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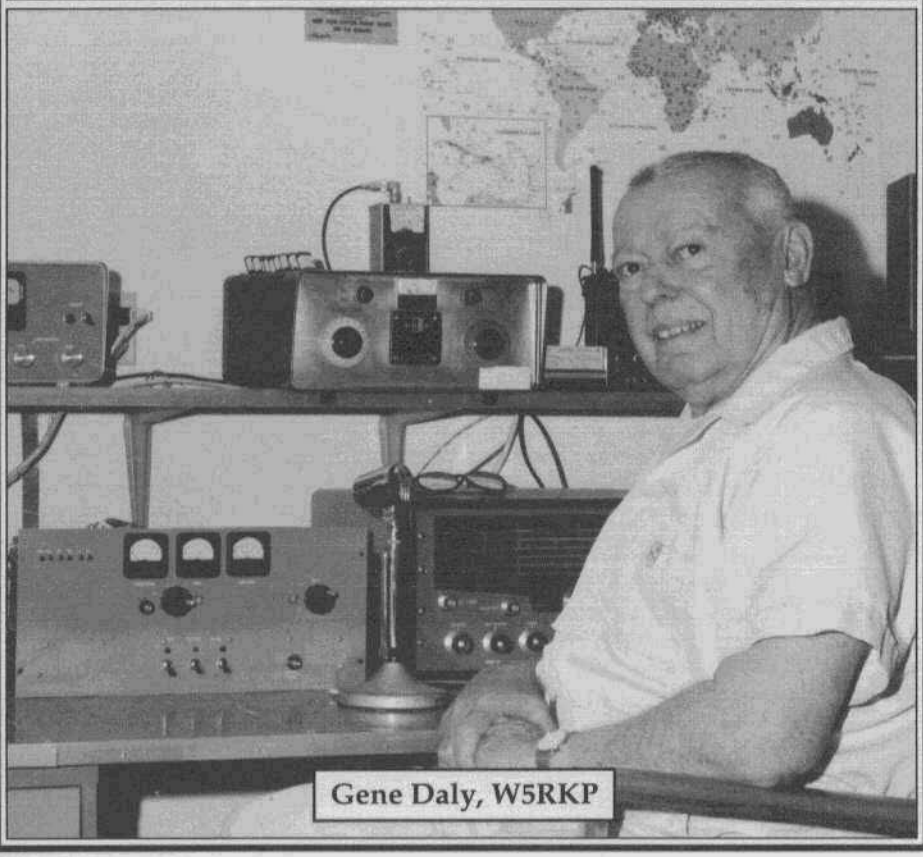
# ELECTRIC RADIO

celebrating a bygone era

Number 126 October 1999



Gene Daly, W5RKP

# ELECTRIC RADIO

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Electric Radio is published primarily for those who appreciate vintage gear and those who are interested in the history of radio. It is hoped that the magazine will provide inspiration and encouragement to collectors, restorers and builders.

We depend on our readers to supply material for ER. Our primary interest is in articles that pertain to vintage equipment/operating with an emphasis on AM, but articles on CW and SSB are also needed. Photos of hams in their hamshacks are always appreciated. We invite those interested in writing for ER to write or call.

## Regular contributors include:

Walt Hutchens, KJ4KV; Bill Kleronomos, KDØHG; Ray Osterwald, NØDMS; Dave Ishmael, WA6VVL; Jim Hanlon, W8KGI; Chuck Penson, WA7ZZE; Dennis Petrich, KØEOO; Bob Dennison, W2HBE; Dale Gagnon, KW1I; Rob Brownstein, K6RB; Don Meadows, N6DM; Lew McCoy, W1ICP; Kurt Miska, N8WGW; Warren Bruene, W5OLY; Brian Harris, WA5UEK; Thomas Bonomo, K6AD and others.

# Editor's Comments

**Ten Meters**

As most ER readers know my favorite band is 10 meters. Needless to say I've been delighted with the openings we've been having of late. For at least the last two weeks I've managed contacts every day on this band. Some days are better than others with stronger signals and longer openings but generally I'm pleased just to have any kind of action on 10. Today as I write this I'm hearing David, VK2BA, for the first time. He's not loud but Q5. I think every 10M AM'er has worked David except me. One of these days I'll make contact with him.

