2-1-42

THE BASIC COURSE IN SCIENTIFIC METHOD

The purpose of this course is to humanize science, not to teach a smattering of facts about chemistry, physics, biology and other sciences. The aim is to give to lower division students some idea of the general method of approach by which man has gained a fuller understanding of the laws governing his world. Just as there are principles of grammar which apply with equal validity whether one writes history, literature, or a scientific discourse, so there are general rules of logical procedure that underlie the special techniques of particular sciences. Likewise, elementary mathematical techniques are the same whatever may be the subject matter to which they are applied. The present course aims to teach the grammar of science, to show the general applicability of certain basic principles of logic and scientific method to any subject matter whatsoever, and thus to bridge the present gap between the highly developed particular sciences and the humanities. We believe this subject matter is of equal interest and relevance to all students who wish to understand the spirit of modern civilization. Toward this end the course undertakes a comprehensive elementary survey of man's struggle to come to terms with himself and his environment as reflected in the history of science. The ascendancy of the methods of natural science since the sixteenth century, and especially since Darwin, is surveyed at some length. The relation of these developments to the technological revolution of the last two centuries is especially emphasized. The place of science in modern civilization is the keynote. The course concludes with a consideration of the nature of scientific symbols and language, the nature of postulates and hypotheses, the problems of observation, definition, classification, generalization and verification, including the elements of statistical reasoning and inference.

BASIC COURSE IN SCIENTIFIC METHOD

I. Approaches to the world

(a) The animistic (metaphysical)

(b) The deistic (theological)

(c) The scientific (positive)

1, 2, 3, 4

II. The ascendancy of science since 1500

(a) The Renaissance and the Reformation

(b) Copernicus, Galileo, Newton

(c) Pasteur

(d) Darwin, James, Dewey

2, 3, 4, 5, 6, 7, 8, 13, 14

III. The place of science in modern civilization

(a) The relation of science and technology
(Science and Culture papers)

(b) Effects of the scientific trend upon contemporary social thought and social programs.

8, 9, 10, 11, 12

IV. The nature of scientific symbols and language

15, 16, 17, 19

V. The nature of postulates, hypotheses, definitions, classification, generalization and verification.

13, 16, 18, 20, 21

VI. The elements of statistical reasoning and inference

18, 21

VII. The fields of particular sciences

22

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