

PREFACE

TO CONSERVE HEALTH AND TO CURE DISEASE: Medicine is still pursuing a scientific solution of this problem, which has confronted it from the first.

In order to embrace the medical problem as a whole, experimental medicine must include three basic parts: physiology, pathology and therapeutics. Knowledge of causes of the phenomena of life in the normal state, i.e., PHYSIOLOGY, will teach us to maintain normal conditions of life and to conserve HEALTH. Knowledge of diseases and of their determining causes, i.e., PATHOLOGY, will lead us, on the one hand, to prevent the development of morbid conditions, and, on the other, to fight their results with medical agents, i.e., to cure the diseases.

We see, then, that the elements of the scientific method are interrelated. Facts are necessary materials; but their working up by experimental reasoning, i.e., by theory, is what establishes and really builds up science. Ideas, given form by facts, embody science. A scientific hypothesis is merely a scientific idea, preconceived or envisioned. A theory is merely a scientific idea controlled by experiment. Reasoning merely gives a form to our ideas, so that everything, first and last, leads back to an idea. The idea is what establishes the starting point or the primum movens of all scientific reasoning, and it is also the goal in the mind's aspiration toward the unknown.

In the experimental method we never make experiments except to see or to prove, i.e., to control or verify. As a scientific method, the experimental method rests wholly on the experimental verification of a scientific hypothesis. We obtain this verification with the help, sometimes of a fresh observation (observational science), sometimes of an experiment (experimental science). In the experimental method, the hypothesis is a scientific idea that we submit to experiment. Scientific invention consists in the creation of fortunate and fertile hypotheses; these are suggested by the feeling or even the genius of the men of science who

create them.

When an hypothesis is submitted to the experimental method, it becomes a theory, while if it is submitted to logic alone, it becomes a system. A system, then, is an hypothesis with which we have connected the facts logically with the help of reason, but without experimental, critical verification. A theory is a verified hypothesis, after it has been submitted to the control of reason and experimental criticism. The soundest theory is one that has been verified by the greatest number of facts. But to remain valid, a theory must be continually altered to keep pace with the progress of science and must be constantly resubmitted to verification and criticism as new facts appear.

Experimental medicine, as we conceive it, includes the problem of medicine as a whole and comprises both the theory and the practice of medicine.

C L A U D E B E R N A R D

Introduction à l'étude de la
médecine expérimentale. Paris,
J.B. Baillière et Fils, 1865.¹

¹Excerpts from "An Introduction to the Study of Experimental Medicine" by Claude Bernard. English translation by Henry Copley Green, originally published in 1927 by Macmillan & Co., Ltd., London. The excerpts are from the unabridged and unaltered republication by Dover Publications, New York, published in 1957.