It seems that I'm hearing the same calls over and over again on 10 and that maybe it isn't common knowledge among the vintage AM ops that 10 is opening up. I hope that my efforts here will encourage more activity. One thing I've getting comments on is that there are a lot of stations that are carrying on QSOs right on 29.0, the calling frequency. I urge everyone to move up the band once they've made contact, then the calling frequency will be more helpful for us all.

**Fifteen Meter Jamboree**

A year or two after ER got started we sponsored a 15M event that was a tremendous success. I remember a comment from Andy, WA4KCY, that described the band as wall-to-wall heterodynes, just like the old days. A couple of years later we tried another jamboree and it didn't work out for some reason; maybe it was poor propagation. It's been suggested to me that we try it again. I've decided on the weekend of October 23/24. There doesn't appear to be any contests that weekend so we should be somewhat in the clear. I think we should concentrate our efforts between 21.400 and 21.450 as that seems to be the least used portion of that band. I'd like to have as many reports with photos as I can get. The reports should contain the usual information. One thing I'm going to try (a la the Classic Exchange) is to use as many transmitters as I can that weekend. Some of my low-power rigs have not

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**Cover:** Gene Daly, W5RKP, master homebrewer, in his hamshack. For about a year he lived in our area and I visited him often. I had hoped to write about the great transmitters and amplifiers he built but just never got around to it. He now lives in T or C, New Mexico. ***Photo by N6CSW***

# Looking Back

**by Lew McCoy, W1ICP**
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In "Looking Back" I have pretty much stuck to what happened at ARRL in the old days. I hope you will all bear with me if I deviate just a little. While this column isn't exactly about amateur radio it is related and I think you will find it interesting because it deals with two very famous people who became friends of mine.

In the early 1950s I did a lot of traveling and lecturing for ARRL about television interference. I was scheduled to go to Los Angeles and my contact for my lecture was Doug Shearer (I forget his callsign), who was head of sound at MGM studio. He was Norma Shearer's brother. I got to Hollywood and Doug met me at the airport and took me straight to the MGM studio. Of course I was excited at the chance to visit a movie studio, this would be a first for me.

He showed me the huge buildings, sound stages, where they actually made the movies. I was just totally bugeyed the whole time—there were beautiful women everywhere. Lunch time came and Doug said we would have lunch at the cafeteria. I was not exactly impressed at the idea of going to a cafeteria(!!) for lunch—I was in for a big surprise. The MGM cafeteria was THE PLACE to eat lunch.

As soon as we entered the cafeteria Doug was hailed from a table of about ten people and they were all stars. They waved us over and made room for us like we were something special. I couldn't understand that at the time but later learned that Doug being the head of sound was a very important person to all the movie stars. His work could almost make or break an actor (or actress).

Several interesting things happened at that lunch. I was introduced to everyone at the table and these included Kathern Grayson, Keenan Wynn, Robert Taylor and others. Doug introduced me as someone in television from the East Coast--Hah. I should mention that this was in the early 50's and TV was sort of frowned on by Hollywood. The luncheon conversation was very interesting to me because I had never been in an environment like this. Most of the talk was about the two movies they were involved in making—one being "Seven Brides for Seven Brothers" and the other "The Student Prince".

As the lunch gradually ended, and everyone went back to work, the chair next to me became vacant. From the corner of my eye I saw this beautiful gal approaching. She asked me if she could join us. As she was wearing a scarf and dark glasses I didn't recognize her but when I heard her voice I immediately realized she was Eva Gabor. I think she had the most distinctive voice of anyone in Hollywood. I jumped up and pulled the chair out for her. This was her first trip to Hollywood and she was appearing in a movie called "An Evening In Paris" starring Elizabeth Taylor and as I recall, Van Johnson.

I had no problem talking with Eva Gabor because I was familiar with her from her television shows. As many of our old time readers will recall, she starred several times in "Studio One", a TV Drama that was on Monday nights. I recall that when she removed her scarf and the dark glasses everyone at the table fell silent. She was an absolute vision of beauty. She was so gorgeous that I learned for the first time what it meant to become 'star struck'.

