

with the flow of the story. Certainly few persons living are as qualified as the author to tell this story, the importance of which to the whole world is so obvious.

The five parts of the book are entitled successively Vision, Faith, Work, Choice, and Hope. They deal respectively with: 1) the attempt in the late thirties and early forties to sell the possibility of the release of atomic energy to the government of the United States as the basis for a powerful military weapon, 2) the first and ultimately successful nuclear chain reaction, 3) the actual construction of the first atomic bombs, 4) the decision to use the bomb against Japan, and 5) the impact of atomic energy on the future of mankind in peace or war. The whole forms a tale with dramatic possibilities which the author has exploited with considerable success. This is particularly true of the trials, doubts, hopes, fears, and general ups and downs associated with the achievement of the first self-sustaining nuclear chain reaction on December 2, 1942, a day that will live forever in the history of science and technology.

All readers, scientists, and nonscientists alike, will welcome the frank and candid discussion of the problem of the military use of the successfully fabricated atomic bomb. No one can doubt that the author and his co-workers searched their souls with painful thoroughness before giving their advice on this fateful question about which there will never cease to be controversy. Differences of opinion inevitably will continue, but those who face the matter honestly will have to reckon with the facts presented by Arthur Compton.

The most controversial part of the book is that which endeavors to foresee the future of a world faced with the threat of war with nuclear weapons and the inevitable widespread destruction that will accompany their use. Compton is convinced that war has actually thereby become obsolescent. Would we could all be so optimistic! Certainly few will quarrel with the view that the atomic age imposes on us all the obligation to work harder for the fundamental freedom of the individual man throughout the world. The author approaches this problem in the light of his own Christian belief. Others will doubtless find similar sanctions for effective action in their own religious faith. But this for a scientist is delicate ground on which to tread.

Two-Terminal-Pair Networks Transmission Lines. Vol. 2 of Linear Transient Analysis. By Ernst Weber. 452 pp. John Wiley & Sons, Inc., New York, 1956. \$10.50. Reviewed by T. Teichmann, Lockheed Missile Systems Division.

The study of linear circuits of various kinds using transform methods has been assiduously cultivated in recent years both by engineers and by practically minded mathematicians. The tendency has been more and more towards an intensive discussion of the behavior of the various transfer functions, particularly in relation to stability problems; the actual physical behavior of circuits has been correspondingly neglected. It is therefore refreshing to find a volume such as this, in

OPERATIONS RESEARCH *Incorporated*

Offers important opportunities to physical scientists with creative research abilities who are interested in

Creating, improvising, and adapting methods of scientific analysis for complex industrial and military operations

Sharing in the growth of a company managed by and for scientists

Enjoying an atmosphere of professional freedom, independent creativity and immediate recognition

The social, recreational and intellectual advantages of living in the metropolitan area of Washington, D. C.

Joining a young aggressive team of Physicists, Physical Chemists, Mathematicians and Engineers with varied backgrounds in theoretical and experimental research who are now solving challenging and important problems in industrial and military operations research

You are invited to send your inquiry or resume to

**OPERATIONS RESEARCH, INC.
8485 Fenton Street
Silver Spring, Maryland**





* ULTRA LOW capacitance & attenuation

WE ARE SPECIALLY ORGANIZED
TO HANDLE DIRECT ORDERS OR
ENQUIRIES FROM OVERSEAS
SPOT DELIVERIES FOR U.S.
BILLED IN DOLLARS—
SETTLEMENT BY YOUR CHECK
CABLE OR AIRMAIL TODAY



NEW 'MX and SM' SUBMINIATURE CONNECTORS
Constant 50 Ω –63 Ω –70 Ω impedances

TRANSRADIO LTD. 138A Cromwell Rd. London SW7 ENGLAND

TYPE	$\mu\text{mf/ft}$	IMPED. Ω	O.D.
C1	7.3	150	.36
C11	6.3	173	.36
C2	6.3	171	.44
C22	5.5	184	.44
C3	5.4	197	.64
C33	4.8	220	.64
C4	4.6	229	1.03
C44	4.1	252	1.03

CABLES: TRANSRAD, LONDON

RESEARCH ENGINEERS

The Armour Research Foundation has a limited number of top level research positions for individuals possessing a high degree of ingenuity and imagination. These positions provide excellent advancement opportunities into management or senior research positions, of equivalent rank, in the following general fields:

**Aerophysics
Combustion
Heat Transfer
Thermodynamics**

**Compressible and Incompressible Flow
Weapons Systems Analysis**

Only individuals capable of applying their proven research abilities within the above fields will be considered. Excellent educational and other employee benefits. Salary open. Send resume to:

Mr. J. A. Metzger
ARMOUR RESEARCH FOUNDATION
of Illinois Institute of Technology
10 West 35th Street
Chicago, Illinois

which the transient responses of large classes of circuits are actually exhibited and discussed in the time domain, though of course transform methods are used extensively (and effectively) throughout. Since the impulse response (in the time domain) is a linear transform of the transfer function (in the frequency domain), this method of approach illuminates the physical significance of various types of transfer function behavior.

The book opens with a description of Fourier and LaPlace transforms, buttressed by a mathematical appendix on functions of a complex variable. Examples are given of the transforms of several types of pulses, and sampling effects are discussed.

The next four chapters are then devoted to two-terminal-pair networks (hereafter referred to as fourpoles, the due qualification being stated). The relation between the impedance matrix and the general fourpole parameters is established and used extensively in the subsequent development. The transient behavior of simple fourpoles is discussed, including modulation problems. Wave filters are then discussed both in the frequency and time domains, and examples given of analogous mechanical and thermal problems. The problem of distortion and of idealized networks is dealt with in a most perspicuous way, tying together K pfm ller's studies of idealized networks, the Bayard-Bode relationships, and corrections for distortion. The final chapter of this section is concerned with active fourpoles (vacuum tubes, transistors, and amplifiers).

The remainder of the book is devoted to transmission lines. The transmission equations are derived in several ways, and the approximations involved are discussed. This is followed by a description of the behavior of traveling waves on lossless lines, and also a standing wave analysis of such lines. An extended discussion is then given of the telegraph cable, containing a careful analysis of the mathematical details, which illustrates clearly the application of LaPlace transform techniques to diffusion type equations. The final chapter deals with the effect of small losses in transmission lines.

Worked out examples are interspersed throughout the text, and each chapter is followed by a number of problems. The format of the book is pleasant and the style lively. It should prove both useful and interesting to anyone having any technical contact with circuit theory.

Reports on Progress in Physics. Vol. 19, 1956. Editor, A. C. Stickland. 367 pp. The Physical Society, London, England, 1956. £2 10s. Reviewed by S. F. Singer, University of Maryland.

Every year the Physical Society of London issues a volume containing a number of specialized review papers, each in itself complete, covering the broad field of physics, including applied physics and often geophysics. Because of the wide range of topics it is extremely difficult to write a critical review; it is also very unlikely that many persons would be interested in all of the papers. One, therefore, either subscribes to