

radioactive indicators in biochemistry, animal physiology, and pathology.

John W. Irvine, Jr.  
*Massachusetts Institute of Technology*

### Silent Sound

**SUPERSONICS: THE SCIENCE OF INAUDIBLE SOUNDS** (The Charles K. Colver Lectures 1937). By Robert Williams Wood. Reprint with supplementary bibliography. 164 pp. Brown University, Providence, Rhode Island, 1948. \$2.00.

Nowadays, supersonics pertains to speed above the normal sound velocity in air, while ultrasonics deals with high frequency inaudible sound waves. Therefore, the title of this book may be somewhat confusing, but its contents reveal clearly the early developments of ultrasound. In 1926, R. W. Wood and A. L. Loomis pioneered in the studies of intense ultrasonic waves. With striking experiments they demonstrated the physical and biological effects of these waves. Subsequently a number of scientific papers reported further investigations by Professor Wood and his collaborators in high frequency acoustics. This work attracted widespread attention. The Colver Lecture Foundation of Brown University recognized these achievements as "valuable contributions to human knowledge" and sponsored, in 1937, a series of lectures by Professor Wood on the subject of inaudible sound. These were published in 1939. The same little volume is now reprinted with a supplementary bibliography, which is not too complete.

For essential background material in ultrasonics, this book remains an excellent primer, in spite of the outstanding technological advances which have been made in this field during the past ten years. Today, we have a larger variety and a better understanding of synthetic piezoelectric crystals to supplement the existing natural crystals applicable to acoustic devices. The utilization of magnetostrictive materials has been extended. Great strides have been made in the techniques of quantitative measurements in different acoustic media at wide ranges of frequencies. The possibilities of these and other ultrasonic developments are mentioned in this series of lectures. Professor Wood gives a very lucid explanation of the supersonic phenomena associated with the Hartmann acoustic whistle. By characteristic versatility and resourcefulness, Professor Wood has here not only played a prominent part in the evolution of this new technology but also has stimulated other workers with compelling interest to explore the possibilities of an untried tool. This little volume should be appreciated by ultrasonic research workers as well as nonspecialists who are interested in experimental adventures in the new field of silent sound.

Elias Klein  
*Naval Research Laboratory*

### Wartime Science in Britain

**SCIENCE AT WAR.** By J. G. Crowther and R. Whiddington. 185 pp. The Philosophical Library, New York City, 1948. \$6.00.

This is a thrilling account of the triumphs of scientific development in the recent war, as interpreted by our

British Allies. In a relatively few pages, the authors have succeeded in giving many of the more significant details about radar, operational research, the atomic bomb, and science in the service of sea warfare. This is not a colorless digest of endless reports, as it well might be if they had exercised less skill in selecting and treating their material; but, rather, it is a vibrant story of a people with their backs to the wall, fighting with every resource at their disposal, including their scientifically trained manpower. To an unusual degree, one catches the feeling that radar unquestionably turned the tide in the Battle of Britain, and that, in the hands of those who developed it between 1935 and 1945, it played a major role in both defense and offense.

"Science at War" not only treats of the basic physics behind many of the developments—enough for the interested layman and not too much for the specialist—but it deals also in fine style with the intimate relationship between science and the military. In telling about the "Sunday Soviets" which brought all ranks of military, scientific, and field personnel together to discuss their common problems, where rank and prestige were laid aside in the search for that wisdom that arises from the experience of many people, the authors have contrasted their British methods with those of the Nazis, and have expressed the conviction that their success and the Nazi failure lay, not in superior intelligence, but in the democratic application of their science as a *civilian* undertaking.

Operational research is interestingly described and gives one a glimpse of how wars may be "improved" by the application of mathematical analysis: How many bombers should be in a raid to bring the biggest results with the least loss? How large should a convoy be? Answers to these and other equally urgent questions paid big dividends as a result of treating warfare quantitatively and analytically. It makes one hope that international agreement will succeed in removing the threat of another major war, almost certain to be "the mathematician's war," whose waging may depend upon the great calculating machines!