Doug told me that he would be a little busy after lunch but then he would show me how they dubbed sound into movies. Eva leaned over and asked if she could go along with us after her acting stint. At that point Doug asked why didn't I accompany Eva to her sound stage. Of course I agreed.



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# "Blimy, Guv! It's an RA-17L (A Saga)"

**by Dick Dillman, W6AWO**
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In November of 1994 I went on a pilgrimage. A meeting in London gave me an extra day or two to search for the elusive (in the US at least) RACAL RA-17L receiver. Calls to several advertisers in Radio Bygones produced nothing. But on the advice of the editor, Geoff Arnold, I contacted Johns Radio in Bedford. A very nice woman named Pat advised me that "Yes, yes, we have a warehouse full of them, yes," and that I should come and pick one out. The next day, with a colleague in tow, we took the train to Leeds, the bus to Bedford and crossed the road to stand on the doorstep of Johns Radio.

For the benefit of the uninitiated, the RA-17 is thought by many to be the premier British valved communications receiver. It was the first commercial receiver to use the Wadley loop and represented a dramatic step forward in the field. The RA-17L is the British version, complete with CV-type valves and funny British connectors, more of which later. As a great fan of anything British, only this version would do for me.

We met Pat, we met the great large black dog who looked menacing and we started to browse. Johns (no apostrophe) is typical of most electronic surplus places the world over, stuffed full of everything everywhere in no apparent order. And there were RA-17Ls in evidence, some with tags saying On Her Majesty's Service (Ah!) along with all manner of other items. At one point we got to see the "lab" in which about a half dozen middle aged and older boffins were bent over various newer RACALs, busily fixing and calibrating and smoking like fiends. At one point the black dog bounded in causing a great commotion, schematics flying, boffins jumping, until one enticed him out with... a cup of tea! "Nice doggie, c'mon now..."

I was enjoying this greatly, but where was "my" RA-17L? Pat answered with a casual "Well boys, if it's a RA-17L you want, you'll have to come along to the warehouse." Which we did, stuffed into her mini (no small task as I'm 6'6" and 220 lbs.). When we arrived, Pat said "Well boys, I must go to the post office and the bank. But here are the keys to the warehouse. Let yourselves in and pick out one you like." Well! A bit more trusting of customers than I'm used to in the States. On the other hand, I suppose a Yank and a Dutchman trudging along the streets of Bedford with an enormous valved communications receiver would not have been hard to spot, either.

And there they were, piled on pallets, hundreds of 'em. How to pick? In the bone-numbing cold, we started what seemed an impossible task. But as so often happens in these situations, one of them "spoke" to me. Yes, it had the red R on the back, indicating a MOD rebuild, and the film tuning scale was intact and moved easily, and it seemed in good physical shape. But so were many others. But somehow, I knew this was the one. So off we went, now with the RA-17L adding to the crowd in the mini. Back at the office I also picked out a rare RA-137 low frequency converter and Pat promised to crate and ship the whole lot, including cables with the re-



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# The BC-610 Revisited

## Celebrated in battle, esteemed in Amateur Radio[1]

## Part 1

**by Robert E. Grinder, K7AK**
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The saga of the BC-610 depicts a stunning moment in the technologies of twentieth-century communications. A clone of the Hallicrafters HT-4, a prewar, medium-power amateur transmitter, the BC-610 emerged as the transmitting component of mobile command posts for the army during WW II. Swift, armored-tank divisions in both North Africa and Europe employed the ruggedly constructed and electronically reliable BC-610 as a communications hub. The battlefield-tested BC-610 was among the first items of equipment landed on beachheads during invasions, whether at Normandy or on South Pacific islands.

The HT-4/BC-610 is fundamentally a transmitter that delivers 450 watts CW, or 325 watts AM phone [amplitude modulation]. It is designed to operate on any frequency between 2 MHz and 18 MHz, a range that includes the 80, 40, 30, 20, and 17 meter amateur bands; coverage can be extended to encompass also the 160, 15, and 10 meter bands. The black-wrinkle, steel cabinet of its most prominent model, the BC-610E, is 39-7/8" high, 32-5/8" wide, 21-3/8" deep (see Figure 1). Its components are mounted on three huge, very heavy-gauge steel chassis (30"x 19" x4"), finished in gray lacquer. Although designated sometimes as "portable," the BC-610 weighs over 400 pounds [500 pounds when packed for shipment]. A speech amplifier, an antenna tuning unit, and a control box, housed individually in compact, steel cabinets, were essential combat accessories.

