“I was told that my first duty was to forget physiology, which had no relation to medicine”

Kieran Walsh

BMJ Learning, London, United Kingdom

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There has been much recent commentary on integration in health care professional education (6). This commentary is of importance to physiology education as integration often touches on integration between preclinical and clinical sciences. There are different forms of integration, from horizontal to vertical to spiral, and different theories underpin our thinking about integration, from constructivism to situated learning to transformative learning. And different practical methods can make integration work on the ground, for example, problem-based learning or work-based learning. Where will all these ideas take physiology education? While it is impossible to look into the future, it is possible to look at the past and, sometimes, to learn lessons or take inspiration from the past. If now is a time of change in health care professional education more broadly and physiology education specifically, then there have also been equivalent periods of change in the past. One such period was the first half of the 20th century, when the rapid growth in scientific knowledge forced a rethink in how education could and should be provided.

Midway through this period, Henry Dale delivered the Presidential Address, introductory to a discussion in the Section of Physiology, at the Centenary Meeting of the British Medical Association, in London, in 1932 (3). The speech was on the relation of physiology to medicine, in research and education. In this short article, I have conducted documentary research on Dale’s speech and analyzed it from a positivist perspective. The positivist approach “is a quantitative one—it is based on the premise that all reliable sources of knowledge are based on logical and rational evidence or science. The positivist approach suggests that in research we should adhere closely to what we can objectively view and quantify” (7). The speech touches on both research and education; however, I have concentrated on that part of the speech that concentrates on education.

As with any documentary research, the first step is establishing that the document is genuine; here, there is no question but that this is clearly a genuine document. It was retrieved from the archives of the British Medical Journal (BMJ). However, as is often the case, establishing the reliability of the document is more subjective. The document is written from the perspective of Sir Henry Dale, an English physiologist. In 1936, he shared the Nobel Prize in Physiology with Otto Loewi for the discovery of acetylcholine. Dale was more of a researcher than an educator; however, he was a leader of his time and would certainly have had considerable influence over colleagues.

In the speech, Dale discusses the role of physiology in medical education. By way of background, he mentions the “overcrowding and overloading of the medical curriculum” and also presciently a “great extension of specialization in practice” in the future. Overloading the curriculum sounds like a modern phenomenon, so it was sobering to realize that it is something that has been of concern for over 80 yr. However, Dale is also clear that the main task of the teacher of physiology is to educate the students who will go on to careers in general practice. One of the fascinating features of reading historical documents is discovering what has not changed; far from being antediluvian, many themes are quite modern. And it is when Dale discusses examinations that we can find much resonance with the present. Dale mentions the “mass of facts which he [the student] must endeavour to swallow and hold ready for disorgement in the examination room. Even if such ‘fact-cramming’ were educationally good, practical considerations must set a limit.” The modern reader would hope that fact cramming would have been consigned to the last century, yet it is likely that this poor practice continues in some modern curricula (5). However, Dale is clear that this should not be the purpose of education in physiology but rather that the purpose should be to “train the student to observe, to think, and to form a reasoned judgement, and not to make confused and evanescent records on his memory.” However, he is also clear that the rapid increase in the quantity of physiology knowledge constitutes a challenge to those who wish to inculcate reasoning and judgement among students. And it is here that Dale reaches the crux of his argument. Dale states that “a proper claim could be made for physiology, rightly presented, as pre-eminently fitted for training the mind in the conditions of accurate observation, in the meaning of quantity and measurement, in the putting of questions to Nature and the appraisement of the answers obtained.” In this statement, Dale seems to encapsulate the ideas of evidence-based medicine, many years before the phrase was coined. Observation, measurement, questioning, and appraisal of results are core components of modern medicine, and Dale has a strong position in suggesting that physiology could be the lynchpin of learning as a result. The author subsequently goes further, mentioning the “special uncertainties and complexities” of studying “a living organism” that physiology enables the student to learn. Medicine has never been a pure science, and growth in scientific knowledge has paradoxically increased the complexities in its study and practice. Certainly it is a requirement of the modern practitioner to be able to operate under conditions of continuous uncertainty. However, to enable this to be achieved, Dale is clear that experimental physiology should be carried out and learned on the human (rather than animal) subject. In conclusion, Dale expounds on the potential of physiology learning as the student’s “first and principal chance of contact with a purely
experimental study of the phenomena of life.” Modern thinking about physiology education is usually based on both theory and evidence to underpin its educational effectiveness. Rhetoric is an underused device in modern educational discourse; indeed, the term rhetoric itself has become a form of criticism (for example, that it is mere casuistry). And yet perhaps we can learn from Dale’s speech the true meaning and effectiveness of rhetoric. Certainly Dale’s words have the ability to inspire and to encourage educators to think in terms of ideal forms of health care professional education and how they could reach these ideals.

As if often the case with documentary research, the challenge can be as much to notice what is missing from the paper as what is present. In this regard, there are many features of modern health care professional education that are not mentioned. Examples include technology-enhanced learning and simulation (1, 4, 8). The modern reader might therefore reflect on whether these modern features truly are essential to the educational endeavour or whether we need a renewed emphasis on the learner and their needs and the outcomes that they will have to achieve. It is possible that certain modern educational tools are not essential to teaching medical physiology.

The author ends the article with a story: the story of his first time on the wards where he was told to “forget physiology, which had no relation to medicine.” Much progress would have been made since 1900, when the author would have entered the wards; more progress has undoubtedly been made since then; and yet there is still more progress to be made in integrating physiology and other basic sciences and clinical medicine. Our current means of achieving this include developing the underlying theory for integration and, at the same time, slowly building the evidence base. But perhaps we could do more to listen to fecund sources from the past and hear what leaders had to say and how they said it. And there are clear lessons to be drawn from this article. Physiology can be the foundation of the experimental method and of evidence-based medicine and, indeed, is a means of linking the two together. In addition, rhetoric need not mean empty words: it can be a method both of conveying information and of motivating an audience to action (2). We could use it more often.

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