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Factors Governing the Speed of Application of Science

C. F. Carter

B. R. Williams

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Book Reviews

Industry and Technical Progress. Factors governing the speed of application of science. C. F. Carter and B. R. Williams. Oxford University Press, London, 1957 (order from Oxford University Press, New York). viii + 244 pp. \$4.

One of the most difficult of man's tasks is keeping a perspective on the "present"—remembering how much the present depends on the past and how little the future will resemble the present. C. F. Carter and B. R. Williams have tried to develop some of this perspective with regard to the role of science and scientific personnel in British industry.

In this task, the authors seem to have steered a wise course. Rather than supply answers, they have tried to present the major problems of effective utilization of science and scientific personnel, in the circumstances and current traditions of British industry, in the context of that industry's present economic, social, and political environment. In presenting these problems in this frame of reference, they also expose the fallacies of many simple panaceas which are proposed from time to time.

As in most problems of this size, it turns out that an evolution, rather than answers, seems to be required for substantial improvements—an evolution involving large segments of a country's human resources: management, scientists, teachers, government employees, and so on. Members of each of these segments must learn more about the problems and about the roles they can play in the segments. *Industry and Technical Progress* can serve this required orientation function quite well.

I find one major disquieting over-all note in the book. It seems tacitly to assume that the way to technical progress will be through profit motives of industry. This assumption seems closely akin to the largely discredited "theories of the firm," based solely on economic concepts, for describing the activities of companies. It appears, more and more, that economic concepts alone are not adequate in considering industrial companies and that consideration of elements of political and social behavior is also required.

And, with regard to technical progress, man's simple but God-given scientific curiosity would seem much too important a factor to be overlooked. I would put it to the authors that the driving force behind individuals in large company research organizations is still simple curiosity—and that technical innovations result to a much greater extent out of this curiosity than out of commercial pressures.

HARLAN D. MILLS

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Principles of Engineering Geology and Geotechnics. Geology, soil, and rock mechanics, and other earth sciences used in civil engineering. Dimitri P. Krynine and William R. Judd. McGraw-Hill, New York, 1957. xiii + 730 pp. Illus. \$10.

The appearance of an engineering text with the word *geotechnics* in its title is a healthy sign of the steady development of earth studies by engineers. Much as professional engineers dislike the word *technology* (and its derivatives) when applied to their work, they have generally welcomed the use of *geotechnics*, in view of its obvious advantages. It has a direct French equivalent ("*Geotechnique*" having already been adopted as the name of an international journal in this field); it has a useful parallel in the word *geophysics*; and it is succinctly descriptive of the study of the engineering uses to which the materials that constitute the earth's crust are put. It is this field that is treated in the volume under review.

The volume is a veritable storehouse of information, indicative of the senior author's lifetime of experience and of the use by the junior author of some of the accumulated corporate experience of the U.S. Bureau of Reclamation, where he serves as engineering geologist on the staff of the chief engineer. The book is well illustrated and well indexed, being up to the usual high standard of McGraw-Hill volumes from the standpoint of production.

Readers of *Science* will want to know

the audience for whom this volume is intended. A detailed study of its contents, made in an attempt to determine this, leads to somewhat puzzling results. The book is far too large and diffuse to serve as a college textbook. As the authors themselves state, "case histories have been used only for the elucidation of principles," and this is therefore not a collection of case histories of the type that can be so valuable an aid to the practicing, as also to the embryo, engineer. And as a reference book it has the unfortunate feature of merely directing the reader to another reference on all too many important topics.

So much work has clearly gone into the preparation of the book that one regrets being unable to give it unqualified praise. With the mounting volume of technical literature, however, such a collection of undigested material—useful though the lists of individual references are—is not as helpful as it might be. The arrangement of the book is a fair indication of the additional attention in assembling and pruning of contents that it so clearly needs. Seven of the 19 chapters, for example, deal successively with "Subsurface Exploration," "Maps and Airphotos," "Rock as a Construction Material," "Tunnels," "Frost and Permafrost," "Shore-line Engineering and River Improvement," and "Elements of Sedimentation Engineering [sic]." If there is order or logic in this arrangement, it has escaped my attention.

As a useful guide to current American literature in the field of geotechnics, the book can be highly commended. At the same time, it can serve as a telling example of the fact that, in order to be fully effective, a good book requires something more than the collection between two covers of a vast quantity of factual information, useful and interesting though this may be.

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Medical Radiation Biology. Friedrich Ellinger. Thomas, Springfield, Ill.; Blackwell, London; Ryerson, Toronto, 1957. xxxiv + 945 pp. Illus. \$20.

Medical radiation biology is defined by the author as comprising clinical radiation biology and experimental radiation therapy. However, this book can in no sense be described as a text on radiation therapy. It is rather a book in which the author intends to compile "the rationale on which the role of radiation as a health hazard and as a therapeutic agent is based."

The book, with some 4600 references