

# Books

## *An Introduction to Spin-Spin Splitting in High Resolution Nuclear Magnetic Resonance Spectra*

by John D. Roberts

W. A. Benjamin, Inc. . . . \$4.95

Reviewed by Eugene I. Snyder  
research fellow in chemistry

In his second book on nuclear magnetic resonance spectroscopy, John Roberts, Caltech professor of chemistry, bridges the gap between a formal quantum mechanical treatment of nuclear magnetic resonance spectral analysis and its complete omission. Assuming no prior knowledge of quantum mechanics or the mathematics thereof by the reader, Prof. Roberts guides him with a gentle, but firm, touch from some simple tenets of quantum mechanics through their application to spectral analysis. This

is done with the clarity, so seldom attained, which befits a worker with extensive experience in the field.

The many physical interpretations and problem sets liberally interspersed throughout the book will aid immeasurably in bringing a practical, working knowledge of nuclear magnetic resonance spectroscopy to those who are novices, and greater understanding and insight to those—particularly organic chemists—using this technique as an analytical tool.

## *Man and Dolphin*

by John C. Lilly, M.D.

Doubleday . . . . . \$4.95

“Within the next decade or two the human species will establish communication with another species: non-human, alien, possibly extraterrestrial,

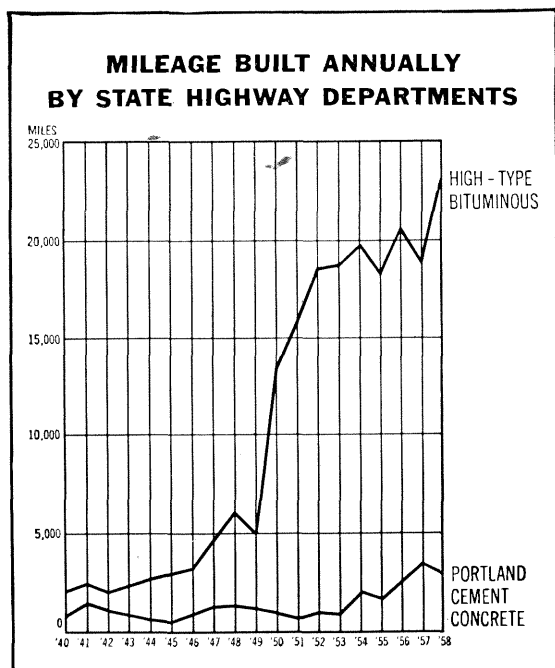
more probably marine; but definitely highly intelligent, perhaps even intellectual. An optimistic prediction, I admit. In this book I have summarized the basic reasons for my beliefs and presented some evidence for the validity of the prediction. In a way this is a crude, elementary handbook for those humans who are interested in the realization of such communication.”

This prefatory prediction sets the stage for Dr. Lilly's own absorbing account of his much-publicized research experiments with dolphins.

In searching for a species with which to attempt communication, John Lilly (Caltech '38) set out to find one with a brain equal to ours in size and complexity, with a body not too much larger than the human body, with a friendly attitude toward humans, and with the ability to vocalize within the same ranges and parametric sets of

*continued on page 8*

## Why America's state highway engineers give first choice to Modern High-Type Asphalt Pavement:



SOURCE: U.S. Bureau of Public Roads

The graph on the left shows you that in 1958 *alone* the use of high-type Asphalt pavement increased 618% over 1940. This is because advances in engineering know-how, in Asphalt technology and in the development of the mechanical paver have made modern, high-type Asphalt pavement the first choice of highway engineers. Its more economical construction and low maintenance costs have saved many millions of tax dollars and kept America's wheels rolling.

Recent engineering advances have developed new, DEEP STRENGTH Asphalt pavement which will provide even better performance and greater pavement economy in the future.

The tax savings possible will amount to millions of dollars and will mean more and better local and interstate roads for our nation.

Your future success in civil engineering can depend on your knowledge of modern asphalt technology and construction. Send for your free "Student Kit" about Asphalt technology. Prepare for *your* future now!

*Ribbons of velvet smoothness . . .  
ASPHALT-paved Interstate Highways*

**THE ASPHALT INSTITUTE**  
Asphalt Institute Building, College Park, Maryland



Gentlemen: Please send me your free student portfolio on Asphalt Technology and Construction.