Three similar army communications systems incorporated the BC-610: (1) the SCR-299, where it was mounted in the rear of a one and one-half ton, panel delivery truck. This configuration became the backbone of army communications throughout WW II; (2) the SCR-399, where it was mounted in a two and one-half ton truck, which provided space for vehicular stations more comprehensive than that of the SCR-299; and (3) the SCR-499, a fixed station, suitable for air-transport, that was comparable to the mobile SCR-399. A gasoline generator supplied 115 volts alternating current (AC) for each type of system. The mobile systems used a trailer to tow the generator, partly to save truck space and partly to avoid endangering station operators should the generator ignite after a direct hit.

The BC-610 fulfilled its mission so meritoriously that military authorities declared it to be analogous to the Jeep and the Garand rifle in its significance to the Armed Forces (Read, 1943). William J. (Bill) Halligan, after retiring from the chairmanship of the Hallicrafters Company, was asked to identify the most successful aspect of his career. He replied that his greatest sense of accomplishment was in the military receivers and transmitters [mainly the BC-610] that his company produced during WW II (Cohen, 1984).

The amateur community became cog-

**The BC-610E. This is the model that the author operates.** ***Photo from the ARRL Handbook, 1945.***

nizant of Halligan's admiration for the BC-610 when he began touting its virtues with full page advertisements in **Electronics, QST, Radio**, etc. between 1940 and 1945. One ad (see Figure 2) stated: "this Hallicrafters-built GIANT OF MILITARY RADIO [BC-610] is a vital link in the chain of communications. " ("Advertisement," 1944e).

Hallicrafters announced via several magazines a five-month letter/writing contest in October, 1943, whereby $100 would be awarded each month for the best vignette portraying the SCR-299 in battle. The Company also promised to send $1 to everyone who submitted a "serious" letter. In May, 1944, in extending the contest, it stated that it was so



continued next page


**A representative advertisement. (artist's rendition).** *From "Radio", May 1944*

impressed with the letters that it had received that henceforth each month two letter writers would be awarded $100 each. In September, 1944, extending the contest again, Hallicrafters established a hierarchical system of prizes: $100 for first, $50 for second, $25 for third, $15 for fourth, and $10 for fifth. Further, readers were coaxed with:

"There is gold here! Write today and get your share"

("Advertisement," 1944b). Indeed, "it's just like money from home" ("Advertisement," 1944c)![2]

Several manufacturers of critical components for the BC-610 also basked in its glory. The E.F. Johnson company, for example, proclaimed that it furnished "condensers, tube sockets, couplings, and insulators" ("Advertisement," 1944d). Eitel-McCullough asserted that the BC-610 "offers striking confirmation" of Eimac tubes, because the latter "occupy the key sockets of the SCR-299," which is "seeing service throughout the world" ("Advertisement," 1943). And the Electro-Voice Company claimed that its "microphones are standard equipment with the Hallicrafters SCR-299" ("Advertisement," 1944a).

The BC-610 drew military service from the onset of WW II through the end of the Korean War. Four prototypes, BC-610A, BC-610B, BC-610C, and BC-610D, evolved one after another during a period of a few months as the HT-4 was modified incrementally into the BC-610E. Approximately 18,000 BC-610Es were produced during WWII (Orr, 1979). Models BC-610F, BC-610G, BC-610H, BC-610I, and T-213/GRC-26, succeeded the BC-610E in much fewer numbers after WW II.

Early in 1946, surplus BC-610Es were released to radio distributors well below original cost. For example, in 1939, Hallicrafters offered initially the HT-4, including tubes and speech amplifier, for $695 ("Advertisement," 1939b). A decade later, in 1950, it offered the HT-4G [BC-610G] at $1,520, including tubes. The speech amplifier was sold separately for $217 ("Advertisement," 1950). These are the prices ($1,737 total) that the Signal corps probably had been paying for these critical components.

