

Inside Ten-Tec

-- QRP innovators

It started with a telephone call in 1969. Al Kahn, former president of Electro-Voice, rang up Jack Burchfield, a design engineer for Bogan in New Jersey. Kahn

had moved from Michigan to Sevierville, Tennessee, after he left Electro-Voice, and he wanted to get back into the mainstream.

"Hey, Jack, come on down, and let's do something," he suggested in that first telephone call. To hear Jack Burchfield tell it, a second request wasn't needed. He had so much confidence in the man he had worked with when he himself was at E-V, that Jack immediately packed up his family and moved south to Tennessee.

Both admit that Ten-Tec, Incorporated, a company now well-known for its solid state ham gear, wasn't formed in the conventional manner. Once they got together in Sevierville, the pair set about adding some kind of manufacturing business to their tool and die shop already under construction. Hi-fi gear came to mind first, since both had a number of years of experience in the field.

Al says they rejected that idea pretty quickly because, "We both were sort of tired of it. After the pioneering days were over, the fun went



Dick Frey K4XU/W1FCC is Ten-Tec's chief engineer. The Century 21 is his design, and he's obviously proud of it. "It works great on the bands," Dick beams, and says he's finally doing the job he's always wanted to do. That seems to be the spirit throughout the Ten-Tec operation.

out of it." They agreed, instead, that they should pioneer some form of amateur radio equipment for the beginner. And the Power Mite line of solid state transmitter and receiver modules was born.

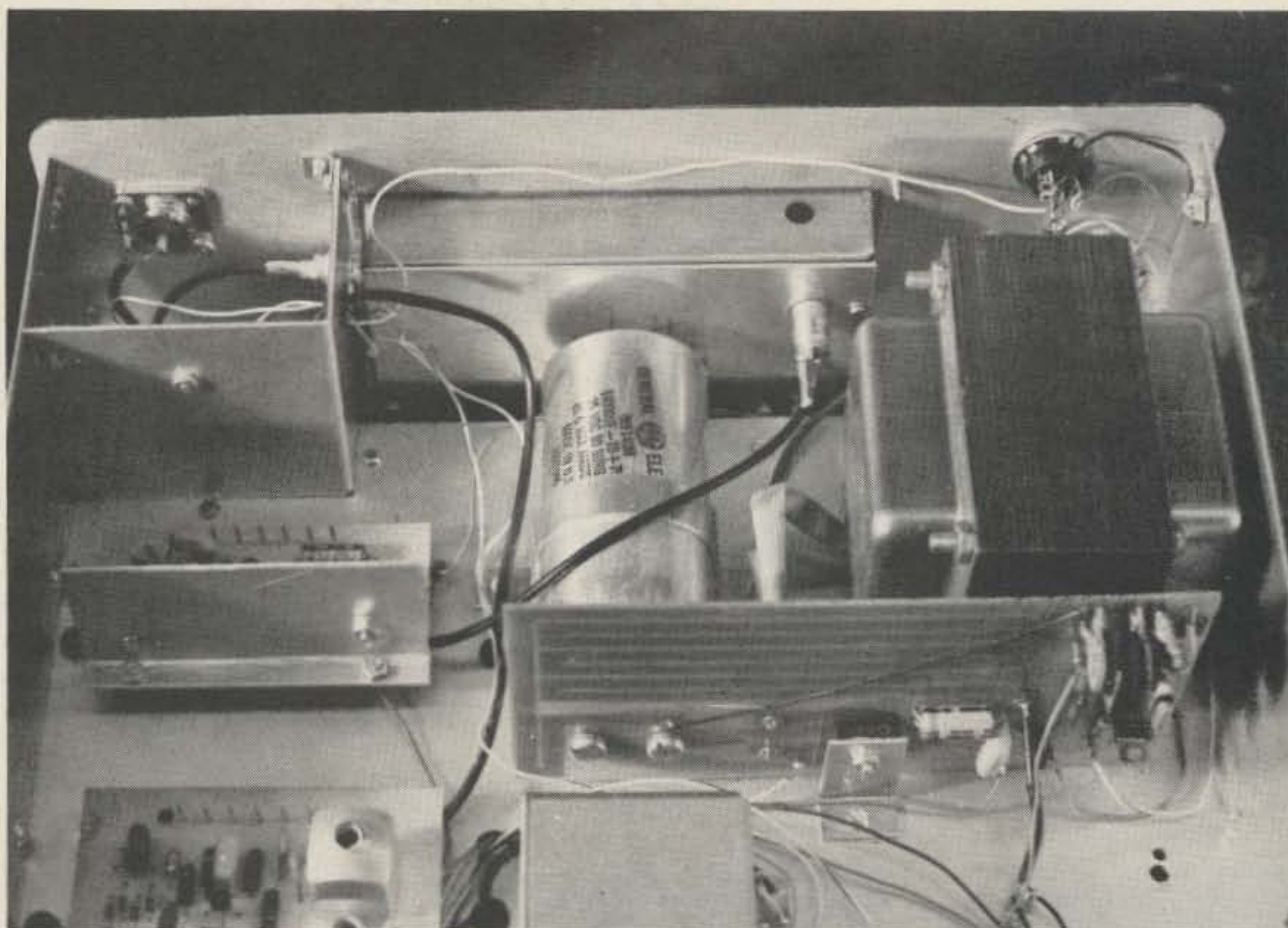
Low-power, low-priced solid state kits for the amateur market was an idea whose time just hadn't come, however. Ten-Tec sold fewer than five thousand of the units, and the ones they did sell went not to the beginner but to the guy with the S-line and the two letter call.

