books reviewed

Handbook of Noise Control

Edited by Cyril M. Harris. Published (1957) by McGraw-Hill Book Co., 330 W. 42 St., New York 36. 1005 pp., illus., graphs, tables. 6 by 9-in. Price $12.50.

A relatively new phrase, noise control, has been firmly establishing itself in our acoustical terminology. A journal using this title has been in publication for several years. Now a handbook bearing the same name has appeared in print for the first time.

An impressive list of authors in acoustics and allied fields have contributed their best, under the guiding hand of editor Harris, to a mighty volume embracing 40 different sections of material mainly devoted to the control of noise, defined as unwanted sound.

For many of us, it is generally our practice to consult texts on architectural acoustics whenever a noise problem presents itself. In such references are found the usual tables of absorption coefficients, transmission losses, and similar data necessary to achieve a solution. These items are all here, and more, included under such titles as Acoustical Materials; Control of Solid Borne Noise; Transmission of Noise Through Walls and Floors; Propagation of Sound in the Open Air; and Acoustical Filters and Mufflers.

But apparently this is just a small part of noise control. Some things must be attacked at the source, so we find considerable technical attention paid to topics such as Gear Noise; Bearing Noise; Electric Motor and Generator Noise; Reduction of Noise of Iron-Core Transformers and Chokes; Fan Noise; Heating and Ventilating System Noise; Compressor; Household Refrigerator, and Room Air Conditioner Noise; and Noise in Water and Steam Systems. Examples are often given, however, which are surprisingly nontechnical, and which hit close to home. There is an illuminating discussion on the use of pressure relief stubs near faucets to eliminate water-hammer.

The worst offenders among external noise sources are land vehicles and aircraft. The sound fields accompanying them and measures for reduction are treated at length in sections entitled Automobile Noise (including trucks, buses, and motorcycles); Noise in Rail Transportation; Aircraft Noise Sources; and Aircraft Noise Control. The advent of the jet aircraft has brought us some of the loudest sounds yet to be encountered on or off the ground. Jet nozzle exhaust noises and the frightening sonic boom are simply analyzed in the latter sections in a way as to satisfy the most curious.

Many noises are closely associated with mechanical vibration at some stage or other in their transit to the ear. Sections on Principles of Vibration Control; Vibration Isolation; Vibration Damping; and Vibration Measurement are devoted to this aspect. Emphasis is placed on the intelligent use of the flexible mount. The overall picture, involving both vibration and sound is treated under Systems Considerations in Noise Problems.

It is interesting to note the trend toward octave band measurement of noise as a compromise between detailed spectrum analysis and the single-valued meter reading, with sections on Instruments for Noise Measurement and Noise Measuring Techniques covering all phases in adequate fashion.

The human ear as a sound detector, its limits, frailties and variable characteristics are handled well in a series of chapters: The Hearing Mechanism; The Loudness of Sounds; Audiometry Testing in Industry; Hearing Loss Resulting From Exposure; and Ear Protectors. Of considerable interest are some new computational procedures for estimating the loudness of noise.

The impact of sound and vibration on man is continued in several informative chapters such as, Effects of Noise on Speech; Effects of Vibration on Man; Effects of Noise on Behavior; Community Reaction to Noise; and Community Noise and City Planning.

It seems that man's effort to control noise is rapidly extending outside the technical field as indicated by the number of chapters treating legislation. Legal Aspects of the Aircraft Noise Problem; Legal Liability for the Loss of Hearing; Anti-Noise Ordinances; and Noise Control Requirements in Building Codes show the restraints being imposed on those who would disturb the peace or menace the health of the individual and his community.

Finally (and in line with the popular philosophy of "When all else fails, consult the instructions"), it should be mentioned that the two initial chapters deal with basic concepts and definitions under the titles of Introduction and Terminology; and Physical Properties of Noise and Their Specifications. The reader will no doubt be happy to refer occasionally to these in connection with researches on the more specific sections.

This is a most comprehensive collection of noise data. Although much of it consists of established textbook material, there is a considerable amount which, up to this time, has been presented only in technical papers. There is even a fair portion of previously unpublished work which alone should make this volume a wanted item on the bookshelf of the sound engineer.—*Floyd K. Harvey*, Bell Telephone Laboratories, Murray Hill, N. J.

Proceedings of the National Electronics Conference Vol. 13

Published (1958) by National Electronics Conference, Inc., 84 East Randolph St., Chicago 1. i-xiv + 1066 pp. (incl. numerous charts, diagrams and tables) 6 by 9-in. Price $7.50

This year's issue of the annual publication follows the pattern made familiar by the previous volumes. Once again the range of subjects is wide, the editing and format excellent and the entire result a proper companion to its predecessors. Of special interest to the readers of this Journal should be the unusually large number of papers directly applicable to Television and Motion Picture Engineering, with eleven papers falling in this category.

Some specific articles which might be singled out are, "Recent Advances in Luminescence" by H. F. Ivey; "Beam Landing Errors and Signal Output Uniformity of Vidicon Tubes" by R. G. Neuhauser and L. D. Miller; "A New Image Orthicon Employing a Multi-Alkali Photocathode for Color Cameras" by P. W. Kaseman; and "Airborne Closed Loop TV System" by A. F. Flacco. Worthy of special note is "Recent Advances in Luminescence" which is an excellent comprehensive survey of this field, and should be of value to both the novice for its general information and to the experienced engineer for its specific data and elaborate bibliography. This type of article retains its usefulness through the years while many limited specialized articles are obsolete before they are printed.

A relatively small percentage of the articles in this volume are of the latter type, which is a commentary on the care with which the papers are selected, and the generally high technical level of the presentation. Of course, as always, the encyclopedic nature of the material causes limited areas to be applicable to any one specialty. However, as noted above, the large number of television and sound oriented articles, in addition to the high percentage of related articles on such topics as transistor circuits and general circuit design and synthesis should make this volume of more than usual interest to the reader of this Journal. A few outstanding examples of the latter type are "Modern Practices in Noise Control" by R. W. Benson; "Transistor Multiple Loop Feedback Amplifier" by F. H. Blecher; "Feedback Amplifier Design by Forward Equivalent Circuits" by L. M. Vallese and "A, B, C, D-Network Design Easy as Pie" by L. Weinberg, with the facetious title of the last belying its value as a general survey and reference article.

Other topics covered which may be mentioned in passing are computers, microwaves, servomechanism and electron tubes, with the list still not complete.

In summary, this volume does not lower the high standards set by previous volumes in the series, and does contain a larger number of articles pertinent to Television and Motion Picture Engineering than has been the case in the past. On this basis, if previous volumes have been found useful, this one should be considerably more valuable and is recommended to the reader.—*S. Sher*, General Precision Laboratory Inc., Pleasantville, N.Y.