

FOREWORD

How do scientists' minds work as they try by observation, experiment, and reflection to solve the problems set for them by Nature? Is there an established method of scientific thinking? As Sir Peter Medawar has pointed out in the following pages, few scientists have attempted to analyze their own thought processes. They get on with their work and arrive at their conclusions without deeply considering the mental pathways they followed. Those who have attempted to analyze the scientists' method of thinking, from Francis Bacon and John Stuart Mill to twentieth-century writers, have mostly not been scientific investigators but philosophers and logicians. Working scientists have generally regarded with indifference the attempts of philosophers to categorize the steps of scientific thought, for example sharply contrasting "deduction" and "induction," for they do not recognize these processes as distinguishable in their own work.

Sir Peter Medawar, in his Jayne Lectures for 1968, brings to this important topic an unusual combination of scientific experience and philosophical reflection. Winner of the Nobel Prize for Medicine in 1960 for his researches on growth, aging, immunity, and cellular transformations, and author of several recent volumes on the philosophy of science, he sees the problem with

clear eyes and arrives at an explanation of scientific thought—the “hypothetico-deductive” process, as he calls it—which scientific investigators will find truly descriptive of their manner of thinking as they go about their research.

Among his audiences at the University of Pennsylvania in April, 1968, there were not only scientists but historians of science, all of whom agreed that Sir Peter’s exposition of the problem was the clearest they had ever heard. The American Philosophical Society, whose interests embrace both science and logic, is proud to have supported these lectures and to make them available to the scholarly public.

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