

The Hallicrafters SX-43

With his usual story-telling skills, guest columnist Jim Hanlon takes us once again into the romantic past of amateur radio, this time to the years shortly after the end of WW II and his introduction to the wonders of the hobby through the medium of the Hallicrafters SX-43 receiver. While the SX-43 is just one more product of the extensive Hallicrafters line, and is rarely seen today, it appears to occupy a special place in our author's memories.—W2DGB

St. Xavier was in an old, downtown building dating back to 1831. I can vaguely remember climbing from the basement gym/auditorium up to the fourth floor on a concrete-and-metal staircase, then walking down the creaky wooden floor of a semi-dark hall with at least a twenty-foot ceiling.

By the time I, myself had actually achieved the lofty status of high-school in the fall of 1952, the SX-43 had been replaced by a more sturdy and serviceable Hammarlund HQ-129X. The older members of the club remembered that the SX-43 had been mechanically unstable, quite

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Hallicrafters announcement of the new SX-43.

likely to jump frequency if an exuberant freshman would stomp on the floor or slam the ham shack door.

My brother tells me that they had even tried to stiffen up the tuning capacitor mounts using Erector Set girders. The SX-43 also was reputed to choke up on the S9+ noise level that so often enveloped downtown Cincinnati. The HQ-129X, in contrast, was solid and wouldn't choke on a lightning bolt.

My next SX-43 encounter was in 1958 when I decided to set up a ham shack in my fraternity house room at Ohio State. Steinburg's in Cincinnati had a used SX-43 and Elmac AF67, and I could just cover the total price with my income tax refund. The SX-43 and I were good friends

for several years. It played the AM and FM broadcast bands for me while I was studying, probably more than it played the ham bands.

I remember that I added a 100-kc crystal calibrator to the back of the chassis and changed the tone control from a high-low toggle switch to a pot with its on-off switch wired to control the calibrator. I also had to replace the bandspread tuning dial cord.

I kept pulling the string tighter to get the backlash out of the drive, but past a certain point it didn't do any more good. It was then that I noticed that by pulling the string tighter I was just bending the chassis! No wonder the SX-43 was a little bouncy.

I traded the '43 in 1960 for a Gonset Super 12 converter, a Johnson Whipload 6 antenna loading coil and a PE-101 dynamotor so I could get on the air from my new Chevy. If anyone out there knows of an SX-43 with a calibrator and a tone control pot, please pat it on the head for me. Sometime in the early 1970s, I realized that I was actually collecting older ham radios rather than just hanging on to my gear because I couldn't afford the new stuff. I began keeping an eye out for another SX-43. Finally, in early 1998, I acquired one through a want ad in *Electric Radio* magazine. It came from California, and it was advertised to be in "ready for restoration" shape.

Unfortunately UPS dropped it over my four-foot fence and managed to dent the main-tuning bezel and smash the dial glass to bits. So I had to do a more extensive restoration job than I had planned on. But that would really be a whole other story for this column. Suffice it to say that time and TLC finally resulted in a fully functional SX-43. It is one of my favorites. A again I use it more on the AM and FM broadcast bands, when I am out working in my garage shack, than I do on the ham bands.

To appreciate the SX-43, you need to understand the time and circumstances of its introduction. When World War II ended there was a large pent-up demand for new amateur receivers. American manufacturers had been running full tilt during the war supplying military radios. No new receivers were available for hams, except for the Echophone series that had been built since December 7, 1941.

At first, the manufacturers offered slightly updated versions of their pre-war sets. Hammarlund's HQ-129X, a great radio, was a pre-war HQ-120 with single-ended tubes and new knobs. National added a noise limiter and an improved crystal filter to their HRO to make the HRO-5TA1. They also spruced up the 1940 NC-200 to create the 1946 NC-240D. RME relabeled their

pre-war RME-43 as the RME-45.

Hallicrafters began by building more of the pre-war S-20R, SX-25 and SX-28A models. Their first true post-war offerings were merely cosmetic updates of older designs.

For example, the S-41 Sky rider Jr, was just a repainted Echophone EC-1A. The S-38 was an Echophone EC-1A in a little larger cabinet, modified to cover the .55 to 30-MHz tuning range in four bands rather than three. The S-40 was an S20R with a newer RF amplifier and mixer tubes in a post-war cabinet. A lot of these models were sold because of the pent-up demand for new receivers, but none of them incorporated the engineering improvements that supposedly had been developed by radio manufacturers during the war.

Finally, in October, 1946, Hallicrafters announced their first truly new receiver, the SX-42. The successor to the famous Super Sky rider line, it was a 15-tube, 52-pound behemoth that provided AM and CW reception on all frequencies from 540 kc to 110 MHz as well as FM reception from 27 to 110 MHz. It was loaded with innovative features.

Bandspread tuning was calibrated for the 80, 40, 20, 10 and 6 meter amateur bands. There were six positions of selectivity, including three crystal-filter bandwidths, a noise limiter, a signal-strength/FM-tuning meter, two stages of tuned RF amplification, double conversion above 27 MHz, and eight watts of high-fidelity audio output from its push-pull 6V6s.