"If a Novice is going to work anybody with two Watts, he'd better have everything just about perfect," Jack said. "So most of the equipment went to the ham who wanted the challenge and to the QRP group."

Whatever the reason, sales volumes weren't high enough to support the young company, even though the multi-thousand square foot plant was paid for before production started. There were two founding principles they weren't ready to give up, though: low power and solid state design. The Argonaut was the next logical step, and acceptance was a little more general, even though it still ran only five Watts. This was in 1971. There were four more years of slim times before this guts-formed company became a force large enough to be reckoned with in the ham radio market.

"We're making money now," board chairman Kahn says. "We turned the corner with the Triton."

One reason for the slow financial success may have been the company's strict dedication to treating the ham fairly. After the Triton came out, for example, it was decided that some design changes should be made. But before marketing the new unit, Ten-Tec made sure all the dealers knew a new design was on the way, and they instructed their dealers to tell Triton purchasers a new box was coming.



Reminiscent of Ten-Tec's earliest beginnings, this latest design — a solid state CW transceiver — began with a telephone call. Ten-Tec founder Al Kahn K4FW says he got three calls in quick succession from people wanting a reasonably priced station for large Novice classes. The Century 21 was the result — all solid state, broadband tuning, 70 Watts input, direct conversion receiver. Complete with built-in power supply, the unit is selling for \$289.00. This is a prototype, but it's all there. Nothing is missing, even though there seems to be lots of room left over inside.



Ten-Tec President Jack Burchfield K5JU (left, standing) and Board Chairman Al Kahn K4FW (right, standing) watch as a technician gives one of the new digital Triton IVs an on-the-air check.



Even the power transformers for Ten-Tec equipment are wound at the Sevierville TN plant. A machine automatically inserts laminations in the transformer windings, then the whole affair is dipped in a sealant and put on a rack to harden.



This coil winder is a Ten-Tec innovation. The machine is attached to a digital turns-counter, which also is programmed to stop the winder after the proper number of turns has been applied to the form. It saves time and cuts down on errors.



The familiar red and black Ten-Tec logo ready to go on a Triton IV, or Argonaut, or keyer, or Century 21, or power supply, or . . .

"It probably cost us \$25,000 to \$30,000 to do it that way," Al says, "but we did it knowingly and it was the right move."

Design standards are strict, too. Until recently, Jack Burchfield was chief engineer as well as company president, and, with ten or fifteen years in the audio business, he naturally put some of that experience into the Triton — less than two per cent audio distortion, for example. Too, he says, computer predictions show a useful life on the solid state finals of 25 years. (In thousands of Tritons shipped, only 5 final transistors have failed.) Each vfo board is individually compensated for temperature stability after it is built. Toroids, coils, cabinets, chassis, circuit boards, dial mechanisms, transformers — they're all built under one roof in Sevierville, Tennessee.

What's the ham market like today? Challenging, Jack and Al agree, and changing. A ham doesn't have to be an engineer anymore to have functional equipment, and, Jack believes, more and more people are getting into ham radio "to talk to people, not to tinker." That's one reason Ten-Tec is offering sophisticated gear that's easy to operate — broadband tuning, for example, and instant break-in.

Supplying the ham market is a little like trying to please all the people all the time. It means keeping up with changing technology, but, moreover, staying abreast with what the buyer wants. To that end, a digital readout version of the Triton IV already is moving down the production line. Right behind it is a solid state, CW-only transceiver, which eventually will grow into a complete station package — keyer, tuner, antenna. A kilowatt solid state linear is on the back burner.

The Ten-Tec company presents an unusual dichotomy — state-of-the-art hardware and old-fashioned

philosophy. Even though starting with all solid state equipment probably slowed the company's development, Al and Jack are adamant that whatever they design will use no tubes. They're putting those modern circuit designs in almost futuristic enclosures.

They work hard, on the other hand, to maintain a small-company, personal approach to the business as they grow. Even with \$3 million in sales projected next year, there seems to be no worry about the company losing its personality.

"We did it at Electro-Voice," Al reflects. "It's just got to start at the top and go down."

Wherever it starts, the feeling is there. The people throughout the plant obviously take pride in their work. They're proud of the Ten-Tec equipment they're turning out. They seem to know a great deal about the work they perform, and there's a comradeship among all the staff that's heartening in these days when most people seem reticent in their relationships.

It's encouraging, too, to hear a ham equipment supplier promise to supply state-of-the-art gear based on a good engineering design, maintain a five-year warranty on the product, and answer every query and comment on the equipment.

Ham radio is growing and so are most companies supplying these new hobbyists. The hams at Ten-Tec have a move-carefully attitude — partly because they're not sure what direction ham radio may take in the future. But Al Kahn is sure of one thing: "Whatever you're doing, do it the best you can, and don't try to move into greener pastures until you can nail down your present job."

That idea pervades the Sevierville plant. It's as if everybody is walking around with a mouthful of nails and a big hammer. ■