ments, such as, for example, the recent work on singularities in virial expansions are therefore not discussed in the reviews. It is unfortunate that there is such a long gap between the completion of a manuscript and its appearance in print in this review series. I think, on the basis of personal experience, that this gap could be considerably shortened if authors, editor and publisher all would coöperate more closely on a stricter deadline basis.

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The reviewer is a senior research fellow at the National Bureau of Standards.

Do machines think?

GREAT IDEAS IN INFORMATION THEORY, LANGUAGE AND CYBERNETICS. By Jagjit Singh. 338 pp. Dover, New York, 1966. Paper $2.00

by Sanford E. Gerber

I find myself on that side of the fence where we believe that, if a machine exhibits some form of behavior that is also exhibited by human beings, this behavior should be called by the same name. That is to say, if an animal behaves in a certain way, such that I would conclude that he thinks, I would have to conclude that a machine that exhibits the same behavior also thinks. It seems to me unfair to say that, since a man can do more things than a machine, the machine does not think; whereas, if the machine can do some of the things which are within man's ability, it must perform some of the same processes. Furthermore, I find it clear that in order for a machine to do what a man does it is not necessary to do it the same way. I don't think Jagjit Singh would agree with my philosophy. He would prefer to consider such concepts as "will" and abstractions. I am tempted to agree that these concepts are uniquely human, but I am not willing to agree that a machine does not think. Anyway, this is a moot question that has been debated by people much brighter than me. I state it here only to indicate that Singh sits on the other side of the fence.

This is a most interesting book intended for the nonexpert, or even for the uninitiated. It contains chapters on such things as coding theory, information and entropy, neural networks, and artificial intelligence. What Singh knows about information theory and cybernetics is apparently greater than what he knows about language, for it is particularly in the area of natural language that the book exhibits its only true weakness. There is one chapter devoted to machine translation in which much of the recent meaningful work is not discussed. Other considerations of natural language processing, such as automatic speech recognition, are not even mentioned. With the exception of this sole weakness, the book does a very good job of describing, discussing and dissecting some very important research. I would recommend this book to the beginning student of information theory.

I have one bone to pick with the publisher. On the jacket of the book, the author is identified by name only. I have been unable to discover the identity of Jagjit Singh. Although he has written a worthwhile book, I cannot provide my reader with any information about his qualifications to have done so.

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Sanford E. Gerber is director of the audiology laboratory at the University of California, Santa Barbara.

Basic equations for the serious reader

X-RAY DETERMINATION OF ELECTRON DISTRIBUTIONS. By Richard J. Weiss. 196 pp. North-Holland, Amsterdam (Interscience, New York), 1966. $10.50

by Leonid V. Azároff

The development of the theory of x-ray diffraction by crystals was begun by C. G. Darwin concurrently with the discovery of the phenomenon by Max Laue. In 1914 it was expounded in two papers in the *Philosophical Magazine* and in 1922 a third paper by Darwin completed his contributions to this subject. About 50 years later, some of the leading present-day expositors met in Cambridge, Mass., to participate in a symposium commemorating B. E.