However, Harrison Radio in April, 1946, publicized the BC-610E on the surplus market for $590, complete with tubes, speech amplifier, and antenna tuner ("Advertisement," 1946a). A month later, Harrison dropped the price to $500 ("Advertisement," 1946b). Allied Radio entered the market June, 1946, at $535 ("Advertisement," 1946c). Harrison and Allied advertisements, and presumably those of other surplus outlets, informed readers that technicians at the Hallicrafters factory were removing the BC-610s from SCR-299 trucks, and then carefully retesting and crating them for shipment. Importantly, readers were assured, too, that the BC-610s could be used on amateur bands without conversion.

Consequently, countless amateurs soon activated BC-610Es. Amateurs who had been enticed via the advertising blitz and amateurs who had learned in battle to revere the BC-610E snapped them up. Further, military personnel still on active duty worldwide, with BC-610Es at their disposal, tuned them to the amateur bands. BC-610s were literally everywhere, and for a time, every amateur who came on the air shortly after the war knew someone who either owned or operated a BC-610.

The popularity of the BC-610 skidded during the 1950s and 1960s as a result of factors associated with television interference (TVI), the early advent of commercial, medium-power, band-switching, tabletop, AM equipment, and, later, the immense attraction of single side band (SSB) operation. BC-610s thus slipped precipitously in the 1960s, 1970s, and 1980s into disuse and storage. An



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impressive renaissance of interest in AM equipment is now underway, however, and the BC-610 is currently the target of resurgent appreciation. Several AM operators have recently retrieved BC-610s from a variety of sources: estates, inactive amateurs, hamfests, garages, barns, and basements. Amateurs nationwide are now scouring the country in search of restorable BC-610s (DuVall, ER, 1999, #124; Miller (ER, 1995, #69). Most are pursuing a durable, medium-power transmitter, and for them, the BC-610 is an illustrious, vintage commodity. Others seek WW II military equipment, of which the BC-610 is a highly desirable archetype.

Several papers about the BC-610 have been published over the years, particularly in **Electric Radio** (Dachis, ER, 1990, #9; Hutchens, ER, 1992, #34; Kleronomos, ER, 1989, #1; Rideout, ER, 1989, #2), but none focused on the topics that I discuss here. My general objectives in this paper are, primarily, to examine in detail both the development and the characteristics of the HT-4/BC-610, and secondarily, to present briefly a review of how amateurs today are customarily using BC-610s.

Specifically, I have divided the paper into four sections: (I) ascent of the HT-4 in the technological culture of 1930s amateur radio; (II) characteristics of the BC-610, with special emphasis on description of the BC-610E, the model in the BC-610 family that became the foremost military and amateur transmitter at mid-century; (III) synopses of ways a cross-section of current owners of BC-610s have restored and aligned them for contemporary AM operation; and (IV) accolades professed by the owners, which demonstrate that the BC-610 is revered and esteemed today no less than it was more than a half-century ago.

**Section I: The ascent of the HT-4 in the technological culture of 1930s amateur radio.**

The early entrepreneurs of radio manufacturing, like Bill Halligan, succeeded because they conceptualized forthcoming products in terms of cultural expectations. A special talent or endowment enabled them to anticipate marketplace relevance. Risk taking was their modus operandi, not because they were reckless but because few goals or objectives seemed to them too complicated or beyond attainment.

Halligan shared these entrepreneurial traits with David Sarnoff and Alfred H. Grebe, two of the more distinguished pioneers of early progress in radio. All three were born within a few years of each other in the 1890s: Sarnoff, 1891; Grebe, 1895; and Halligan, 1898. Perhaps it is significant that as youth they were socialized similarly to the new technology and that as adults they evinced comparable astuteness and ambition when their careers diverged.

For example each developed extraordinary proficiency with the telegraph key during his teen years. Sarnoff and Halligan both worked as teenage wireless operators on land and sea for American Marconi. Grebe and Halligan both obtained amateur licenses at age fifteen, and each served before WW I as radiomen aboard merchant ships. During the war, Halligan further distinguished himself as a Navy radioman. Importantly, each of these future leaders learned assiduously to evaluate receiver performance. As they struggled to pull signals out of noise and interference, they developed standards that they would later apply when they were responsible for manufacturing receivers.

