Contents
August 2019  Volume 103  Number 8

9  Second Century
  Embracing Change in the Shack
30  Recreate or Modify PCB Layouts with Open-Source Software
  Dr. Erich S. Heinzle, VK5HSE
36  Build a Digital Voice Keyer Using Readily Available Software
  Jim Kauffman, W4IU
38  Optimizing Propagation on 630 and 2200 Meters
  Robert S. Logan, NZ5A
44  Product Review
  Mark Wilson, K1RO
  QRP Labs QCX CW Transceiver Kit;
  NEX-GEN XD4 Portable Spot II; Heck Kits LC
  Meter Kit; PBCgogo Prototype Printed
  Circuit Boards
62  DXpedition to Historic Tabarca Island
  Eliodor Tanislav, YO3AAS
65  A Pilgrimage to Mount Athos
  Peter P. Vekinis, LX1QF/KH6VP/SVØGV
68  Team Exuberance Energizes Young Hams
  Allison McLellan
71  Airborne Antenna Inspection
  James Hull, KK4EOU
72  The 2019 ARRL National Convention at Dayton Hamvention®
  Allison McLellan
85  The Hiram Percy Maxim 150th Birthday Celebration
  Operating Event
86  2019 ARRL International DX CW Contest Results
  Charlie Carroll, K1XX
88  2019 ARRL RTTY Roundup Results
  Jeff Stai, WK6I
90  The 2019 ARRL International EME Competition
90  The 2019 ARRL September VHF Contest
91  The 2019 ARRL 10 GHz and Up Contest
Digital and Mobile Editions
ARRL members can access the digital edition via a link at www.arrl.org/qst, download our iOS app from the iTunes Store, and download our Android app from the Google Play Store.

Interested in Writing for QST?
www.arrl.org/qst-author-guide
email: qst@arrl.org

QST (ISSN:0033-4812) is published monthly as its official journal by the American Radio Relay League, Inc., 225 Main St., Newington, CT 06111-1400, USA. Periodicals postage paid at Hartford, CT, USA and at additional mailing offices.

POSTMASTER: Send address changes to: QST, 225 Main St., Newington, CT 06111-1400, USA Canada Post: Publications Mail Agreement #50-09/1437. Canada returns to be sent to IMEX Global Solutions, 1501 Morse Ave., Elk Grove Village, IL 60007.

US & Possessions: Membership in the ARRL, including a 1-year subscription to QST, is available to individuals at $49. Licensed radio amateurs age 21 and under and the eldest licensee in the household may qualify for the rate of $24. Life Membership, including a subscription to QST, is available at $1,225.* Membership includes $21 per year for subscription to QST. Membership and QST cannot be separated. Libraries and institutions, $49 per year. Single copies $6.95.

International
To compensate for additional postage for mailing outside the US, the following rates apply:
Canada: Membership in the ARRL, including a 1-year subscription to QST, is available at $1,550.* Libraries and institutions, $62 per year.
All Other Countries: Membership in the ARRL, including a 1-year subscription to QST, is available at $1,900.* Libraries and institutions, $76 per year.
Membership without QST is available to the immediate family of a member living at the same address, and to anyone who is legally blind, for $10 per year.
Foreign remittances should be by international postal or express money order or bank draft negotiable in the US and for an equivalent amount in US funds.

Membership in the ARRL, including a 1-year subscription to Digital QST only, is available to Canadian and International members at $49.

QST®, DXCC®, VUCC®, DX Century Club®, ARES®, Amateur Radio Emergency Service®, Logbook of The World®, LoTW®, and ARRL, the national association for Amateur Radio®, are registered trademarks of the American Radio Relay League, Inc.


Payment arrangements available. Please write for details.
In order to ensure prompt delivery, we ask that you periodically check the address information on your mailing label. If you find any inaccuracies, please contact the Circulation Department at circulation@arrl.org or 860-594-0200 immediately. Thank you for your assistance.

Reprints and permissions: permission@arrl.org
Details of our Online Privacy Policy can be found at www.arrl.org/online-privacy-policy.
Telephone: 860-594-0200
Fax: 860-594-0259