

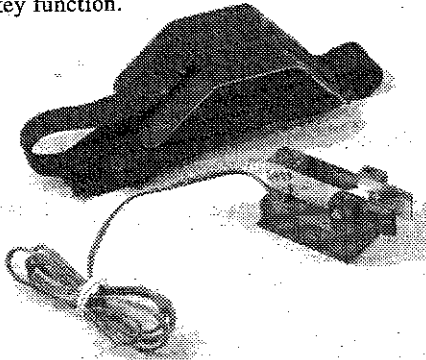
ward to the great promise of amateur digital satellite communication via the soon-to-come Phase 3D satellite. (For more information about digital satellites and Phase 3D, contact AMSAT-NA, 850 Sligo Ave, Silver Spring, MD 20910; 301-589-6062, <http://www.amsat.org>.)

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New Products

PADDLETTE KEYER PADDLE

◇ The Paddlette is a miniature iambic keyer paddle with portable and mobile ops and backpackers in mind. Its footprint is only 1x1³/₄ inches, and it weighs just 2 ounces. A magnetic hold-down feature keeps the key firmly in place. Another magnetic hold-down on the side of the key allows the key to be turned onto its side for use as a straight key. A mating adhesive-backed magnetic plate can be placed anywhere you want to place the key, and the Paddlette then mates with the magnetic plate. An extra magnetic plate is included with the Paddlette, to use either for another paddle location, or for the straight key function.



The paddle's electrical parts are solid brass and the hardware is stainless steel and brass. Fine-pitch screws and a hex wrench are provided to adjust the contact spacing. The 56 threads/inch pitch of the adjusting screws allows very fine spacing adjustments to be made quite easily.

A knee mount is also available, for hams who want a knee-key for mobile or portable use. The knee mount is attached to the user's leg via an elasticized belt and Velcro fastener, and the Paddlette attaches to the knee mount via the paddle's magnetic base.

Complete instructions that come with the Paddlette explain how to adjust the contacts, wire the paddle to your keyer and affix it using the self-adhesive plates.

Prices: Paddlette, \$38.50; knee mount, \$9.50; Paddlette and knee mount, \$44.95. All prices include shipping and handling. Paddlette Co., Box 6036, Edmonds, WA 98026; tel 206-743-1429. **QST**

New Books

BUILD YOUR OWN INTELLIGENT AMATEUR RADIO TRANSCEIVER

By Randy Lee Henderson

Published by McGraw Hill, 11 W 19th St, New York, NY 10011. First edition, first printing; hardcover 7¹/₂x9¹/₂ in, 356 pp, B&W illus, ISBN 0-07-028263-3, \$39.95. Softcover available, ISBN 0-07-028264-1, \$29.95

Reviewed by Paul Danzer, N111
Assistant Technical Editor

◇ When I first saw this book, I could not imagine why anyone would want to devote 350-plus pages just to the design of one transceiver. A few pages into the book, the answer was clear—the design serves as a vehicle for a theoretical and practical discussion of the many aspects of modern, digital-based transceivers. If you want to know how we can get clean analog RF signals out of a piece of equipment based on 1s and 0s, this book will certainly help you find out.

Randy Henderson, W15W, was an editor some years ago at the ARRL. This book mirrors the ARRL's approach—to tell where to get parts for a project and to offer practical suggestions about how to get small quantities from industrial distributors.

This title of this book *should be You Are Intelligent Enough To Build Your Own Amateur Radio Transceiver*. It pulls no punches, and right in the introduction encourages the attitude "Yes I can!" instead of "I can't get the parts." Crystals are a good example. For filters, the author uses available computer clock crystals to make very practical filters.

Chapter 1 includes a number of good circuits you might want to copy for other AF projects. When an unusual semiconductor—not a standard transistor or diode—is used, an explanation of the semiconductor accompanies the circuit description. The level of detail for would-be constructors is very high. There is even information on making your own microphone from inexpensive Radio Shack electret parts. I can personally confirm the design—I built a similar one some years ago as a lapel microphone for my H-T, and listeners often report that they can "hear the birds overhead."

The text is rife with practical construction suggestions. If you have never before built a BFO or an analog oscillator, it might come a shock when your little beauty changes frequency as your hand comes close. Once again, W15W anticipates the problem for new constructors, and suggests solutions.

PC-board layouts and parts-placement drawings accompany most circuits. PC boards tend to be just a few inches on each side, reflecting the modular approach to the transceiver. If the text describing a *trifilar* wound toroid transformer is not completely clear to you, don't worry! A good drawing illustrates how to wind (and connect) the three wires.

For those who consider themselves well-versed in home-brew techniques—well, you

haven't seen anything yet! For an example of the author's "can do/make do" approach, take a look at the cord-and-pulley dial-reduction mechanism attached to the tuning control. Have you ever used the jar-top from a salad dressing (*Kraft Miracle Whip*) jar as a pulley? If you follow this project from start to finish, you'll also fabricate your own optical encoder.

Chapter 3 includes describes how to construct a six-crystal sideband filter using off-the-shelf parts. Instead of assuming that you are willing to buy 20 crystals then select the best ones, the circuit is designed to allow trimming, thus permitting the use of stock crystals.

Many hams have seen application notes for power transistors that use transmission line transformers for coupling to the power amplifier stages. Even with the photographs that occasionally accompanied the schematic and text, often you were left with many questions—especially "Do I really know enough to build one of these?" Well, look no further. Chapter 5 devotes three pages to construction details.

As an introduction to the section on digital frequency synthesis, two old vacuum tube oscillators are shown. The 1930's vintage 6L6 crystal-controlled oscillator stands in beautiful contrast to the text and drawings—two pages later—on how a four-bit digital-to-analog converter operates. If you have no background in PLOs, VCOs and digital synthesis, have no fear. The book introduces each of these elements in enough detail that you will have a reasonable understanding before you are through reading the chapter.

The *intelligent* aspect of this transceiver is explained in detail. Chapters 12, 14 and 15 spell out how to use a 80C31 microcontroller as the heart of a three-chip computer. Program storage is in a 27C64 EPROM. Yes, you will have to burn your own EPROM, unless you can get one of the suppliers in the back of the book to do it for you. But, just you as you might anticipate, the book includes both a discussion and directions—certainly enough to get you started. The author discusses the basic assembly language instruction set for the 80C31, as well as many of the software routines. (Henderson suggests that readers contact him to obtain a copy of the software. A copy also will be posted on the ARRL Hiram BBS, 860-594-0306.—Ed)

The book includes two smaller projects that use many of the same techniques and complement the transceiver. However, the spectrum analyzer in chapter 17 requires an outboard oscilloscope (perhaps not an unreasonable approach), as does the swept-frequency generator for crystal filter evaluation in chapter 18. In chapter 19, hidden under the title "Power distribution and operating techniques," the author admits he is primarily a CW operator, and—let's not get too carried away here—his favorite mode is mobile CW running 3 W on 40 meters.

For reasons perhaps best known to the publisher, the book never mentions the author's Amateur Radio call sign—not even in his biography at the very end. But this is definitely a book by a ham for hams, and not just another technical tome destined to gather dust on your bookshelf. **QST**