The section on the atomic bomb is devoted largely to pointing up the history of early developments in atomic energy control. It frankly acknowledges the inability of the British to put the necessary manpower and resources on this problem which was so successfully pursued by joint effort in Canada and the U.S.A. Over and over again, one catches the impression that much was accomplished in the British scientific effort with few men. For example, in the early development of the proximity fuse, the British never had more than fifty men on the problem, whereas we devoted fifteen hundred to it.

It would require a better historian than your reviewer, and one with full access to the records, to evaluate the comparative contributions to the common effort made by scientists working on opposite sides of the Atlantic Ocean. This book, on the face of it, is based upon documented facts and is not overreaching in its claims. The spirit of close cooperation that existed between American and

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# CALENDAR

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### BOOKS *Continued from page 29*

British scientists is completely acknowledged. This little book is not the place to look for arguments on who won the war. It is a delight to hear their side of the history so well told.

Richard M. Sutton  
*Haverford College*

### Books Received

**BIOLOGICAL REACTIONS CAUSED BY ELECTRIC CURRENTS AND BY X-RAYS.** By Th. van der Werff. 203 pp. Elsevier Publishing Company, Inc., New York City, 1948. \$5.00.

**FOUNDATIONS OF MODERN PHYSICS, Second Edition.** By Thomas B. Brown. 391 pp. John Wiley and Sons, Inc., New York City, 1949. \$5.00.

**E = mc<sup>2</sup>. A play in two acts.** By Hallie Flanagan Davis, assisted by Sylvia Gassel and Day Tuttle. 88 pp. Samuel French, New York City, 1947, reprinted 1948. Eighty-five cents.

**FILM AND EDUCATION. A Symposium on the Role of the Film in the Field of Education.** Edited by Godfrey M. Elliott. 597 pp. Philosophical Library, New York City, 1948. \$7.50.

**VECTORIAL MECHANICS.** By E. A. Milne. 382 pp. Interscience Publishers, Inc., New York City, 1948. \$7.50.

**INSTALLATION AND SERVICING OF LOW POWER PUBLIC ADDRESS SYSTEMS.** By John F. Rider. 204 pp. John F. Rider Publisher, Inc., New York City, 1948. \$1.89.

**THE ROAD TO REASON.** By Lecomte du Noüy. 254 pp. Longmans, Green and Company, New York City, 1948. \$3.50.

**TABLE OF INTERPLANAR SPACINGS FOR DIFFERENT TARGET MATERIALS FOR THE BACK REFLECTION REGION.** Scientific Paper No. 1403. By Suzanne Beatty. Westinghouse Research Laboratories, East Pittsburgh, Pennsylvania. Available on request.

**AMERICAN STANDARD LETTER SYMBOLS FOR PHYSICS. ASA Z 10.6.—1948.** 37 pp. The American Society of Mechanical Engineers, New York City, 1948. \$1.00.

**SYMPOSIUM ON USEFULNESS AND LIMITATIONS OF SAMPLES.** Authorized Reprint from Copyrighted Proceedings of the American Society for Testing Materials Volume 48, 1948. 40 pp. A.S.T.M. Headquarters, 1916 Race Street, Philadelphia 3, Pennsylvania. \$1.00.