NAME \_\_\_\_\_ CLASS \_\_\_\_\_  
 ADDRESS \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_  
 SCHOOL \_\_\_\_\_

The most-demanded portions  
of the 12-volume  
*High Speed Aerodynamics*  
and *Jet Propulsion* series, now  
made available at modest cost

# PRINCETON AERONAUTICAL PAPERBACKS

Coleman du P. Donaldson, General Editor

**1. LIQUID PROPELLANT ROCKETS**

*David Altman, James M. Carter, S. S. Penner, Martin Summerfield.* 196 pages. \$2.95

**2. SOLID PROPELLANT ROCKETS**

*Clayton Huggett, C. E. Bartley, Mark M. Mills.* 176 pages. \$2.45

**3. GASDYNAMIC DISCONTINUITIES**

*Wallace D. Hayes.* 76 pages. \$1.45

**4. SMALL PERTURBATION THEORY**

*W. R. Sears.* 72 pages. \$1.45

**5. HIGHER APPROXIMATIONS IN AERODYNAMIC THEORY**

*M. J. Lighthill.* 156 pages. \$1.95

**6. HIGH SPEED WING THEORY**

*Robert T. Jones, Doris Cohen.* 248 pages. \$2.95

**7. FUNDAMENTAL PHYSICS OF GASES**

*Karl F. Herzfeld, Virginia Griffing, Joseph O. Hirschfelder, C. F. Curtiss, R. B. Bird, Ellen L. Spots.* 149 pages. \$1.95

**8. FLOW OF RAREFIED GASES**

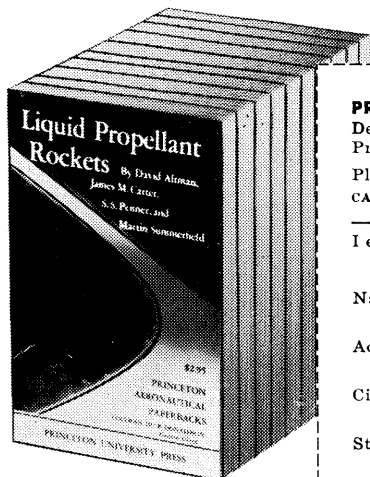
*Samuel A. Schaaf, Paul L. Chambre.* 63 pages. \$1.45

**9. TURBULENT FLOW**

*Galen B. Schubauer, C. M. Tchen.* 131 pages. \$1.45

**10. STATISTICAL THEORIES OF TURBULENCE**

*C. C. Lin.* 68 pages. \$1.45



**PRINCETON UNIVERSITY PRESS**

Dept. ES-9,  
Princeton, N. J.

Please send me the PRINCETON AERONAUTICAL PAPERBACKS here indicated by number:

I enclose \$\_\_\_\_\_ in check or money order.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_

State \_\_\_\_\_

**Books . . . continued**

variables that the human uses.

The dolphin seemed to meet all these requirements, and in 1955, at Marineland, Florida, Dr. Lilly began his experiments with these creatures. In 1959 the work was transferred to the Communication Research Center, set up by Dr. Lilly in St. Thomas in the Virgin Islands.

In his book Dr. Lilly describes this fascinating project in colorful detail and in a straightforward no-nonsense manner that not only makes for fine reading, but puts this unique research back into the perspective that has been missing from most of the press accounts.

*Symbols, Signals and Noise*

by J. R. Pierce

Harper & Brothers . . . . . \$6.50

Reviewed by David Braverman  
asst. professor of electrical engineering

This well-written book which discusses the origins, theoretical basis and applications of the theory of information, developed by Shannon in 1948, forms an excellent introduction to modern statistical communication theory. The book leads one from the early work in telegraphy, through the derivation of Shannon's model of the communication system, to the consequences and applications of information theory. The subject matter of the book forms the cornerstone of modern statistical communication theory.

The author has undertaken a difficult task in attempting to write a book on information theory for the general public, but for the most part he has succeeded.

Dr. Pierce received his BS (1933), MS (1934), and PhD (1936) degrees from Caltech. Because of his work in information theory and his close associations with the pioneers of the theory at Bell Telephone Laboratories, Dr. Pierce is well qualified to write an exposition of the theory.

The book is especially recommended for the scientist or lay person with a knowledge of mathematics and a desire to learn of the applications, origins, and limitations of information theory. Anyone looking for an introduction to the broad field of modern statistical communication theory would also find the book interesting.