The national associations of specialists, mostly formed in this century, provide the consultant with an opportunity to meet his colleagues, to discuss individual problems, and to listen to the research workers. The more recently formed regional associations have the same objects and serve the same purposes. Most consultants spend up to a week each year at such meetings and are given study leave to attend them.

These gatherings are valuable, but they do not meet all the needs of consultants, and this is being increasingly recognized. Educational courses for consultants are being introduced, and these are going to take a more important place in our future education. They are usually designed by the specialist to familiarize the general consultant—the internist, for example—with advances in a special field. The recent course on disease of the liver organized by Dr. Sheila Sherlock at the Postgraduate Medical School of London appears to have been a model for such courses. Any general physician would be well occupied in spending one week each year in this way. There will be difficulties in providing an adequate number of such courses, since the undergraduate teaching hospitals are unlikely to take part in their organization. Similar courses would be valuable for other specialists, and in paediatrics a beginning has been made at the Hospital for Sick Children, Great Ormond Street.

It is reasonable to expect that regional hospital boards should provide study leave with pay for consultants attending such courses, and also an allowance for subsistence and travel when the consultant cannot claim income-tax relief on account of such expenses. The attitude of the regional hospital boards is changing, but it needs to change more quickly. The applicant should not be required to persuade the regional hospital board to allow him expenses for such conferences and courses; the board should be prepared to inform consultants that in attending such courses they have an opportunity which the boards will gladly finance. These boards should also deal more generously with the craftsman-consultant who wishes to travel to learn a new technique. Such journeys are of prime value to the sick public whom the boards exist to serve, and too often the consultant's request is treated with an astonishing parsimony.

These developments are non-controversial, the need is recognized and is in process of being met.

Time for Reading and for Thought

Two matters have been mentioned in this article which merit further discussion. The first is the provision of reading time in the hospital library during the working week for those consultants who ask for it. One session a week might be allotted as the average requirement, and even with this allowance the physician will probably spend eight or ten hours a week in journal-reading at home.

The second subject is the provision of time in the working year for thought, for refreshment, and for inquiry. Not one year in seven spent in a foreign university, but allotted time in the hospitals where the problems arise, and where the patients are treated. Just as we cannot wait five years for a "brain-dusting," but must seek educational stimulus each year, so too in the year's work there should be a period in which hurry is removed and tension slackened. One way of achieving this would be to take the clinicians out of the ward service—in the American fashion—for three or four months each year. For three months there would be, let us say, twelve spare hours each week. In regional hospital board hospitals consultants could not be withdrawn from the out-patient department also, for too much work is already being attempted there by too few clinicians. (More consultants would be required, and this would please everyone except the Treasury; the consultant requirements could then be matched to a reasonable standard of work in the out-patient department and not to the number of in-patient beds available.)

Let us have some field experiments conducted for a year in selected hospitals. We are urged to make experiments in

undergraduate medical education: why not discover whether such schemes as these would heighten the quality of consultant activity? There may be faults in ourselves, but we should nevertheless be prepared to alter the present system until we make it possible for each man in it to do his best work.

ADULT MEDICAL EDUCATION

A PRECLINICAL SCIENTIST'S POINT OF VIEW

BY

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It is many years now since I produced weekly essays for my Oxford tutor, and it was therefore with a somewhat nostalgic feeling that I received the invitation of my friend, Dr. Hugh Clegg, to write once again upon a set subject of someone else's choosing. The general instructions of this new, but very temporary, tutor were that I should deal with "adult" medical education from a preclinical scientist's point of view, and also assess the value of Sabbatical years to such a scientist, illustrating my assessment by reference to a comparatively recent ten-months period that I spent as a visiting professor in the United States. I accepted Dr. Clegg's invitation with willingness because it promised to be "rather fun" to get away for once from the normal prose compositions of the scientist, but at the same time with reluctance because the article would inevitably involve too great a use, for my liking at any rate, of the first person singular. As an *Anhang* to my instructions Dr. Clegg said that I should not make my essay too Utopian, which I suppose meant that I should bear in mind the possible reactions of the University Grants Committee to any too far-reaching suggestions about Sabbatical years for pre-clinical scientists.

One limitation which I must in all fairness mention at the outset is that I cannot very well speak for the preclinicians who are not medically qualified and who now form a much larger proportion of the total than was the case a generation ago. The biochemists in particular tend not to have had the double training, and they are on the whole a comparatively recent addition to our preclinical staffs, though the increase to date in the medical importance of their subject is obvious, and its prospective increase can readily be envisaged.

