

CRYSTAL SETS TO SIDEBAND

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FOREWORD, Revision 15

Dear Radio Amateur,

I began writing this book when I realized that my homebuilt station seemed to be almost unique on the air. For me, the education and fun of building radios is one of the best parts of ham radio. It appeared to me that homebrewing was rapidly disappearing, so I wrote articles about it for my local radio club newsletter. My ham friends liked the articles, but they rarely built anything. I realized that most modern hams lack the basic skills and knowledge to build radios usable on the air today. My articles were too brief to help them, but perhaps a detailed guide might help revive homebuilding. I have tried to write the book that I wish had been available when I was a novice operator back in 1957. I knew that rejuvenating homebuilding was probably unrealistic, but I enjoy writing. This project has been satisfying and extremely educational for me. I hope you'll find the book useful.

The book is about understanding and demonstrating the basic principles of electricity and radio communication. After 1970 electronics advanced into integrated circuitry and software. These technologies are obviously superior to old-fashioned equipment built with discrete parts. Unfortunately, they are increasingly difficult to understand in detail or assemble in your basement. Soldering tiny surface-mount chips and building your own multi-layer circuit boards can be almost impossible. Sometimes homebuilders can build digital electronics by assembling the largest-sized integrated circuits on 2-sided boards. Software to run imbedded microcomputer chips or interface with your computer can be downloaded from the Internet. Assembling digital projects and making them perform will be lots of work. Sadly, you will learn little about how they work. Data sheets for modern chips often have *hundreds of pages* of mind-numbing details. Did you learn a principle of physics when you eventually realized that pin 27 of IC6 must be grounded?

On the bright side, programming microcomputer chips can be fun. It's much like doing crossword puzzles or Sudoku. Each part of the program must perform without interfering with the rest of the puzzle. Even the most complex modern electronics still work on the basic principles discussed here. You'll often find that understanding basic electricity will allow you to fix everyday electrical troubles around your house, car and even your computer.

Modern book publishers don't print books that will have few readers. Because of its length and numerous color illustrations, this book is expensive to put on paper. Also, my readers often find errors and ask me questions. I answer questions as best I can and routinely add new articles. This is a "living book" and not a frozen volume on a library shelf. Versions of this e-book have been in circulation since 2002. This revision is #15 and features a new chapter on building VHF ham radios. The book appears on several websites and was even translated into Spanish. A few chapters have been translated into Polish and German. For several years the book has had its own website, www.qsl.net/kØiye. As of 2022 the website has had 16,200 visits.

Best of all, readers send me pictures and schematics of their projects. Many of my projects were suggested by readers. As examples, Professor Jayaraman R., "Jayram" - VU2JN, inspired me with his homebrew antenna tuner. It works great and I'm still using it. The design was originally developed by Frits Geerigs, PAØFRI - hence the name "FRI-match." Ashish Derhgawen, N6ASD, renewed my interest in crystal sets, spark gaps and regenerative receivers. He also inspired the article on homemade electrolytic capacitors. His homemade, high capacitance, variable tuning capacitor made from a beer can is ingenious! Danny Bossuyt, ON1MWS, has an all-homebrew station with capabilities like mine. Like me, he has his own favorite technologies. Consequently, his construction and designs are delightfully different. He keeps tempting me to build "huff and puff" VFOs and loop antennas, but I have yet to give in. Jason Atkin, N6MKC, did some proof-reading for me. He pointed out to me that I have been misspelling "superheterodyne" since I was in junior high school. This book is definitely a group project. So, what are *YOU* building? Send me a picture! Inspire me!

Thanks to the interest in QRPs, our homebrewing hobby is rapidly growing. Because of this book, I have received e-mails from homebuilders all over the world. E-mail communication between hams is much like ham radio, but the reception is much, much better. Even if we homebuilders don't change the world, I guarantee you will enjoy learning radio technology and building your own equipment. It's the journey and the basement R&D that's fun, not possessing the best possible equipment. Someday I hope to meet you on the air ... or at least on the Internet. Hi!

73s, Frank Harris, KØIYE

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