**NATIONAL BUREAU OF STANDARDS CIRCULARS.** Available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

**Circular C471, Spectral Transmissive Properties and Use of Eye-Protective Glasses.** 34 pp. Twenty cents.

**NBS Miscellaneous Publication M 192, New Advances in Printed Circuits.** 73 pp. Forty cents.

**PREVENTION OF DETERIORATION ABSTRACTS.** Two volumes of six issues each, individual abstracts in loose leaf form, with binders and index guides. Abstracts classified under the headings: Biological Agents; Electrical and Electronic Equipment; Fungicides and Other Toxic Compounds; Lacquers, Paints, and Varnishes; Leather; Lubricants; Metals; Miscellaneous; Optical Instruments and Photographic Equipment; Packaging and Storage; Plastics, Resins, Rubbers, and Waxes; Textiles and Cordage; Wood and Paper. Yearly subscription rate of \$37.50 will be advanced to \$50 for requests received after July 1, 1949. A monthly bibliography of all reports in this field is available for an additional \$10.00 per year. Subscriptions should be sent to National Research Council, National Academy of Sciences, Room 204, 2101 Constitution Avenue, Washington, D. C.

February 3-5	American Physical Society, Berkeley, California
February 13-17	American Institute of Mining and Metallurgical Engineers (Annual Meeting), San Francisco, California
February 26	American Mathematical Society, New York City and Chicago, Illinois
February 28 -March 4	American Society for Testing Materials (Spring Meeting), Chicago, Illinois
March 3-4	Illuminating Engineering Society (South Pacific Regional Conference), San Francisco, California
March 6-10	American Institute of Chemical Engineers (Regional), Los Angeles, California
March 7-10	Institute of Radio Engineers (Annual Convention), New York City
March 8-10	Society of Automotive Engineers (Body and Car Production), Detroit, Michigan
March 9	Inter-Society Color Council, New York City
March 10-11	Illuminating Engineering Society (Pacific Northwest Regional Conference), Portland, Oregon
March 10-12	Optical Society of America (Winter Meeting), New York City
March 10-12	Division of Solid State Physics of the American Physical Society (Annual Meeting), Cleveland, Ohio
March 14-17	American Association of Petroleum Geologists (Annual Meeting), St. Louis, Missouri
March 14-17	Chicago Technical Societies Council (Conference and Show), Chicago, Illinois
March 18	Institute of Aeronautical Sciences (Flight Propulsion Meeting), Cleveland, Ohio
March 27-31	American Chemical Society (Semiannual Meeting), San Francisco, California
March 28-30	Society of Automotive Engineers, Cleveland, Ohio
April 1-2	American Mathematical Society, Durham, North Carolina
April 3-5	Illuminating Engineering Society (Southwestern Regional Conference), Houston, Texas
April 4-8	Society of Motion Picture Engineers, New York City
April 11-12	American Institute of Electrical Engineers Conference on the Industrial Application of Electron Tubes, Buffalo, New York
April 11-13	Society of Automotive Engineers (Aeronautics and Air Transportation), New York City
April 11-14	National Association of Corrosion Engineers Annual Conference and Exhibition, Cincinnati, Ohio
April 11-15	American Society for Metals, Los Angeles, California
April 16-17	American Physical Society (Southeastern Section), Clemson, South Carolina
April 19-21	American Institute of Electrical Engineers (Southwestern District), Dallas, Texas
April 19-22	American Society of Biological Chemists (Annual Meeting), Detroit, Michigan
April 20-22	American Geophysical Union, Washington, D. C.
April 20-23	American Society of Civil Engineers, Oklahoma City, Oklahoma
April 21-23	American Philosophical Society, Philadelphia, Pennsylvania
April 24-28	American Ceramic Society, Cincinnati, Ohio
April 25-27	Radio Manufacturers Association and Institute of Radio Engineers (Annual Meeting, jointly sponsored), Philadelphia, Pennsylvania
April 25-27	National Academy of Sciences, Washington, D. C.
April 28-29	Illuminating Engineering Society (Canadian Regional Conference), Toronto, Ontario
April 28-30	American Physical Society, Washington, D. C.
April 29-30	American Mathematical Society, Philadelphia, Pennsylvania, and Lawrence, Kansas
April 30	American Mathematical Society, Stanford University, California
May 2-4	International Scientific Radio Union and Institute of Radio Engineers (Joint meeting), Washington, D. C.
May 2-4	American Society of Mechanical Engineers (Spring meeting), New London, Conn.