



LOMA LINDA UNIVERSITY

Medical Arts and Sciences: A Scientific Journal of the College of Medical Evangelists

Volume 2 | Number 1

Article 2

1-1948

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Recommended Citation

Olmsted, J. M.D (1948) "The Place of History in Medicine," *Medical Arts and Sciences: A Scientific Journal of the College of Medical Evangelists*: Vol. 2: No. 1, Article 2.

Available at: <https://scholarsrepository.llu.edu/medartssciences/vol2/iss1/2>

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EDITORIAL

THE PLACE OF HISTORY IN MEDICINE*

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A person cannot be said to be educated without having some knowledge of the historical background of his civilization. In a sense even a discussion of "recent advances" in a specialty is historical, since each new piece of work, even if it may seem to spring *de novo*, like Athena from the head of Zeus, still bears some relation to what has already gone before. This is particularly true of medicine. Medicine is at long last emerging from empiricism and is on the way to becoming a true science. The break came during the nineteenth century with the development of chemistry, and particularly with the discovery of the pathogenic bacteria and their relation to disease. The emphasis shifted from symptoms to causes, with the result that by means of the experimental attack new systems of therapeutics have been evolved. The scientific method has proved so successful that the stream of advance is moving forward powerfully and rapidly. Physicians are impatient to make a trial of new treatments, but what is more to the point, they are becoming willing to question the old. This was not true even a century ago. The example which immediately comes to mind is the reluctance to abandon the time-honored empirical practice of phlebotomy; a treatment sanctioned by its continued use over a period of two thousand years and still in vogue in the most enlightened medical circles in the world

as late as 1840. A century from now will undoubtedly see many modifications of the medical practice of this present moment, but it is doubtful whether our great-grandsons will be as loath to abandon procedures which are without experimental foundation as our great-grandfathers were, for by that time the experimental method will be firmly established as the guiding principle in medicine. It would be well, therefore, that a sense of its history pervade the practice of medicine in order that the prevailing modes of diagnosis and treatment of disease may be the better appreciated and evaluated through a consciousness of the philosophy underlying their adoption.

This historical sense, it seems to me, is not readily gained from a study of a mere catalog of facts. Everyone has read the type of review article, each paragraph of which begins, "Smith in 1911 found . . . Jones in 1912 found . . . Brown in 1913 found . . ." Such an account serves its purpose as an index or chronology of advancing steps and puts the worker in the field in touch with references he may want to look up, but it hardly provides the background of historical knowledge to which I refer. Standard histories of medicine, such as Garrison's well-known work, the more recent one by Castiglione, and that of Cecilia C. Mettler, which has just been published, not only furnish a comprehensive view of the advances in the practice of medicine, but also

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endeavor to give the reader an understanding of the philosophy on which such practice is based. On analysis it will be recognized that even in the earlier histories of medicine the treatment savors of the biographical, for although the author may be describing a movement along a given direction or over a given period of time, nevertheless, the advances must have been made by individuals, either working alone or in a group, and the part played by each person can be and usually is indicated. The method of writing history with the emphasis on individuals is particularly well illustrated in the latest of these texts, that of Cecilia Mettler. The objection has been made, however, that a work of this sort allows little opportunity "to relate the developments in medicine with the general cultural conditions in which they arose." * This criticism, it seems to me, is directed more toward the success with which the author has accomplished his task than toward the biographical method of presenting historical data. For one who aims at presenting a comprehensive historical account too minute biographical detail may bog down the narrative and obscure the intended bird's-eye view of the whole. But, in general, a judicious amount of biographical detail enhances the interest, gives a clearer picture of the setting in which the action takes place, and makes the action itself more vivid to the reader. The desirability of an adequate *mise en scène* can hardly be overemphasized. No better example than that of John Mayow can be cited of how incorrect can be the estimate of a person's place in history when the state of knowledge at the time of his supposed contribution is not thoroughly appreciated. The *Encyclopaedia Britannica* still states that John Mayow "preceded Priestley and Lavoisier by a century in recognizing the existence of oxygen." Most historians of chemistry as well as those of physiology flatly claim that after the discovery of oxy-

