes that girls of 18 are entrusted with the care of the sick child, although the same desiderata as were required by the physician are also necessary in her case—namely, greater powers of observation, greater dexterity in manipulations, and greater patience—the attributes that only come with experience. Instead of commencing her training in a children's hospital she should proceed, just as is advisable in the case of the medical student, from a training received in the adult.

Scheme for Training Medical Students.

I think I hear some of my audience saying that there can never be sufficient material for such a purpose—that our children's hospitals are not large enough, and certainly in my own town the children's hospital could not supply sufficient facilities for our hosts of students. But between the care of children and that of the adult there is one very radical difference. The treatment of any serious internal ailment in the adult cannot be ambulant, whereas this is eminently possible with regard to a great deal of disease in the child. The size of the patient makes it possible for him to be easily carried to and from the doctor. There is, too, a great disinclination on the part of many parents to allow their infants and young children to enter hospital, and it is often only in the case of infections, with resultant danger to the other members of the family, that these objections can be overcome. Hence there exists in the out-patient department of a children's hospital a great wealth of material, interesting and important from the student's point of view. Therefore it is in the out-patient department (where the work is akin to what his own will be later on) that he should and can obtain most of his training in paediatrics. This system of ambulant treatment of the sick child is not only possible, but it is in many instances advisable, since in this way there is retained for him an individual nurse who will

devote night and day to his care. If surgical treatment is decided upon it is becoming more and more the custom at the Royal Hospital for Sick Children, Glasgow, to keep the child in hospital only for a short time, and to permit him to go home to be under the care of his mother within two or three days after the operation.

Thus the remedy for the present unsatisfactory state of matters does not mean the erection of large children's hospitals. Indoor accommodation is only necessary for the treatment of infectious disease, for the special study of disease requiring strict supervision and elaborate apparatus, and for the care of children whose home conditions are impossible. I would recommend that out-patient departments for infants and children be instituted at all general hospitals with teaching schools, so that the medical student may have ample opportunities of getting an insight into this wealth of material. Let the student see most of his adult material in the wards and the bulk of his young patients in the out-patient department, and let most of his dispensary practice be among children. With an efficient staff of enthusiastic teachers the student would benefit to a tremendous extent. To my mind it is only in this way that the medical man of to-morrow will be thoroughly equipped and able to take a share in the maternity and child welfare schemes which are essential for guaranteeing us against the invalidism of the adult. If for economic reasons municipal aid in the treatment of the child is advisable, then the ideal staff of these State or municipal clinics would be recruited from the family doctors in the neighbourhood. By such a system the patient and the doctor would mutually benefit.

Duration of Medical Curriculum.

So far I have dealt chiefly with my subject as it affects the teaching of the student and the equipping of a sound family doctor. This is and always will be of prime importance, as most of us went to college to become, and in fact do become, family doctors. It will be a sad day for the man in the street, in spite of all the criticism levelled against the medical profession, if the supply of this valuable servant of society ever fails. One often hears it said that there is disappearing from our midst the good old type of family doctor—the all-round physician who is also able to undertake operations and who is an expert in obstetrics. There is, of course, no doubt that within recent years there have been great developments in medicine, and that many new fields—for example, throat and nose, gynaecology, and radiology—have been opened up, and that it is impossible for any one man to be expert in all these branches of medicine. Nevertheless, I do hold that it is possible for the graduate in medicine to be more versatile than he is. This, I am afraid, must mean more time given to his education. Medicine is no finite subject, but is always advancing, and what new vista will be opened up to-morrow no one can say. The possibilities in the discovery of the cause and prevention of disease are unlimited. This may be, and often is, in what appears to us the most unlikely direction, but it behoves those who practice medicine to be as catholic in their interests as possible. Instead of curtailing, as some reformers suggest, the number of sciences which we have been wont to learn, or at least gain an introduction to, the number of subjects and period of our study should be increased. Instead of five years, the medical course should, as it already does in Sweden, extend to seven or eight years. Why the term of apprenticeship should be seven years for him who makes a chair and only five for him who should have an understanding of the whole of science and biology and who is entrusted with matters of life and death is quite incomprehensible.

Academic Paediatrics.

I had not intended to dilate at such length on the duration of the medical course, but had rather wished to limit my closing remarks to a discussion of the academic side of paediatrics. It is the function of the academic centre to stimulate interest in the subject, to carry out research in the unknown fields, and to train teachers, and no medical school can be considered complete without such a department. This department need not, and in fact cannot, at least in any of our university towns, do all the routine

work of treating the sick children or the teaching of the students, and so cannot replace the outdoor departments I have previously referred to. It must be a department complete in itself with pathological and biochemical laboratories, or closely allied to the chief pathological and biochemical departments of the university, so that facilities for all branches of investigation are available. The latter arrangement is in many respects advisable, as it brings the pathological and biochemical investigations under the guidance of the expert and unites the clinical and scientific sides of the school, a union which cannot be too highly commended, as each has much to teach and learn from the other.

It must also be understood that this paediatric department be not limited to any one branch of the subject, but that the whole domain of medicine in childhood be represented. It is the neglect of this which, in my opinion, is undermining the influence of paediatrics. To open a ward in a general hospital for infants and feeding cases and call it a children's department is futile. The only real paediatric department must admit all patients under, say, 13 or 14 years of age, and should have special facilities for the care of the common infectious diseases. It is only in this way that a paediatrician with a wide and philosophical outlook can be trained, and the exponents of children's diseases be given the influence which the importance of their subject demands.

