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SELECTED BIBLIOGRAPHY ON THE EFFECTS OF HIGH-INTENSITY NOISE ON MAN

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NOTICE TO AUTHORS

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FOREWORD

ON THE SUBJECT of high-intensity noise the bibliography here presented and the bibliographies that accompanied Karl D. Kryter's *The Effects of Noise on Man*, published in 1950 as *Monograph Supplement 1*, together probably constitute the most exhaustive source of references to date.

As J. C. G. Loring points out in the *Preface*, he compiled this bibliography at the Psycho-Acoustic Laboratory under a contract with the Office of Naval Research, in response to a request from the National Research Council Committee on Hearing. It may be added that the Committee on Hearing has since been incorporated into the Armed Forces-National Research Council Committee on Hearing and Bio-Acoustics, and that the new committee's work is being supported by ONR through a contract with the Central Institute for the Deaf. Executive Secretary of the Committee is Hallowell Davis, Chairman of the former Committee on Hearing, who also supervised the ONR project within which the Kryter monograph was prepared at the Central Institute for the Deaf.

The Editor wishes to acknowledge the collaboration of Associate Editor S. Richard Silverman. He also wants to make special mention of the services of Elaine Pagel Paden, Assistant to the Editor, and of Judith Gilberg, who together performed the exacting and dull tasks of verifying citations, marking the manuscript for the printer and proofreading.

Grant Fairbanks

10 December 1953

PREFACE

THE MULTIPLE IMPACT of the air age has found one of its most dramatic expressions in the increasing power of aircraft engines. With increasing power goes increasing noise. As the amount of energy that is released increases, the effect of noise upon communications, physiological functions, and even operations, increases with it.

Noise has become a matter of serious concern to scientists and engineers, as well as to those interested in public, industrial, and military well-being. Even the public has come to view noise as a threat to its welfare, with the result that both civilian and military aviation have been faced with a public-relations problem. As recently as 1949, when K. D. Kryter wrote his monograph[1] on the effects of noise on man, the literature was concerned chiefly with noise no more intense than 120 db sound pressure level. The post-war years witnessed a flurry of interest in the effects of exposure to noise in the ultrasonic range. But it has become increasingly clear that it is the intensity rather than the frequency of the noise that has the greater effect on man's behavior and performance.

In 1952 the National Research Council Committee on Hearing recommended that a survey be conducted 'to gather information on the present knowledge of, and present work in progress on, the subject of acoustic trauma. . . .' This project was undertaken by the Psycho-Acoustic Laboratory under its contract with the Office of Naval Research, and in November 1952 a set of recommendations was presented to the NRC Committee.[2] The Committee then proposed that 'the Psycho-Acoustic Laboratory be requested to prepare a selected bibliography on the biological effects of high-intensity vibrations for use in planning further research in this field.' It was in response to this proposal that the present bibliography on noise was undertaken.

The Psycho-Acoustic Laboratory has recently completed the compilation of a second edition of *A Bibliography in Audition*,[3] bringing it up to date through 1951. From that list, and from readily available journals published in 1952 and 1953, the selected bibliography on noise has been compiled. Kryter's excellent monograph has served as a model, and its bibliographies have served as a starting point for the present bibliography.

The present bibliography differs from the bibliographies of Kryter's monograph in several respects. First, it does not include them, but constitutes, in-

[1] K. D. Kryter. The effects of noise on man. *JSHD*, 1950, Monogr. Suppl. 1. Pp. 95.

[2] W. A. Rosenblith, D. E. Wheeler and H. Smedal. Problems of high-intensity noise: a survey and recommendations. Harvard University, Psycho-Acoustic Laboratory, Report PNR-133, 30 December 1952.

[3] To be published by the Harvard University Press.

stead, an up-to-date supplement. Second, in the compilation there has been greater dependence on secondary sources. Many articles have been included that the compiler has not seen; some have been seen in abstract only. Third, in comparison with Kryter's monograph, there are many more references to intensities above 120 db. Fourth, Kryter's four categories have been increased to seven. The organization of the present bibliographies follows, together with a brief explanation of the type of material contained in each category.

I. *Deafening Effects of Noise* is similar to Kryter's category of the same name. It includes the effects of exposure to sound, particularly intense sound, on thresholds and auditory functions. Two sub-groups cover (A) the effects of noise on animals and (B) the effects of blast.

II. *Effects on Communications* contains recent studies on the effects of noise of various levels on the intelligibility of speech. Few of the studies discuss the effects of noise levels above 120 db.

III. *Aural Protective Devices and Preventive Measures* includes studies on various kinds of ear-protective devices, such as insert-type ear plugs, external ear cushions, helmets, etc. Many of the papers are concerned with measures for protection in noisy locations, also with so-called predictive tests, i.e., tests designed to permit the selection of noise-insensitive individuals.

IV. *Effects on Human Behavior* contains studies on mental performance under the influence of noise, individual differences under the stress of intense sound, psychomotor efficiency, and annoyance value. Two representative studies on animals are also included.

V. *Physiological Effects* includes studies of the effects of noise on muscles, the circulatory system, metabolism, the central nervous system, etc.

VI. *Measurement and Reduction of Noise; Suggested Standards for Noise Control* includes studies on aircraft and industrial noise, with special emphasis upon control measures.

VII. *Noise Fields from Engines, including Jet Engines* deals with industrial noise produced by engines, and in particular jet engines and propellers.

VIII. *General References on Noise, Reference Works, Medico-Legal Aspects and Those Not Otherwise Classifiable.*

The author is indebted to Professor Walter A. Rosenblith, of Massachusetts Institute of Technology, for his valuable advice and help, and to Miss Dorothy Cohen, Technical Editor of *The Bibliography in Audition.*

Part I | DEAFENING EFFECTS OF NOISE

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