

# Preface

## **“FOR CREDIBLE LASERS, SEE INSIDE”**

Shortly after the laser was invented, a now-defunct Sunday newspaper supplement published an article on “The Incredible Laser.” In breathless prose, it promised a future of laser weapons straight out of science fiction. Arthur L. Schawlow, a laser pioneer with a whimsical turn of mind who later shared the 1981 Nobel Prize in Physics, posted a copy of the article on the door of his laser laboratory at Stanford University, adding: “For credible lasers, see inside.”

I sometimes suspect more nonsense has been written about lasers than about any other “space age” technology of the last half of the twentieth century. Even the technologically unsophisticated have a general idea of what electronics and spacecraft can do. Ask them about lasers, however, and they may start spouting fantastic visions of lasers as deadly ray guns, or as magical devices that can do almost anything with light. These problems have eased somewhat with the spread of lasers in supermarket checkout systems and compact disc players, and the shift of military research away from high-energy laser weapons. However, they are being replaced with marketing hype that attaches the word “laser” to everything from sailboats to sporty cars. This book is about real-world lasers—to borrow the line from Arthur Schawlow’s door, “for credible lasers, see inside.” What you will learn about is the exciting world of real lasers—how they work and what they can do.

Back in the 1960s, one irreverent observer called the laser “a solution looking for a problem.” There was truth to that assessment, because scientists learned how to make lasers work before engineers learned how to put them *to* work. Now that has changed. Lasers are a part of our lives in more ways than we realize. Listen to a compact disc audio recording, and you hear crystal-clear music read by a laser beam. Make a long-distance phone call, and chances are excellent that your voice travels most of the way via laser beam. Go to the supermarket, and a laser beam will read the prices at the checkout