gen was made by Mayow it was forgotten for more than a century. The fact is, this discovery was not forgotten, for the very good reason that it was never made by Mayow. In a beautiful piece of historical research entitled "John Mayow in Contemporary Setting," T. S. Patterson (*Isis*, 1931) has shown that Mayow's reputation has been vastly overestimated because of the accident that a late reprint of his book makes Mayow's work readily available to the modern reader, whereas the work of other scientists of his immediate period is not. Patterson goes so far as to say that it was easy for Mayow's contemporaries to see that in his writings "such views as were sound were not Mayow's, whilst those which were Mayow's were not sound," and therefore his modern sponsors should not be nonplused because Mayow appeared to make almost no impression on seventeenth-century physiology in spite of his "epoch-making" book. In short, when we ferret out just how much Boyle, Hooke, Willis, and Lower had accomplished in the field of respiration while Mayow was still under twenty years of age and in attendance at Oxford University studying law, we realize that the book, *De respiratione*, which he published at the age of twenty-four, and which has been considered by modern commentators as "epoch making" was in reality simply an enthusiastic account by the young man of a subject which was in the limelight at Oxford at the time, and which had been developed by others than the author of the book. Since he did not in the modern manner cite his references, it has been taken for granted by his modern commentators that the views he expressed were based on his own experimental findings. This Patterson has definitely shown not to be the case, and the conclusion is inescapable that the place in history still currently assigned to Mayow is quite out of keeping with the facts.

When we consider the place in medical history of the full-length biography, I think no

* C. D. Leake in *Science*, Jan. 30, 1948.

one would deny that it has great potentialities for furnishing this background of the historical sense for which I am making a plea. Nothing can be more illuminating than an exposition of the working of the mind of a man who has made definite contributions to medicine, and this is what the biographer undertakes to do, either in so many words or at least by inference. I may be forgiven for citing the example of my old hero, Claude Bernard. Personally I would make Bernard's *Introduction to Experimental Medicine* required reading for all medical students, as it virtually is in the Paris Faculty of Medicine. In this classic volume one finds the story of how Bernard came to make many of his fundamental contributions—the chance observation, how this observation led to a hypothesis, hypothesis to experiment, experiment to the discovery of a natural law. One example will suffice.

He tells how one day rabbits from the market were brought to his laboratory, and urinated on the table. He was struck by the fact that this urine was clear, whereas herbivorous animals usually have cloudy urine. He reasoned that these rabbits might not have been fed for some time, and were therefore essentially carnivores, living off their own flesh, and that was why their urine was clear. This hypothesis was put to the experiment by feeding hungry rabbits bits of lean meat. The hypoth-

esis was correct; their urine was now clear. When he opened the abdomen of these meat-fed rabbits to see whether the appearance of the digestive processes was the same as when a more usual diet had been provided, he noted that the lymphatic vessels leading away from the intestine were white with chyle as in grain-fed rabbits—and another chance observation struck him. The position of these lymphatics with reference to the pylorus was quite different from what he had observed in the dog, but in both the dog and the rabbit the lymphatics first began to show up distinctly near the opening of the pancreatic duct, which was higher up in the dog than in the rabbit. This suggested that the milky chyle was the result of the action of pancreatic juice on the food, and this on being established by experiment led to the discovery of steapsin.

There is, of course, a false simplicity in Bernard's implied receipt for making a scientific discovery, for it is not given to everyone to turn chance observations to the use that he made of them. There is, however, a lesson to be learned from his exposition of the way a first-class mind worked, which should be most stimulating to the young scientist. For this reason I commend to the medical mind an acquisition of a historical sense, and suggest that biography is an excellent source from which to derive it.