

ming, humming, boings, bonks, and so on. Many fish sounds can be heard in the air above water surface. M. P. Fish quotes an account written in 1878 about how annoying catfish choruses can be in the night on the Gulf of Mexico.

Systematic studies with electronic equipment are relatively recent. Hence many sounds are not identified as to origin. For example, G. M. Wenz tells about the "carpenter" sounds the hydrophone picks up in many different places. Sometimes one carpenter is, and usually several are, working and creating a din that becomes a nuisance. He also discusses sea lion barks which sometimes change into woofs and yelps. The question he poses is: How is the bark produced underwater?

Three papers describe work on the famous 20-cycle, repetitive signals heard off Cape Cod and off the Bermudas. Schevill, Watkins, and Backus in their paper associate these signals with fin whales. R. A. Walker of Bell Telephone Labs gives the results of a 15-month study. The 20-cycle signal is a one-second pulse repeated every ten seconds. Pulse trains may last from 6 to 25 minutes, often repeating for hours, and come from sources having power between 1 and 25 watts and moving randomly with speeds typically two or three knots. He successfully pinpointed hundreds of such sources. Each seemed to have characteristics of a biological object such as a large whale.

Echo location and communication in whales and porpoises, among other

cetaceans, is dealt with in a separate section of five papers on Special Acoustic Problems in Cetacean Research. Here is fascinating empirical information on the outcries, moans, shrieks, and squeals of cetaceans along with systematic data which reaches a climax in the paper by Dreher and Evans on Cetacean Communication. These authors recorded the vocabulary of porpoises and whales and tell how they were able to distinguish, for example, between fright, feeding behavior, and baby-talk language.

Aside from its value to specialists in life sciences, this work has a broad scientific appeal. I recommend it highly. The format is superb: glossy paper, good documentation, author index, subject index, table of contents, and generous illustrations.

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QUANTUM ELECTRODYNAMICS

By A. I. AKHIEZER, *Physico-Technical Institute, Academy of Sciences, U.S.S.R.*; and V. B. BERESTETSKII, *Division of Physical and Mathematical Sciences, Academy of Sciences, Moscow, U.S.S.R.* Edited and Translated by G. M. VOLKOFF, *Department of Physics, University of British Columbia, Vancouver*. The only complete translation authorized by the authors of their revised and enlarged second Russian edition. Volume XI in the Interscience Monographs and Texts in Physics and Astronomy. 1964. In press.

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By G. RICKAYZEN, *University of Liverpool*. Describes the microscopic theory of superconductivity from the basic ideas to the most sophisticated recent developments. Includes a full account of the theory due to Bardeen, Cooper and Schrieffer, with emphasis on the simplest ideas and models. More advanced techniques are discussed in several appendices. The book features full discussion of: the necessary mathematics required for treating many-body problems; the theory of metals, the effects of the electron-phonon interaction; tunneling into superconductors; transport phenomena; and collective modes. Volume XIV in the Interscience Monographs and Texts in Physics and Astronomy. 1965. Approx. 480 pages. Prob. \$22.50.

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By ERNEST RABINOWICZ, *Massachusetts Institute of Technology*. Describes the principal phenomena that accompany friction and wear, and shows how material properties, in particular the surface energy/hardness ratio, influence them. The book features a systematic description of all mechanical interaction phenomena: friction, wear, lubrication, and adhesion. 1964. 244 pages. \$12.00.

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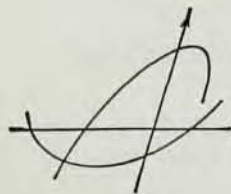
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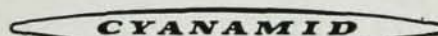
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