Sarnoff finessed the leaders of American Marconi, including Guglielmo Marconi himself, and those of the nascent Radio Corporation of America (RCA), to become in 1921, at age 30, General Manager of RCA (Lewis, 1991). For nearly a half-century thereafter he manipulated the enormous resources and patent holdings of the Corporation

to dictate the course of radio broadcasting and manufacturing in America. Grebe, as a result of his experience and connections in New York City, knew both theory and art of receiver design better than anyone else of his time. He began manufacturing radio receivers commercially in 1919, when he was only 24 years old. Grebe produced during the 1920s the first commercial shortwave receiver for amateurs; moreover, the superior quality of his broadcast receivers led the A. H. Grebe company to become a household name among consumers.

Unfortunately, his creativity was cut short by bankruptcy in 1931 and his untimely death in 1935 (Grinder, ER, 1996, #88).

Tobe Deutschmann, an importer and supplier of parts to radio manufacturers, was Halligan's first significant mentor/benefactor (De Henseler, 1991). After WW I, Halligan aspired to become a professional engineer, but educational expenses and the necessity of supporting a wife led him instead to a job writing a weekly column about happenings in radio for the **Boston Telegraph**. Deutschmann, recognizing the burgeoning talents of the young man, made him sales manager of his company when the newspaper folded.

The fortuitous opportunity enabled Halligan to utilize his practical background in dealing with the aims and needs of radio manufacturers. Halligan and Deutschmann soon opened a radio parts store in Boston to expand their market to experimenters and amateurs. Halligan named it "Radio Shack", after a ship's radio room. Editors and authors of radio magazines, radio designers, and manufacturers, e.g., Larry Cockaday, Glenn Browning, and Fred Drake, soon congregated at the store. Their discussions constituted informal seminars, and they enabled Halligan to acquire broad perspective on state-of-the-art radio apparatus. Indeed, when asked in 1984 to name his primary area of interest during his days at Radio Shack, Halligan replied: "I spent quite a bit of time designing transmitters. One of my designs was later incorporated in the HT-4. . ." (Cohen, 1984, p. 14).

Halligan moved to Chicago in 1928 to become a partner in a company that represented radio component manufacturers. Business slowed with the onslaught of the Great Depression, so in 1933, at age 35, with far more hope and vision than resources, he established the Hallicrafters Company, a name invented by amalgamating his name with the slogan "Handcraft makes perfect."

Halligan encountered seemingly insurmountable odds at the outset. He was unable to manufacture receivers without infringing on RCA patents, and he could not afford to purchase a license outright. He dodged the issue initially by hiring the Silver-Marshall and Austin Howard companies, respectively, to manufacture his first sets. Halligan knew that long-term success hinged on obtaining an RCA license. He hoped initially to secure a sublicense inexpensively by purchasing a financially distressed company in possession of one. He found such a company in Indiana with ties to the Echophone Company of Chicago, which was also in financial straits. A valid RCA license was about the only remaining asset of Echophone, so Halligan and a partner bought both companies. Although Echophone was in arrears thousands of dollars to RCA for license fees, Halligan convinced Sarnoff to allow him to pay off the debt over time; the deal enabled him for the first time, in 1936, to manufacture receivers in his own factory (Douglas; 1998; 1999).

Halligan entered the marketplace in competition with well-established manufacturers such as McMurdo-Silver, Radio Manufacturing Engineers (RME), National, and Hammarlund. His first receiver was a five-tube, TRF set;



