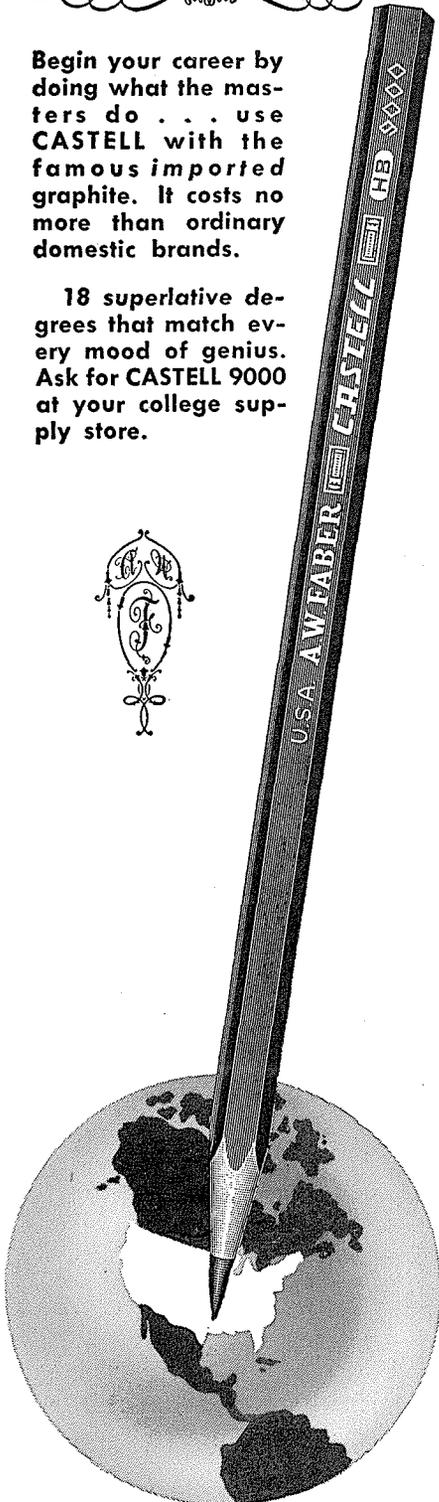


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## BOOKS

### THE IMPACT OF SCIENCE ON SOCIETY

by Bertrand Russell

Columbia University Press,  
New York, \$2.00

*Reviewed by Charles E. Bures  
Assistant Professor of Philosophy  
and Psychology*

THESE THREE LECTURES comprise the Matchette Foundation Lectures delivered at Columbia University in November, 1950. In his usual clear and incisive fashion Bertrand Russell discusses the effects of science on traditional views, the effects of scientific techniques on social problems, and finally science and human values. The meat of the matter is salted by the characteristically dry and satirical Russellian wit.

In the past three centuries science and technology have become a revolutionary force with tremendous social implications. The most influential scientific ideas, as Russell sees it, have been reliance on observation instead of unsupported authority, the doctrine of the mechanistic autonomy of the physical world, the dethronement of purpose from nature at large (but not from man), and the realization of man's relative insignificance from a cosmological point of view.

#### Functions of Science

Science has two functions: knowing about things and changing things through scientific techniques. Historically, scientific techniques set a limit on the size and stability of social organizations. Important discoveries like gunpowder, the compass, steam power (and transport), electrical communication, air-flight, and, lately, atomic energy, have increased the controllable size of nations and other social organizations. Speed of communication and accumulation of the means to enforce power have centralized power in fewer hands and increased the interdependence of individuals and groups. Scientific techniques have made possible the social control and stabilization of world-wide social organization and government.

Unfortunately, scientific techniques can also increase human misery. Increasingly powerful methods of making war have increased the gen-

eral fear of war. Centralization of social power has brought new positions of power. The conflict of large groups within nations has become a serious threat to individual liberties. The irresponsibility of officials poses a source of danger for which controls must be found. Individual liberty tends to be lost in the shuffle.