Sabbatical Holidays

A further simplification of my subject results from the fact that the need of preclinical scientists for "adult" education in Dr. Clegg's sense cannot be met by refresher courses, for such in general do not exist for us as they do for those engaged in the practice of medicine. For us "adult" education must be one of two things or a succession of the two. We may wish temporarily to cut ourselves off completely from our professional work and to make ourselves more fully educated either by living in a university atmosphere and partaking in the studies and discussions of non-scientific faculties, or by going outside academic circles altogether and getting personal experience of other, more novel aspects of the world and/or of human existence within it. The feeling of a need for a Sabbatical holiday of such a kind depends, I presume, upon individual inheritance, upbringing, and philosophy of life, but the satisfying of the need is doubtless the right form of recreation for some people, and should be recognized as such in a fully wise dispensation.

The other possibility for a Sabbatical break from routine is that we should temporarily drop some of our duties and

either in our own departments or elsewhere devote ourselves more fully to the remainder. Before, however, going on to discuss that in detail, I must mention that some scientists have no wish for Sabbatical holidays at all, their whole-hearted devotion to the subject of their choice making it nugatory or even worse to offer them any temporary recreation of the kind that we are discussing. "Whole-hearted" is perhaps a right epithet, for their regularly alternating daily work and nightly rest and absence of any long breaks is reminiscent, if on a different time scale, of the behaviour of the heart which, in Leonardo da Vinci's phrase, "moves on its own and does not stop, unless forever" (Keele, 1952), getting its recreation in its short diastoles.

Such preclinical scientists are rare, but I could mention at least one living physiologist of distinction who falls into the category, and I recall one past one who, when commanded to an investiture on a certain date for his receipt of the accolade of knighthood, replied that that date would be impossible as he had to attend a meeting of the Physiological Society on it! A parallel on the clinical side is afforded by the case of a surgeon who operated so fast, albeit most skilfully, that students could learn nothing from watching him at work, and who spent his free time in the evenings either in attending to his private museum collection or in discussing problems, by means of trunk calls, with fellow-surgeons in other parts of the country. He died comparatively young, but with a wonderful total of accomplishment in the specialty to which he gave his all.

Duties of the Preclinical Scientist

Let us now revert to the second kind of Sabbatical holiday that I have mentioned, and attempt to gauge its possibilities by seeing what are the duties of the preclinical scientist, and which of them he is most likely temporarily to give up when he takes his leave of absence. He has first to teach, or rather educate, annually-fresh student classes; secondly, to conduct research; and, thirdly, to be concerned in various facets of administration. He may, in addition, have outside calls upon his time which are not part of his scheduled academic duties but are very worthwhile because they extend his influence and/or experience into allied spheres. Were a poll taken of the leanings of preclinical scientists towards the individual items of their threefold task, I imagine that few would put the administrative duties first and most would put them an easy last in their orders of preference. They are extras which fall to one's lot to an increasing extent as one goes up the academic scale but for which some have less natural aptitude than have others, and in which few find any great pleasure as opposed to interest. I have little doubt that most of us would regard the freeing of the spirit that comes from the suspension of these particular "chores" as the major advantage of a Sabbatical year. We can get a feeling of useful, and sometimes of important, accomplishment from administration well carried out, but in general it is an activity that is not exactly exhilarating, to put it no more than mildly.

That leaves education and research to consider, and most of us know of colleagues who scamp teaching and concentrate on research; on the other hand, there are not a few whose main value to their respective departments lies in their teaching power. Leaving the varied personal inclinations out of consideration for the moment, I would unhesitatingly say that, unless his research results are leading to some conclusion of outstanding importance to medicine or to his particular science, a preclinician should put the interests of his students first and his personal research second. For our outstanding responsibility is undoubtedly to train as effectively as we can the sixty or so new pupils who come to us each year—that is, to help as much as possible and to hinder as little as possible the progress of those upon whom, rather than upon ourselves, the practice and the advancement of medicine during the next few decades will depend. Unsought-for rewards come from such priority accorded to one's teaching duties, for the young are very responsive to a right lead and most generous in

their appreciation; also, in working for and with them, we are ourselves kept younger in spirit than our tallies of years give us any right to expect to be. The main drawbacks to preclinical teaching are, first, that each year one has to begin again at a very elementary level; and, secondly, that (except for the few students who go on to a degree in science) each class stays with us only two years or less, and therefore never reaches fully interesting levels in our subjects. It is in the main these drawbacks which after some years make the preclinical teacher wish for a temporary break in the routine sequence.

