ing!) had to be passed up, in order for me to succeed with those I had already selected as primary for me.

So, the occasional overview of computer technology and markets in your magazine is welcome as general information, but I would not like to see heavy emphasis on computer circuitry and accessories. The other magazines can serve that need. Finally, we will all have one clear choice in hobby and business electronics reading.
STEPHEN F. WILLEY
Sandpoint, ID

STEREO IMAGE EXPANDER

I am surprised that the two-part article, "Stereo Image Expander," by Joel Cohen (**Radio-Electronics,** June and September 1982) has not generated more comment in your letters department.

I decided to build the image expander, and am I ever glad! Over the years, I have tried to put as little between my ears and the source music as possible, concentrating on obtaining the best speaker systems that I could afford.

Without doubt, next to good speakers, the stereo image expander is the most important component in my system; the improvment in detail and clarity, the general sense of "being there" is just *awesome!* I have used the image expander with Infinity *Monitor IIa's* and with Sander's *Electrostatics,* with excellent results. Naturally, the sonic effect is most realistic with the *Electrostatics.* I can wholeheartedly recommend Mr. Cohen's device to any serious music listener.

One word of caution: In the article, Mr. Cohen explains the importance of carefully determining the optimum speaker placement for best stereo image, even without his device. That very important step must *not* be skipped over if the full potential of the stereo image expander is to be realized.

Thank you for an outstanding construction project and a fine magazine, and don't let the anti-computer people scare you off! I built the Mark 8 successfully in 1974 and enjoy the broad spectrum of your projects.
PAUL FARR
Olivenhain, CA

ACTIVE ANTENNAS

I much appreciate the compact and understandable editing you have done on the VLF Active Antenna articles so far. However, there are some nit-picking problems in labeling and reference to figures in the March 1983 **Radio-Electronics.** Figure 5 on page 67 is not labeled, so the references on page 72 are in error. Figure 5 should be labeled:
  5a—450kHz lowpass filter
  5b—100kHz series tuned (Loran-C)
  5c—60kHz series tuned (WWVB)
  5d—180 kHz parallel tuned (high Q)
  5e—180 kHz lowpass filter
Perhaps that could be corrected in a future article or note? There is also a minor error in Figure 3. The arrows pointing to the lines should be labeled $f1 - f2$ and $2f2 - f1$. That is because those lines refer to the magnitude of

the respective 2nd and 3rd order terms at that point, which, by definition, are the terms $f1 - f2$ and $2f2 - f1$ for that example.

I plan to have some circuit boards and the J310 JFET but no other parts available by about April 1st; if any interest develops, I have had correspondence already from some of my friends in the Longwave Club of America regarding the first article in your February 1983 issue. So, thanks again for the editing and effort of your staff here.
R.W. BURHANS
Athens, OH

R/C SERVOS

I just finished reading the article, "How To Interface R/C Servos" in the February 1983 **Radio-Electronics.** It gave me the idea to build a computer-controlled robot arm that can be programmed to move in a precise fashion pattern.

The application is for a motion-control camera system. My problem is that I need a simple way to program the movement of the servos. The only idea I have is to use the same system that Disney uses on their audio-anamatronics. That is: When they want to move an arm, they set it to one extreme of movement and set that position in memory. Then they move it to the other extreme and set that in memory. When they hit the RUN button, the arm moves smoothly from one extreme to the other.

Another way that I've heard it is done is to move the arm through its pattern manually; and the computer "remembers" the pattern. Do you know how either system works and/or an easy way to program a certain pattern in a servo-controlled arm? I would greatly appreciate your help.
RONALD VEDERAME   R-E