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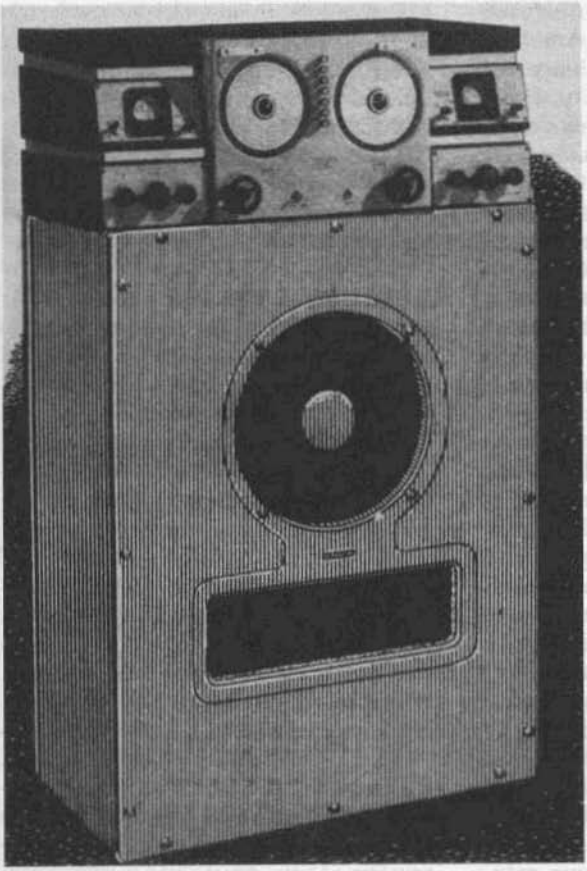

**From a Jensen advertisement—a composite illustration created by Paul Finell, W7EFQ, of the DD-1 atop a Jensen sound reproducer—prototype of the HT-4.**

however, various configurations and price ranges of subsequent superheterodyne models included an unrivaled breadth of features, e.g., self-contained power supply, iron-core IF system, bandspread, signal-strength meter, variable-selectivity crystal filter, German-silver "pie-plate" dial, aesthetic panel layout, rounded cabinet corners, and chrome trim.

The mid-1930s were auspicious economically for manufacturers of shortwave communications receivers. Commercial shortwave broadcasting had by then mushroomed worldwide. Programs emanating from exotic, faraway metropolises offered listeners welcome respite from anxieties engendered by the Great Depression. Enthusiasts who tuned their dials in search of foreign broadcasts usually found amateur operators in contact with their counterparts who lived in distant lands. For many listeners, the prospect of joining the amateurs proved irresistible. Consequently, during the five years between 1929 and 1934, the population of radio amateurs in the United States grew 300 percent -- up from 16,629 to 46,390 persons (American Radio Relay League, 1965).

The market for communications receivers in the mid-1930s was bolstered not only by an increase in prospective customers but also because manufacturers were now producing more sophisticated receivers than most amateurs could home-build. Furthermore, while other manufacturers competed with one another predominately on technical issues, Halligan emphasized also style, saturation advertising, and innovation.

First, style attained its apogee at Hallicrafters in the 1930s with the indirectly illuminated "Venetian Blind" dial of the ergonomic Skyrider 23 ("Advertisement, 1939a; Kleronomos, ER, 1992, #35) and the Skyrider diversity receiver (DD-1), whose separate input circuits diversified radio signal reception and minimized effects of fading on readability (McLaughlin and Miles, 1937). The DD-1 cabinet, designed in-house at Hallicrafters, is about 32" long, 15" high,

and 19" deep. The verticality of the center portion of the brushed aluminum panel is accented by flanking it at each end with panels, 7" x 4", tilted backwards about 20 degrees. The DD-1 was planned to sit conveniently atop a floor-mount bass-reflex cabinet, which was available in kit form from the Jensen Radio Company ("Advertisement," 1938a). The Hallicrafters Company thereby created with the two units (see Figure 3) a uniquely styled receiver of striking proportions, which, significantly, inspired a year later the cabinet of the HT-4.

Second, Halligan inaugurated the practice of advertising jointly with distributors; for example, whenever a new model was announced its picture would appear on virtually every page of the advertising sections of **QST** and **Radio**.

Third, Halligan's prodigious fecundity frequently disrupted orderly production schedules within his company. A new idea for bandspread, image reduction, or noise limiting, etc., often led to advertisements for new receivers before factory prototypes had been built. Halligan's staff would list features, make a mock-up and photograph it, sometimes with a fake paper dial and lettering. A forthcoming ad in **QST** would carry the photo accompanied by a description of features and price. The engineers then were expected to complete the design, order parts, and rush the receiver into production (Samuelson, ER, 1990, #11, p. 25).

