tween the fixed and moving booms should be 2-1/2 inches to provide adequate clearance.

The safety cable is an optional item. It is attached to the rear of the traveling boom so that when the antenna is stowed, it is attached to a ground anchor. The combination of the mast-spreader and the safety cable provides the equivalent of top-of-the-mast guying. This, together with the mechanical clamp, assures that as long as the tower stays up, so will the antenna. – *Norman Foot, WA9HUV, 293 E. Madison Ave., Elmhurst, IL 60126.*

CALCULATOR LOGIC

Technical Editor, *QST*:

While the "New Apparatus" section of *QST* is not really the proper place to discuss calculator systems per se, I was a bit disappointed that W1CER did not touch upon the difference between "algebraic" and "reverse Polish notation" types in his write-up of the National Semiconductor Novus 4510 (*QST* for August, 1975).

To anyone considering the purchase of a calculator for mixed expressions commonly (and not so commonly) used in electronics, I'd suggest considering an RPN type with register stacking.

Some rather misleading advertising has come forth by calculator manufacturers of late. In the case of some "algebraic" types, one cannot obtain the "sum of products" and the "product of sums" with equal facility. Nor can one really perform the functions as he would "write the formula."

The algebraic type literally solves by programming "two *plus* two *equals* four." The RPN type more nearly follows "the *sum* of two and two *is* four." Risking oversimplification, I believe herein lies the basic difference between the two types. In my opinion the latter (RPN) is much more versatile.

In RPN, the summing, multiplying or dividing functions are performed after the quantities are entered. This, along with the register stack capability as mentioned by W1CER, permits solution of most mixed-expression equations without resorting to memory storage and recall or writing down of intermediate answers. – *W. H. Fishback, W1JE, Old Comers Rd., Chatham, MA 02633.*

A TALE OF QRN – ELECTRIC FENCE STYLE

Technical Editor, *QST*:

Identifying and locating the interference from a pest-control fence charger was only the beginning of the problem. The arcing-ac roar that blanketed the 80-, 40-, and 20-meter bands sure was a puzzle. At first, the rhythmic 32-times-a-minute roar suggested something like a cross roads flasher or a neon sign, so I would cruise the business district looking for something with that beat. Although the interference was loudest along the power lines, I never chanced across a hot spot that would help to localize the source. Also, just about the time I was ready to sell the gear the interference would stop and maybe not show up for a week or two. And just when I would start to think it was only a passing nightmare it would come back.

Not having much luck with the business area, I thought I would drive in the opposite direction toward a pumping station at the edge of a ravine. I did notice the sound seemed to get a little louder as I passed a house on the next street from mine, so I decided to get a portable radio and explore that area on foot. I had been using the car radio up to then. Sure enough the sound increased as I got closer to the house. When I put the radio near the service feeder and the electric meter, the set nearly ripped itself apart. But after getting permission from the owners, I found nothing in the house, so I decided to follow the power line across the street.

Again, the portable radio roared in anguish as I passed a guy wire bracing the light pole. I asked the people in that house if the rhythmic roar had any familiarity, and the owner said he would check something in the basement. Lo and behold, he snapped a switch and the roar went completely away. He then went back down and turned the switch on. The roar started again. Then he escorted me to his greenhouse in the backyard and pointed to a monster with one red eye and one white eye balefully blinking 32 times a minute – his fence charger.

I had no trouble in convincing him to let me take the thing to the shop. There I wasted no time in wiring a line filter bypassed with a couple of .05-μF capacitors from a junk TV set. Then I hurried back to check the results. Well, the QRM was still there, but the line filter had knocked it down from a roar to about an S2, which was something I could work through. But I decided to probe further.

The fence consisted of a rectangle of aluminum wire about 100 feet on a side and about six inches off the ground. The wire was mounted on plastic "bobbins" nailed to a stump or fence post. Disconnecting the fence would stop the interference, so a cracked or leaky insulator came to mind. Following that idea, I opened the line at the first corner and left only the first 100 feet connected. No interference. When the second hundred feet was connected, the noise started up again.

Attempting to localize the trouble, I opened the second 100 feet in the middle, and again the noise disappeared. To further pinpoint the problem, the remaining 50 feet was opened in the middle and testing was done on the 175 feet. Connecting the additional twenty five feet brought back the noise.

I quickly nailed two new insulators to the fence posts and restrung that offending 25 feet of line on them and reconnected it to the main feed line. Guess what – the noise came back! This sure was a puzzler – with 150 feet of fence line not a trace of QRM but connecting the additional newly insulated line of 25 feet would bring on the noise. I repeated the test a dozen times, seeing and hearing the results but not believing it. By this time I was in such utter confusion I decided to retreat and regroup.

In an attempt to eliminate one variable, I got a power transformer from an old TV set, connected the ac line cord to the primary and wired a couple of terminal strips, so I could feed that fence line from the secondary either with 400 or 800 volts ac in series with a 25-kΩ resistor. I figured I could get some idea of the leakage current by reading the voltage drop across the resistor. I noticed that with 400 volts on the fence line there was no noise, but with 800 volts the noise came back. I also noticed that the leakage, if any, was too slight to give any indication. This was the total 400 feet of fence line.

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Technical Correspondence

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Wondering if 400 volts of ac through a 25-kΩ resistor was a big enough jolt to discourage any possum, beaver, or woodchuck from raiding the garden, I decided to test the fence for "joltage" myself since I was wearing rubbers. Not the slightest tickle. Back to the greenhouse to measure the voltage, thinking the series resistor had opened up, but no, the voltage feeding the line after the resistor still read 400, and shorting the resistor to ground gave an arc, so I knew the resistor was okay.

Taking the voltmeter to the far end of the line, I got a reading of about 80 volts, so I started to follow the fence line around, taking spot readings, in spite of my being able to see that the line was solid and clear of all objects. I finally arrived at the start of the line — and there it was! When the fellow had installed the line he had started by putting in a turnbuckle with the thought perhaps of keeping the line taut by taking up on the turnbuckle. In fact, I had noticed it before and had even turned it, since I am a turnbuckle turner by instinct. At any rate, corrosion was the cause of the problem — one eye of the turnbuckle read 80 volts and the other eye read 400. Jumpering the turnbuckle with a piece of aluminum wire cured the problem and the fence charger was put back in service. There's been no trace of noise since. P. S. Apparently it took the capacitance of 175 feet of fence line to cause the charger to break down the insulating effect of the corroded turnbuckle. — *John Labaj, W2YW, 12 Park Place, Elsmere, NY 12054.*