

Empiric

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The word empiric has multiple meanings relevant to philosophy, medicine, chemistry and mathematics. An excerpt from the 2nd Edition of the Oxford English Dictionary best illustrates the divergent meanings:

<p>empiric Greek <i>ἐμπειρία</i>, Latin <i>empircus</i> : experience</p> <ol style="list-style-type: none">A member of the sect among ancient physicians called Empirici, who (in opposition to the Dogmatici and Methodici) drew their rules of practice entirely from experience, to the exclusion of philosophical theoryOne who, either in medicine or in other branches of science, relies solely upon observation and experimentAn untrained practitioner in physic or surgery; a quackA pretender, imposter, charlatan
<p>empirical</p> <ol style="list-style-type: none">Med. a. Of a physician: That bases his methods of practice on the results of observation and experiment, not on scientific theory. b. Of a remedy, a rule of treatment, etc.: That is adopted because found (or believed) to have been successful in practice, the reason of its efficacy being unknownThat practises physic or surgery without scientific knowledge; this is guilty of quackery.In matters of art or practice: That is guided by mere experience, without scientific knowledge; also of methods, expedients, etc.Pertaining to, or derived from experience: in Mathematics, a formula arrived at inductively, and not verified by deductive proof; in Chemistry, a formula which merely enumerates the ultimate constituents of a compound in any convenient order, without implying any theory of the mode in which they are grouped

The etymology of the word empiric is intimately related to the evolution of medicine and science and the divergent sources from which they arose. It is through a short investigation of the evolution of medicinal empiricism through the lens of history that a clearer understanding of this word will be derived.

Out of the mysticism of the Dogmatici, that characterized early medicine Hippocrates emerged with a new set of ideals; he was arguable the first empiric, avoiding the fallacy of philosophical rhetoric, relying on his senses and observations. It was through this empiric approach to medicine that Hippocrates discovered that disease is an extension of nature. It is hypothesized that he came to this conclusion after “long experience with cures in the temple.” Through shrewd observation a new line of deduction based not on divination but rather observation emerged. This is not to say that Hippocrates was a pure empiricist, excepting knowledge only from what was derived from the senses, but rather he relied on his theories of humoral pathology to explain his own observations of disease (3).

While Hippocrates is considered the Father of Medicine and was in many respects an empiricist, Aristotle truly was the first pure empiric. He described empiricism as “the as yet unorganized product of sense perception and memory” (2). Aristotle believed that through careful observation all things could be understood and thus set out to understand nearly all aspects of the world around him. It was Aristotle that applied the practice of empiricism to both philosophy and medicine. He was the “creator of comparative anatomy, systemic zoology, embryology, teratology, botany, and physiology.” Although not the first to perform dissections, he instituted them on a large scale and through careful study came to understand the heart as the central organ controlling circulation and accumulated tomes on the “structure and function of various parts of the body” (3).

After Aristotle medicine underwent a “period of speculation” in which Hippocratic medicine dominated for many centuries, with only minor discovery, until Clarissimus Galen (168-200 A.D.) made his mark. Galen was among the first to carry out physiological experimentation on a large scale. He closely studied the movement of blood wrongly deducing that there were two separate circulations that carry blood containing “vital spirits.” He also performed experimentation demonstrating “the function of the laryngeal nerves, the motor and sensory function of spinal nerve roots, and effect of [spinal cord] hemisection.” Although he continued to rely upon the humors of Hippocrates he elaborated upon them and instituted more widespread use of drugs in treatment of illness (3).

The ideas of Galen and Hippocrates dominated medicine through most of the Middle Ages, a time when theology and medicine became thoroughly fused and most of the spirit of empiricism of the Greeks and Romans was replaced with stagnation. One exception to this trend was Roger Bacon (circa. 1200). He was the “first to point the way toward original research—as opposed to acceptance of authority.” He wrote, “Experimental science has three great prerogatives over other sciences; it verifies conclusions, by direct experiment; it discovers truth which they never otherwise would reach; it investigates the course of nature and open up knowledge of the past and of the future.” While he was a “warm believer in judicial astrology and its influence... [on] disease and death” as well as theology’s importance in science, his firm belief in empiricism was a deviation from the beliefs of the time and in many respects equal to modern viewpoints (3).

It was not until the 16th and 17th centuries that the veil of theology in medicine was able to be lifted and a Renaissance revival of Hippocrates “art of observation” was renewed. Osler cites this time as having done “three things in medicine—shattered authority, laid foundation of an accurate knowledge of the structure of the human body and demonstrated how its functions should be studied intelligently.” It is in Paracelsus (1492-1541 A.D.) that these characteristics were epitomized and the derivation of an empiricist

as a *charlatan* or *quack* likely had its roots. Osler describes him as the “Luther of medicine, the very incarnation of the spirit of revolt. At a period when authority was paramount, and men blindly followed old leaders, when to stray from the beaten track in any field of knowledge was a damnable heresy, he stood out boldly for independent study and the right of private judgment.” Paracelsus held that the reading of many books did not make a physician but rather it was the doctors’ job to “know the different kinds of sicknesses, their causes, their symptoms and their right remedies” and he had toiled fervently to attain this knowledge through experience. The authority of the time considered him a quack because he bombastically disturbed the status quo in a way that “had not been done for fifteen centuries” (3).

It is through empiricism that early physicians made their greatest discoveries. It is because of these early efforts compounded that we arrive in the present state of medicine and a new definition: treatment based on a physician’s past experience undertaken when a diagnosis cannot be made (1).

References

1. The American Medical Society Encyclopedia of Medicine. Clayman, C. (ed.) Random House, New York, 1989.
2. The Encyclopedia of Philosophy. Edwards, P.(ed.) The Macmillan Co., New York, 1967.
3. Osler, The Evolution of Modern Medicine. Yale University Press., New Haven, 1921.
4. Oxford English Dictionary. 2nd edition. Simpson, J. and Weiner, E. Clarendon Press, Oxford, 1989, pp. 189-190.