To quote manufacturer's literature, "the main tuning and bandspread knobs "are mounted coaxially, focusing the tuning functions in a single, precision-built unit." A small, locking knob mounted coaxially within the bandspread knob permitted either tuning knob to be "rotated freely while holding the other firmly in position." The radio's physical design had been crafted by Raymond Loewy, a famous industrial stylist, and it won an International Design Award from the New York Museum of Modern Art. The SX-42 sold for \$275 without the speaker, a bit on the pricey side for the majority of radio amateurs in those days. But in July of 1947 Hallicrafters introduced a downsized version—the SX-43. It retained many of the SX-42 features likely to be most desired by radio amateurs, but it was built to sell for \$169.50. This was competitive with the mid-range radios offered by other manufacturers: the HQ-129X, RME-45, and NC-173.

The SX-43 offered continuous coverage from 540 kc to 55 MHz and from 86 to 110 MHz. AM and CW reception was provided from 540 kHz to 44 MHz; AM and FM reception from 44 to 55 MHz, covering the amateur six-meter band; FM

reception only from 86 to 110 MHz. The bandspread dial was calibrated for the 80, 40, 20 and 10-meter amateur bands, and it became the main tuning dial for the 44 to 55 and 86 to 110-MHz bands.

Its four selectivity positions included broad and sharp i.f. and broad and sharp crystal filter. The noise limiter and signal-strength meter were retained, but a more modest single 6V6 provided the audio output stage. Main tuning and bandspread were controlled by separate tuning knobs instead of the tricky coaxial arrangement.

Under the hood the SX-43 boasted a number of innovations, borrowed from its more expensive relative, that still outclassed the competition. On the four ranges from the broadcast band through 44 mc, it is a typical, single-conversion superhet with one RF and two IF stages. However, it was out front in employing a 6BA6 miniature pentode as the r.f. amplifier, and also used a low-loss 7F8 Loktal dual triode as a low-noise mixer and local oscillator.

Interestingly, the crystal filter is situated between the two IF stages rather than between the mixer and the first IF as in most receivers of this type, perhaps because of the lower gain in the triode mixer. In any event, the filter is quite selective in its sharp position, well suited to CW reception, and it has an effective phasing notch. On the two higher bands, 45 to 55 mc and 86 to 109 mc, the IF frequency shifts to 10.7 mc via a second set of tuned circuits in the IF transformer cans in series with the 455-kc circuits.

For FM reception there is also a 6SH7 third IF stage, probably acting as a limiter, followed by a double-diode ratio detector. AM reception is accomplished on band 5 by turning the 6J5 455-kc BFO into a 11.115 mc second conversion local oscillator, and by mixing that signal with the 10.7 mc IF in the 6SH7 third IF stage to produce a signal at 455 kc for injection into the 6H6, 455 kc AM detector.

Hallcrafters made the SX-43 family-friendly by color-coding the controls. To receive the AM broadcast band, you would set all of the controls to the red dots or red-labeled positions, tune the band with the main tuning knob, and of course control the audio output with the volume control. To receive FM, you set the controls as before except for the reception and band selector knobs which were moved to the green dots. As mentioned, tuning was done with the bandspread control.

Despite its attractive circuit, functional features, and appealing package, Hallicrafters they cut a few corners that may have been responsible for the SX-43's limited success in the amateur market. Its not selling well to hams against its competition. For one thing it had no antenna

trimmer control to allow its r.f. amplifier stages to be peaked on the operating frequency.

As mentioned earlier, the SX-43 is mechanically flimsy. The top of my workbench is a sturdy, two-inch thick slab of plywood. Yet when I put the SX-43 on top of the bench and slap the underside with my hand, a signal on 40 CW will bounce well outside of the crystal filter peak. The tuning mechanism is a dial cord drive, quite adequate for a broadcast receiver, but a little too "loosey goosey" for serious amateur work. Eventually, as in my well-used receiver, the cord will polish its drive shaft so smooth that it begins to slip. The owner then has to either roughen the shaft surface or wrap a piece of tape around it to restore its surface friction. The bandspread tuning on the SX-43 is quite skimpy. For example, all of 40 meters is covered in just 4 1/4 turns of the 1 1/2-inch diameter knob, resulting in 20 inches of tuning on this band.

In contrast, the HQ-129X tunes 40 meters in 44 1/4 inches; the NC-173 in 34 1/2 inches; and the RME-45, with its two-speed "cal-o-matic" vernier dial, in a generous 95 inches. Even my war-surplus, general coverage BC348 provides 46 inches of tuning on the 40-meter band. So the SX-43 has, in general, the worst bandspread by far of any of its competitors.

I've also noticed that my SX-43, like its brother back at St. Xavier, blocks up on strong CW signals. The CW note squawks and goes to zero beat as if the BFO was being pulled to the frequency of the incoming signal. Unlike its 1947 competitors, which drift for awhile after being turned on, but eventually settle down, my receiver continues to move around a bit on its own after the normal thermal drift has stopped. The SX-43 was phased out of production in 1949. Except for the SX-62, which was really a short-wave listener's receiver, Hallicrafters did not produce any more radios for amateurs with FM broadcast coverage. The SX-71, which replaced the SX-43 in 1949, featured dual conversion with 2075 and 455 kc IFs, six-meter coverage, and a narrow band FM detector. After that, Hallicrafters' design approach went to dual-conversion radios with 50-kc, highly-selective second IF amplifiers, as in the S-76, SX-96, SX-100 and SX-101.

But sometimes at night, after I've put the dog into her kennel, I still go out to my "summer shack" in the garage, shut off the lights, and turn on the old SX-43 to admire its glowing green dials just one more time. And I think of an occasion more than half a century ago when I saw another SX-43 and knew I wanted to become a radio ham. I'm very thankful that it all happened. 