

Moving-coil, piezoelectric, condenser, and electret microphones are represented, as are moving-coil and electrostatic loudspeakers. Two short papers (1924) on ribbon loudspeakers, translated from German, are properly included in Part II on microphones, their primary application. These immediately precede the clearly written 1931 paper by Harry F. Olson on the ribbon microphone. The loudspeaker group is introduced in Part VI by the 1925 classic of Chester W. Rice and Edward W. Kellogg entitled: Notes on the Development of a New Type of Hornless Loud Speaker. About this paper the late Professor Frederick V. Hunt in his 1954 book "Electroacoustics" (reprinted in 1981 by the Acoustical Society) wrote that it "made available immediately and to everyone a concise summary of the existing state of the transducer art, including as it turned out, the gist of a good many disclosures of prior work by others that had not yet become available in the form of published patent specifications."

Underwater transducers opens with the 1917 paper of H. J. W. Fay on the Fessenden oscillator, invented in 1912 by Reginald A. Fessenden and used in 1914 by Fessenden to echo range for the first time in water from an iceberg. The quartz crystal sandwich invented by Paul Langevin in France in 1918 is described next in his British patent of 1921. Transducer theory treats three basic subjects, motional impedance by A. E. Kennelly and George W. Pierce (1912), the electrical equivalent circuit of transducers by Warren P. Mason (1935) and the effective electromechanical coupling factor by Ralph S. Woollett (1966).

The book title is much more inclusive than the contents. It would have been helpful if the editor had clearly stated that the principal subject is electroacoustic transducers in air and water at sonic frequencies. To have broadened the scope to agree with the title would have required several times as many papers to be selected, although one by A. G. Webster on Acoustical Impedance and the Theory of Horns and of the Phonograph (reprinted as Paper 4 in Physical Acoustics, Volume 4 of the series) deserved another reprinting in the current Volume 14, rather than just called out as a reference. The listing of plans for future volumes would have helped bound the expectation of the reader. Also, the 1982 Volume 16 on Acoustical Measurements was certainly in preparation.

Since my net reaction to the book is strongly positive, I have saved those comments for last. One does not have to be a specialist in acoustic transducers to read, understand, and appreciate the quality and general clarity of the papers presented. Admittedly some of the equations included are for the benefit of the specialist, but most are basic and should be intelligible to the average physicist or engineer. Most of the papers in the book contain schematic drawings and photographs of transducers, graphs of transducer performance parameters and, occasionally, interesting circuit diagrams. I would highly recommend Hunt's book, mentioned above, as a companion volume and suggest the reading of the first chapter—all prose—as a preliminary. Finally, I would recommend that further volumes in the series on other types of Acoustic Transducers be planned, having noted that the

precedent for doing so has already been set by the three volumes to date in Musical Acoustics.

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Sensation and Perception

Harvey Richard Schiffman

John Wiley and Sons, New York, 1982 (2nd edition)
xii + 540 pp., Price \$24.95.

This book is intended as a text for upper-level undergraduate and beginning graduate courses in sensation and perception. In general structure and coverage, the second edition is very similar to the first. Following a brief introduction, classical psychophysical concepts are outlined. There follow a chapter on the orienting system, three on audition, two on somesthesia and kinaesthesia, two on the chemical senses, and seven on vision. Two further chapters deal with development issues, and one with the perception of time. A final brief chapter entitled "Sensation, perception and attention: Selected topics" has been added in the second edition. A glossary appears at the end of the book.

Although higher-level perceptual processes are discussed in detail in the chapters on vision, they are barely considered for the case of hearing (except for a section on speech perception). Auditory grouping phenomena and auditory pattern recognition receive virtually no consideration. The perception of timbre or sound quality is dealt with very briefly, and only in terms of the waveform in the steady state. Yet these are issues concerning which considerable progress has been made since the appearance of the first edition of the book in 1976. It is hoped that future editions will provide a more balanced treatment of auditory phenomena. On the positive side, the inclusion of a chapter dealing with time perception is an unusual and welcome feature.

In general, the book is well and simply written. Those searching for a basic textbook on sensation and perception should certainly consider it among the options now available.

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