Technology has led to rich nations with stabilizing populations, on the one hand, and poor nations with rapidly increasing populations, on the other. To Russell, this spells war inevitably, unless solutions are found. Communism is just a phase of this larger problem. Fear of war now brings to mankind the greatest misery.

#### Benefits of Science

Science also confers many benefits. Transport permits food distribution. Science can abolish poverty, reduce labor effort, increase living standards, decrease human suffering medically, reduce lawlessness, improve education, increase opportunity, diffuse happiness. Biology, physiology, and psychology are only beginning to show benefits of great promise. They may well outweigh the effects of physics and chemistry in the past.

What about prognosis? To Russell, the basic solution to human misery is the extension and widespread understanding of legal processes and their humane enforcement. Unrestrained national sovereignty must be abandoned. Democracy and traditional personal freedoms, birth control, and world government must be realized. Dogmatism and fanaticism of all kinds must be faced with a rational intellectual temper.

Tension between East and West fosters great fear and great fear breeds fanaticism. The average level of happiness in the West is higher than in any previous community. The West possesses the highest level of science and technical skills. The best available brains must be mobilized to remove fear of war and other evils.

In philosophy, the effect of technology has been an emphasis on altering the world. By different routes this has led to dialectical materialism and pragmatism. Both doctrines, in their extreme, lead to force as a criterion. Truth and fact

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are reduced to the test of workability or success. Russell refers to such doctrine as "this engineer's philosophy." Such absurd consequences can be overcome by distinguishing between knowing and applying.

Our age needs compassion for all mankind, desire for knowledge, eschewing of pleasant myths, courageous hope and creativeness. Only in genuine compassion are found the desire to understand human misery and the urge to combat it.

While the contents of this small book may strike the literate reader as old stuff, Russell's diagnosis and prognosis hammer home the essentials and the urgency of the directions we must take if science is to aid mankind and not increase human misery.

**PRINCIPLES OF PHASE EQUILIBRIA**  
by F. E. W. Wetmore and D. J. Leroy  
McGraw-Hill, N. Y., \$3.50

*Reviewed by Norman Davidson,  
Asst. Prof. of Chemistry*

**PHASE EQUILIBRIA** is a part of physical chemistry that is of vital interest in a variety of other fields—geology

and metallurgy being notable examples. The interpretation of phase diagrams is presented here in a series of examples, starting with one and two component systems and progressing to four components. The discussions are based on the phase rule and on common sense; they are clear and can be understood by a reader who does not have an extensive training in physical chemistry. The text is therefore suitable for the practising technical man who wishes to extend or refresh his knowledge of the subject.

**STEAM TURBINES**  
3rd Edition  
by Edwin F. Church, Jr.  
McGraw-Hill, New York \$6

*Reviewed by R. L. Daugherty  
Professor of Mechanical Engineering*

**THIS IS A REVISED** and expanded edition of a book that has been a standard text in this field for 23 years. It contains an excellent description of the various types of steam turbines now in use, and a clear presentation of the fundamental thermodynamic theory.

There is an unusually comprehensive treatment of the theory and practice of steam nozzles, and the treatment of blade theory is adequate

and understandable. An interesting feature is the application of aerodynamic theory to design of turbine parts. The scope has been extended also to sonic velocities in flow through the turbine.

Altogether this is a well-rounded treatment of the entire field.

**STRATIGRAPHY AND SEDIMENTATION**  
by W. C. Krumbein and L. L. Sloss  
W. H. Freeman and Co.,  
San Francisco, \$5.00

**THIS COMPREHENSIVE** textbook treatment of stratigraphy and sedimentation is an integration of facts, principles, and hypotheses bearing on the general field of study. The first part of the text deals with certain basic concepts, including a useful chapter on stratigraphic procedures. Discussion of sedimentary environments and of the tectonic frameworks of sedimentation in some of the later chapters is especially interesting.

The application of principles is stressed rather than coverage of a great deal of purely descriptive stratigraphy, and an attempt is made to present recent contributions as well as the standard literature of stratigraphy and sedimentation.

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