PHYSIOLOGY IN MEDICAL EDUCATION
AND PRACTICE*

By W. J. E. Jessop.

I HAVE chosen for this address a subject of very wide scope, and I do not propose to limit that scope by any qualifications in my opening remarks. Rather would I impress on the minds of my audience its full implication by mentioning certain of the aspects which fall within it. Thus, in the term "Physiology" I would include not only the limited field to which modern textbooks of physiology restrict themselves, but also the allied fields of biochemistry and biophysics, with histology and possibly cytology, in so far as they are capable of throwing light on problems of function. By medical education I mean not only the comparatively restricted course of instruction given to medical students, but also the further knowledge of problems of function gained during preparation for higher degrees, and particularly during research.

In discussing the relation of physiology to medical practice we must consider all aspects of such practice, for physiological principles underlie not only each of the three great branches of the healing art, but also those numerous specialities which are included in the ever-growing list of "-ologies."

Taking the relationship of physiology and the allied sciences to the education of the medical student we must consider the subject from two points of view. It is necessary that the student should acquire, during contact with his physiological teachers, a knowledge and understanding of certain facts without which he cannot be expected to appreciate the subjects which follow in the curriculum. This is so obvious that it would hardly be disputed by anyone, so we may safely pass over it without further comment. Equally important, if less immediately obvious, is the provision of a training in the application of scientific principles to problems involving individuals of the human species. During the courses in chemistry, physics and biology the student is made aware of the importance of these principles, but their application to problems which concern living human beings presents special features which a properly constituted course of physiology is admirably suited to illustrate. After such a course the student should have developed an attitude of mind calculated to influence his method of approach to all the problems of medical practice.

*Inaugural Address to the Biological Society of the Royal Colleges of Physicians and Surgeons in Ireland, delivered 13th November, 1937.
A prominent legal personality once stated that the difference between an educated and an uneducated man was that the former could be relied upon to know when a case was proved. This distinction applies with peculiar force to the results of medical education. The properly educated doctor will not only know when a case is proved, but he will be competent to collect the evidence. His training will have taught him to observe accurately, and from the results of his observations to form a theory consistent with the facts, and to test that theory by noting how it fits in with circumstances other than those actually under consideration. This is the essence of what has come to be called the "experimental method." But it is a mistake to think that it necessarily involves drastic experiments and, therefore, cannot be applied to the problems of disease in one's practice; for in clinical medicine the experiments are staged by Nature, and the results, when accurately observed and correctly interpreted, are as valuable in the discovery of Nature's laws as experiments deliberately planned in the laboratory.

And, having collected evidence, the medically educated man will be competent to decide when that evidence is sufficient. He will see that any experiments conducted are properly controlled, and will thereby avoid the fallacy into which medical men appear to be particularly liable to fall—post hoc ergo propter hoc. Further, he will apply these standards in assessing the value of the statements of others—in finding the grains of wheat in the chaff of medical literature and advertisements.

It must, of course, be granted that such an attitude of mind is often found in individuals who have had no organised scientific training but who are liberally endowed by nature with ordinary "common sense." And conversely there is no doubt that in some people no amount of scientific training would produce it. Further, in many instances the study of clinical material alone, especially if presented by one who applies these principles, may be sufficient. But in the majority of cases the physiology laboratory is the most suitable place for reinforcing the training received earlier and for illustrating how it may be applied to human beings without loss of scientific accuracy.

Such a training may not be acquired in a hurry, as one crams for an examination, and it should not cease when the student passes the professional examination in anatomy and physiology and enters the wards. If it does, then the powers so carefully developed will undergo disuse atrophy, and on qualification the individual will be little more than one who has, while serving an apprenticeship, acquired from his masters a knowledge of the facts of disease, ornamented by a miscellaneous collection of "tips." In their recent recommendations the General Medical Council have stressed the importance of the training received during the course in physiology and have specified the time which should be spent in such training. But while these recommendations will doubtless be universally adopted, they will make little difference if clinical teachers regard the time spent in the laboratory as already too long.