In addition to the ward or wards there must be an out-patient department, not only for the purpose of obtaining a wider clinical experience, but also for the observance of series of cases over a long number of years. Infantile

paralysis and the rheumatic infection are good examples of diseases requiring prolonged care, so that an infantile paralysis clinic and a rheumatic or cardiac clinic are essential. Not only, however, is the observance of cases over a prolonged period necessary for the health of the patients, but also for enabling the physician to gain personal acquaintance with the life-history of disease. This is one of the most wanted desiderata of hospital experience, since as a rule so much time is taken up with the examination of new cases and the acutely ill that the patient is entirely lost sight of after his dismissal from the wards. In this connexion the fate of nephritis, of chronic pneumonia, of coeliac disease, and of cerebral tumour are examples which occur to the mind at once.

Nutrition and development are such important aspects of child life that facilities for their study must be provided. This means a liaison between the paediatric department and the welfare centres and school inspection centres in the city. And just as important for a complete understanding of child life is the question of mental development, which is only now beginning to receive attention. The mind, however, cannot be dissociated from the body, and hence one of the chief workers in this field must be the physician.

Such multifarious fields of study demand a large staff properly co-ordinated, but team work in medicine is now, and wisely so, the order of the day. Organized research will not necessarily produce a Pasteur or a John Hunter; genius fortunately will arise and flourish in spite of—in fact, it would almost at times seem to do so in virtue of—adversity, but by organized research the ordinary individual is kept most active and rendered most productive.

THE HIGH ALTITUDE TREATMENT OF PULMONARY TUBERCULOSIS.*

BY

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I AM far from declaring high altitude climate to be a panacea for pulmonary tuberculosis, but an extensive personal experience of over 20,000 patients, not only in Arosa, but also in the course of my travels over the world and in all climates, has strongly confirmed my conviction of the superiority of the Swiss climate to all others. I myself have experienced the benefits. I first went up to Arosa thirty-six years ago suffering from pulmonary tuberculosis, both lungs badly affected, a so-called "hopeless case," against the advice of our family doctor, who thought I was going to lay my bones among snow and ice. I have become fit and well, have been able to prosecute my work in the lowlands, and, without any relapse, have been lucky enough to work hard for nearly thirty years. The high altitude climate is not the only "stimulant," but it certainly has a great tonic effect, and possesses many advantages derived from such beneficial elements as the pure, cold, and extremely dry air, the abundance of sunshine, and the richness in light and ultra-violet rays even on cloudy days. Therefore open-air treatment can be carried out in almost any weather and under the best meteorological conditions.

Especially benefited by treatment at high altitudes are children who are delicate and may have incipient tuberculosis. Children suffering from swollen hilar glands and generally of the glandular type also do very well at high altitudes. They must be kept quiet until they become apyrexial, but afterwards they may be permitted to move about and enjoy exercise in the open air, combined with sun treatment, which can be carried out nowhere better than at high altitudes. To one of the two children's clinics directed by myself, where no infectious cases are taken and where they are staying under medical supervision, an open-air school is attached.

Adults suffering from pulmonary tuberculosis form the majority of our patients at high altitudes, and, of course,

here as elsewhere the early cases do best—those with only slight signs at the apices, slight dullness on percussion, altered breathing, rough inspiratory sounds, prolonged and increased expiration, broncho-vesicular or bronchial breathing with small crepitations, and perhaps a small rise of temperature, following, in some cases, an alarming early haemorrhage. Yet sometimes, although we can detect scarcely any physical changes at the apices, a good prognosis cannot be given, since a continuous process is spreading downwards from the apices into the lungs.

Special care is required in our climate, and we must keep at rest on their arrival even apyrexial patients with initial lesions, in order to let them become well acclimatized. Early infraclavicular infiltration especially requires rest treatment for a considerable time. In this form there is slight dullness below the clavicle and bronchial or broncho-vesicular breathing with fine crepitations or rales, without any very appreciable change at the apex. Sometimes these signs occur in the axilla; the whole affection is acute, and tends to excavation. But such cases do very well at high altitudes, and may sometimes heal without the formation of a cavity or even after a small cavity has been formed. I myself and one of my assistants have published details of good results in such cases, and they are confirmed by various other authors; there is no justification for the statement that high altitude treatment is unsuitable. The necessarily prolonged rest treatment can nowhere be better carried out than in our mountain climate, where patients can lie out on the balconies in their beds, and later on in their chairs, in any weather; moreover, they do not become slack and flabby as in the lowlands or at the middle altitudes. They must, of course, be under strict, careful, and skilful medical supervision at a good sanatorium.

Sometimes, two or three weeks after the arrival of a patient who showed few physical signs at his apices or elsewhere, these become rather more distinct, with better audible crepitations, etc., even though the temperature and the general condition remain quite satisfactory. I term this an "initial reaction," and attribute it to the new and different climatic conditions. This reaction may develop during complete rest, and in some ways is comparable to a slight tuberculin reaction. The completely altered metabolism of the body may be responsible for it, and, to a certain degree, the deepening of the respiration in the thinner air. This occurrence emphasizes the

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