To the conduct of research, the final academic duty to be discussed, we are in theory, though seldom in practice, free to devote at least half our time. Those of us who have aptitude for original investigation, and particularly those who meet with success in it, find it the most satisfying of their three academic duties, and the one that most justifies the designation of "living" as opposed to that of "existing." For there is a unique exhilaration in being the first to discover something never before known, especially (to some at least of us) if the application of that discovery may prove of advantage to clinical medicine. From research, therefore, one rarely wishes for a rest; on the contrary, the usual complaint is that it is too often interrupted by the less exciting calls of teaching and administration. So Sabbatical years, in so far as they are not complete breaks from preclinical duties, tend to be devoted to furtherance of research projects, or to the integration of results, or to the formulation, in relative peace, of plans for future work.

Some scientists wander off, often far afield, when they take such times off from their less attractive duties, and in this way they add a change of atmosphere to the other recreative influences. Some, on the other hand, just stay on as freer folk in their own departments. When, for instance, the late Professor Barcroft was granted Sabbatical Lent terms by the University of Cambridge in 1935, 1936, and 1937, he continued to work in his room in the physiology laboratory, and, while one of his staff acted as deputy professor, protected himself with a notice on his door which stated, "Professor Barcroft is away from Cambridge for all purposes save research."

My Stay in the United States

To complete the rest of the task allotted me by Dr. Clegg—that is, to say how I myself profited through a Sabbatical year—I have necessarily to become somewhat over-personal and to begin with I must say that I have various interests which are not catered for in an institution engaged solely in vocational training but need the wider atmosphere of a university. That part of my make-up led to my remaining at Oxford for a generation, and it was not until 1947 that I returned to the department at Bart's in which as clinical student I had been a part-time demonstrator. In Oxford I had qualified for between two and three Sabbatical leaves from my College, but the University had had no corresponding scheme, so for a score of years I had had no break of any length from routine preclinical teaching.

In 1951, however, an opportunity came to me through the kind thought of an Oxford ex-pupil, Dr. Robert E. Johnson, Professor and Head of the Department of Physiology in the University of Illinois, Urbana, Ill., U.S.A. He suggested that I should be invited to come out as supernumerary one-way Visiting Professor of Physiology for ten months, and I accepted, after getting permission from my College and University, for a variety of reasons. I had only 8–13 years of academic life left before retirement, and thought that a change for a year would provide a useful reinvigoration for the more routine remainder of my time. I liked foreign travel and also America and the Americans, including American students, with whom I had had dealings as an Assistant Professor of Physiology in the University of Michigan in 1926. I was interested in the prospect of meeting or re-meeting North American physiologists and learning at first hand of recent advances made by them. I also wished to visit some of the parts of North America

that I had not seen on previous visits, and on the cultural side, *inter alia*, to extend my acquaintance with American art galleries and museums. On the personal side, I wished to meet again many members of the U.S. Army 2nd and 91st General Hospital staffs who had been at the Churchill Hospital in Oxford during the war. Finally, I looked forward to two crossings of the Atlantic, for sea-travel is one of my predilections.

An unexpected and very unique pleasure that I did not anticipate was the absence of any U.S. income tax on a visiting professor's earnings. I believe that taxation of income, in so far as Great Britain is concerned, was first suggested by a member of one of my Oxford Colleges—namely, Oriel—generations ago. I can bear witness to the joy it must have been to live in the period before he became active!

Academic and Research Work

From what I have written in the earlier part of this article it is obvious that one of the main attractions of my Sabbatical year was its complete freedom from administrative work. A second came through the special nature of my sole academic duties, for these were to give two seminars a week upon a subject of my choice, approved by Dr. Johnson, to about two dozen postgraduate students working for M.Sc. and Ph.D. degrees. I chose the circulation as the subject and profited greatly by being able to deal with it at such length. Even more did I enjoy my contact with so delightful, keen, and able a body of advanced students. They all became close personal friends, and memories of them and of their very many and great kindnesses to me remain most vivid even if, in typical American fashion, few of them are good correspondents.

