**The American Radio Relay League**

The American Radio Relay League, Inc., is a noncommercial association of radio amateurs, organized for the promotion of interest in Amateur Radio communication and experimentation, for the establishment of networks to provide communications in the event of disasters or other emergencies, for the advancement of the radio art and of the public welfare, for the representation of the radio amateur in legislative matters, and for the maintenance of fraternalism and a high standard of conduct.

ARRL is an incorporated association without capital stock chartered under the laws of the state of Connecticut, and is an exempt organization under Section 501(c)(3) of the Internal Revenue Code of 1986. Its affairs are governed by a Board of Directors, whose voting members are elected every three years by the general membership. The officers are elected or appointed by the Directors. The League is noncommercial, and no one who could gain financially from the shaping of its affairs is eligible for membership on its Board.

"Of, by, and for the radio amateur," ARRL numbers within its ranks the vast majority of active amateurs in the nation and has a proud history of achievement as the standard-bearer in amateur affairs.

A *bona fide* interest in Amateur Radio is the only essential qualification of membership; an Amateur Radio license is not a prerequisite, although full voting membership is granted only to licensed amateurs in the US.

Membership inquiries and general correspondence should be addressed to the administrative headquarters:

ARRL
225 Main St.
Newington, CT 06111 USA
Telephone: 860-594-0200
FAX: 860-594-0259 (24-hour direct line)

**Officers**

***President:*** Rick Roderick, K5UR
P.O. Box 1463, Little Rock, AR 72203

**The purpose of *QEX*** is to:

1) provide a medium for the exchange of ideas and information among Amateur Radio experimenters,

2) document advanced technical work in the Amateur Radio field, and

3) support efforts to advance the state of the Amateur Radio art.

All correspondence concerning *QEX* should be addressed to the American Radio Relay League, 225 Main St., Newington, CT 06111 USA. Envelopes containing manuscripts and letters for publication in *QEX* should be marked Editor, *QEX*.

Both theoretical and practical technical articles are welcomed. Manuscripts should be submitted in word-processor format, if possible. We can redraw any figures as long as their content is clear. Photos should be glossy, color or black-and-white prints of at least the size they are to appear in *QEX* or high-resolution digital images (300 dots per inch or higher at the printed size). Further information for authors can be found on the Web at **www.arrl.org/qex** or by e-mail to **qex@arrl.org**.

Any opinions expressed in *QEX* are those of the authors, not necessarily those of the Editor or the League. While we strive to ensure all material is technically correct, authors are expected to defend their own assertions. Products mentioned are included for your information only; no endorsement is implied. Readers are cautioned to verify the availability of products before sending money to vendors.

Ron Diehl, NQ8W

# Perspectives

The breadth and depth of communication science and technology in amateur radio could not be better illustrated than in this issue of *QEX*. Each contribution reflects a distinct aspect of our craft: reinforcing our grasp of fundamentals, applying ingenuity to practical challenges, and exploring innovative technologies that promise to change the way we operate.

We return to one of the cornerstones of electronics. Inductance remains vital in everything from filters and baluns to transformers and resonant circuits, yet it is often not as well understood as resistance or capacitance. A clear treatment of its principles and applications helps experimenters design with confidence and connect theory to practice.

Another feature highlights the enduring value of logarithmic methods. Once embodied in mechanical slide rules and later in handheld calculators, these mathematical tools continue to shape circuit implementations today. Tracing their evolution reminds us that much of modern engineering rests firmly on foundations laid decades ago, and that the clever insights of earlier generations still influence our workbench.

Innovation also appears in the antenna realm, where amateurs often confront severe space and location restrictions. One author shows how a compact loop design can deliver surprising performance from a desktop environment. This type of creative engineering shows that physical limitations need not prevent world-class operating, and that effective solutions are often within reach of any determined experimenter.

Finally, we look ahead to the fast-growing impact of artificial intelligence. Neural networks, once confined to research laboratories, are now practical tools for recognizing and classifying the multitude of signals that fill the shortwave spectrum. By adapting these techniques to amateur applications, we gain powerful new ways to monitor, analyze, and better understand the radio environment.

From fundamental physics to emerging machine intelligence, from historical methods to clever solutions for everyday constraints, this issue underscores the remarkable diversity of amateur experimentation. Whether your focus lies in careful measurement, creative design, or forward-looking technologies, you'll find ideas here to challenge and inspire your own work.

## Writing for *QEX*

*QEX* is a forum for the free exchange of ideas among communications experimenters. *QEX* is published bimonthly.

Please send full-length *QEX* manuscripts, or share a Technical Note of several hundred words in length plus a figure or two, to **qex@arrl.org**. We pay $50 per published page for full articles and *QEX* Technical Notes. Get more information and an Author Guide at **www.arrl.org/qex-author-guide**. If you prefer postal mail, send a business-size self-addressed, stamped (US postage) envelope to: *QEX* Author Guide, c/o Margie Bourgoin, ARRL, 225 Main St., Newington, CT 06111.