
PHILOSOPHY OF SCIENCE. Stephen Toulmin. (Harper Torchbooks, $1.25).

SCIENTIFIC EXPLANATION. R. B. Braithwaite. (Harper Torchbooks, $1.85).

Apart from superficial (and often as not misleading) accounts in the daily press and popular magazines of some spectacular “break throughs” in scientific research or technology, even the intelligent and otherwise educated layman is likely to know little of the systematic content of the various sciences, and still less of the highly complex logic of their “methods.” For that matter, scientists themselves aren’t always knowledgeable about sciences not immediately related to their own; and they too may lack a clear understanding of the underlying logic or philosophical rationale of their own theoretical methods. (For it is a fact, however peculiar, that within certain limits it is not essential for the scientist to be self-conscious about his methods in order to employ them successfully.)

What is Science? is a collection of twelve essays on science and the scientific outlook written for the layman by experts in as many fields. The editor, James R. Newman, known for his previous successes in writing and editing scientific literature for the general public, has appended a short introduction, brief biographies of the contributors, and a small but well-chosen bibliography. The essays are unusual in that they are introductions written by distinguished experts. Sir Edmund Whittaker sketches the history and scope of mathematics and logic. Hermann Bondi writes on astronomy and cosmology, tracing the background of his own radical and currently much-debated theory of the “continual creation of matter.” Physics is presented by Edward Condon; chemistry by John Read; biochemistry by Ernest Baldwin; biology by Warder Clyde Allee; evolution and genetics by Julian Huxley; psychology by Edwin G. Boring; anthropology by Clyde Kluckhohn; and psychoanalysis by Erich Fromm. In addition, Bertrand Russell discusses the impact of scientific work and technological developments on the situation of mankind, and deduces moral, social, and political implications. In a more ambitious and highly informative concluding essay entitled “Science as Foresight,” Jacob Bronowski introduces the reader to computers and logic machines, theory of games, information theory, cybernetics, and the logic of experiment. He explores the analogies between human thought and two types of “thinking machine.”

A common misconception about “scientific method” is that all scientific theories are developed alike, regardless of the particular subject matter. It is thought that insofar as they are “scientific” they must be “empirical” in the same simple and straightforward way that a generalization about particular observations is. There are theories of this sort in the sciences, to be sure. But the theoretical enterprise of the systematic sciences, physics, for example, is vastly more complex and subtle than this Baconian picture. Both Stephen Toulmin in The Philosophy of Science and R. B. Braithwaite in Scientific Explanation set out to show this.

As the sub-title “An Introduction” suggests, Toulmin’s discussion will be more comprehensible to the reader with little or no technical background. With virtually no use of mathematical formulation, he considers the relation of theory to observation, the character of scientific theories, the role of conceptual models, the existence of sub-microscopic particles, and the logical problems of model generalization about all examples of a certain type from a necessarily large number of observations.

The approach throughout is that of minimizing the subtle relations of the language of science to theoretical concepts on the one hand, and of observing phenomena on the other. For example, Toulmin discusses at length what he means to say that light “travels straight lines,” whether, say, this meant in the same sense in which a croquet ball travels in a straight line towards the wicket.

Professor Braithwaite’s book is for the more advanced student. His high street discussion of deductive and inductive theories and how they are employed in science, theory, and of the mathematical meaning of statistical hypotheses probability statements requires the reader to follow him over some difficult terrain.

Boy, sick. Girl, sick. by John Kingsland

BOY. GIRL. BOY. GIRL. Jules Feiffer. (Random House, $1.50)

A decade or so ago, a woman I know, exulting in her mental health, boasted to me, “If I had been as unhappy a year ago as I am now, I would have killed myself.” This may have been one of the first ‘sick’ jokes of our time. It was a remark which might have been taken from any Feiffer cartoon. Feiffer’s first book, Sick. Sick. Sick women. In fact, a collection of sick jokes, in the sense of Helen Keller dolls (which wind up and walk into walls) or of the “But apart from the unfortunates incident, Mrs. Lincoln, what did you think of the play?” genre. In Feiffer, it is the people who are sick, not the jokes... except that there are not, strictly speaking, any jokes. Apparently we have come a full circle from the non-comic cartoons of “Little Orphan Annie” to the un-funny funnies of Feiffer and others. A Feiffer cartoon is a satirical tableau which is best described by the subtitle to his first book, “A Guide to Non-Confident Living.”

Feiffer has said that “people can become so blase about their emotional miseries that relating symp-toms can become an important part of social life.” This particularly describes the activities of some of Feiffer’s stock characters, who are by now familiar figures in Boy. Girl. Boy. Girl. Forever worried about whether they are ‘in,’ whether they are reading the right books or playing the appropriate sexual role, there is nothing they enjoy more than talking about their problems. There is Bernard, who never makes out with girls, and Huey, a tough character who always does (and who is not nearly so amusing as his weakening foil). Thus a particularly dejected looking Bernard tells us: “I meet a girl. I tell her all of my most intimate personal secrets which she promises never to re-pet to anybody. Then after a while we break up.” The process is repeated through several girlfriends until he laments: “All over the city girls who no longer like me are casually walking around my life’s confessions... spreading my parties all over town. The world knows Bernard Mergendiesler! And I’ve always been secretive.”

On the female side, there is the strong and weak. Fran, the tough-minded woman, is one of Feiffer’s best creations. It takes a woman to begin by apologizing for a minute tennis game, only to leave her male partner raging with ulcers by the time her apology has even been extended.

Feiffer has come rather a long way from the day when he walked into the offices of a Greenwich Village newspaper and offered to give them a cartoon a week for the sake of having it printed. His immediate success in “The Village”—that part of the country where concern with inhibited lack of them is more acute than any other—has led to strength to strength — to syndication.

The question now is, is he facing a data material? Is there only so much one can do with emotional analyses? Certainly, Feiffer seems turning more and more to political satire. And sometimes, certainly, he misses the mark; sometimes he doesn’t make us laugh; he doesn’t make us shake our chuckle or giggle either. Finally, Feiffer lost me completely. The punch is that there is a character left over. If President Kennedy could say now—I swear Marvin, there’d be no Schlesinger—I’m not sure what I’d laugh at (by being ‘in’). But I’m sure that Arthur Schlesinger is influential. Arthur Schlesinger recently reviewed this book for a New York newspaper and gave it the issue entirely. But as Feiffer further notes, “The hallmark of a professional is a lack of knowledge of his market.”