With regard to personal research, I was apparently to be less fortunate, and I learned this only a short while before sailing. The difficulty was that the department was due for rebuilding and in its old state was grossly overcrowded, so that I could not be given laboratory space. I therefore decided to use my time in integrating a series of research results, notes about which I took with me, in planning further work, and in completing so far as possible the biography of Joseph Barcroft upon which I was engaged, for finishing that work would leave me freer for non-historical research upon my return. Though, therefore, I performed no experiments during my time in Urbana, research was materially aided, and the analysis of the latest protocols gave me the wherewithal for a communication to the annual meeting of the National Academy of Sciences and, at greater length, for a paper in the *Lancet*. Most important of all, that paper became linked with the successful treatment by the Dublin obstetricians of the oliguria/anuria of concealed accidental haemorrhage of pregnancy (Barry, 1952; Feeney, 1953, 1954; Barry and Geoghegan, 1954). It is therefore possible that my research profited more through the bar to its experimental continuance during my Sabbatical year than it would have done had that bar not existed. At all events I am very satisfied in retrospect with the way everything evolved.

Interesting Travel

Meeting American physiologists, other than those who were in or came to Urbana, was in general made possible through invitations to give lectures or to attend meetings elsewhere, the expenses being covered or more than covered by the fees offered; I remain most grateful to the Americans and Canadians who issued me such invitations. The different expeditions gave me about 15,000 miles of most interesting travel and provided me with many extremely happy memories in addition to fulfilling my wish to learn more at first hand of recent advances in physiology. I was also able to visit a number of art galleries, some of which I had never before seen. I could fill much space in describing them and the museums into which I penetrated, but perhaps the experience was to see five Vermeers hanging side by side in the National Gallery of Art in Washington, D.C.

Two of the things which help towards the proper appreciation of another country are staying for a full year in it so as to know it in all its seasonal variations, and seeing not only the heavily populated areas but also the more counter-trifled ones and the natural scenery. In Urbana and elsewhere I experienced a whole range of climatic effects from heavy snow, ice-storms, and suchlike up to temperatures of 100° accompanied by great humidity. The scenic beauties included those encountered in the lecture tours which I have mentioned and others seen during a fortnight's holiday, after academic duties were over, in Yellowstone National Park, Vancouver Island, and the Canadian Rockies. Those parts were not only most interesting but also indescribably beautiful from the scenic point of view, yet the tour in question was only one of many equally fascinating ones open to the would-be traveller in North America.

The pleasure of my Sabbatical year was greatly enhanced by the extreme kindness and friendliness and hospitality which I met everywhere, and for which I wish to express my gratitude. Among those who share in it is Professor Alan C. Burton, of the University of Western Ontario, London, Ont., and I mention him particularly because in his laboratory hangs a quotation from William Morris which is most apposite to an article, such as the present one, on work and intervals of recreation from it. It reads:

"What other blessings are there in life save these two, fearless rest and hopeful work: Troublous as life is, it has surely given to each one of us here some times and seasons when, surrounded by simple and beautiful things, we have really felt at rest; when the earth and all its plenteous growth, and the tokens of the varied life of men, and the very sky and waste of air above us, have seemed all to conspire together to make us calm and happy, not slothful but restful. Still oftener belike it has given us those other times, when at last, after many a struggle with incongruous hindrances, our own chosen work has lain before us disentangled from all encumbrances and unrealities, and we have felt that nothing could withhold us, not even ourselves, from doing the work that we were born to do, and that we were men and worthy of life. Such rest, and such work, I earnestly wish for myself and for you, and for all men; to have space and freedom to gain such rest and such work is the end of politics; to learn how best to gain it is the end of education; to learn its innermost meaning is the end of religion."

Beneficent Influence

It was strange, after the Sabbatical year which I have above briefly described, to get back to administrative duties and the like, but I remembered a picture which I had seen in the Vancouver Art Gallery *en route* to the Canadian Rockies. Its title was "Chaque Fête a son Lendemain," and if "lendemain" in this instance had in part to be translated as "meetings of committees, etc," at all events the "fête" had taken place and had not only been good while it lasted but was to continue its beneficent influence to the present date, and doubtless will go on so doing.

Though, therefore, I can see all the difficulties that lie in the way, I am, through my own experience, very aware of the advantages that could result, in the cases of all but a few preclinical scientists, from the introduction of a provision for Sabbatical leaves of absence. At a recent meeting of a University Board of Studies which I attended it was obvious that such a view is widely shared by my colleagues. So it is now mainly a question of discussing the ways and means to get our opinions put into practice, and that is not a part of the task that was allotted to me by Dr. Clegg.

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