By the late 1930s, Hallicrafters was acknowledged in the amateur community to be a major manufacturer of communications receivers. Industry-wide comparisons showed that it was marketing more models in more price ranges than all other manufacturers combined (De Henseler, 1991; Orr, 1979). Yet at Hallicrafters, and elsewhere, the commercial production of relatively high-power, amateur transmitting equipment was barely in its infancy.

Early in the decade amateurs who constructed transmitters recognized the advantages of direct-current (DC) plate power, crystal-controlled frequency stability, voltage amplification in speech equipment, and amplitude modulation (Jones, 1937). Basic configurations were limited, but dozens of circuit variations were possible. Given the circumstances, building a transmitter involved three tasks: selecting functionally compatible circuits, accumulating and wiring components, and testing the finished product. These tasks were easy for the average amateur in the days of simple circuits, few components, and breadboard layouts. However, relatively high-power, multiband operation boosted circuit complexity, component specifications, and space demands.

The augmented requirements rendered breadboard layouts unwieldy and accelerated adoption of "relay racks," a strategy borrowed from the practice of early telephone exchanges. Amateurs soon preferred to stack their equipment vertically, usually with heavy power supplies on the bottom, followed, perhaps, by a modulator, a speech amplifier, oscillator and buffer stages, and, at the top, a radio-frequency (RF) amplifier. Panels were conventionally 19 inches wide; stacking several chassis often exceeded six feet in height.

Component manufacturers were first to recognize the commercial possibilities inherent in complex transmitter configurations designed for relay racks. A company might provide blueprints free-of-charge, of carefully designed and tested transmitters using, appropriately, major components that it manufactured. Stancor (1937), for example, presented sixteen transmitter circuits, accompanied by layout pictures, which featured stock Stancor transformers and chokes. Similarly, General Transformer (Jones, 1937, p. 119) offered "a painless way to high power" that is, a 'build-it-yourself' plan using



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its transformers. Not to be outdone, the Taylor Tube Company ("Advertisement," 1938e; Taylor Tubes, 1939) designed specifically for its tubes a handsome, 275 watt transmitter; then, to entice amateurs, it offered "free of all charges," with purchase of "necessary Taylor tubes," the four 13" x 17" x 3" chassis used in the rig, with all socket and other large holes already punched!

Shortly thereafter, National and Thordarson manufacturing companies joined forces to market "Foundation Units," which were essentially kits, in that they consisted of punched panels and chassis, complete with necessary special parts and hardware. National declared that "thoroughly engineered and reasonably priced, the National Transmitter Foundation Units turn the home-built transmitter into a professional job" ("Advertisement," 1938b).

Halligan, aware of the emerging trends in marketing transmitter equipment, proposed to put Hallicrafters at their forefront. The Company had earned by now a solid manufacturing reputation. Sale of Super Skyriders was brisk. A cadre of experienced, knowledgeable engineers and technicians maintained reasonably efficient assembly lines, and a host of distributors nationwide had become collaborators in advertising. Halligan was confident, therefore, that he had accumulated both resources and facilities to factory design and manufacture wholly wired and tested amateur transmitters. On the one hand, they would exceed home-built and kit units in quality, and on the other, they would nearly match them in cost-effectiveness.

No one at Hallicrafters, however, possessed sufficient expertise in transmitter theory, circuitry, and component layout to fulfill Halligan's objectives. His chief of production urged him to resolve the dilemma by hiring Robert Samuelson, a Collins Radio Company engineer who had recently designed aircraft and ground-equipment transmitters. Samuelson found the opportunity compelling. The four-year veteran of Collins Radio joined the Hallicrafters staff in April, 1938 (Samuelson, ER, 1990, #11).

Samuelson soon found himself working into the wee hours of the night to keep pace with Halligan's expectations. Announcements of the HT-1/HT-2, HT-3, and HT-4 (HT is an acronym for "Hallicrafters transmitter") appeared, respectively, in the 1938 QST issues of August, September, and October. To meet issue deadlines, photos and copy had to be prepared by mid-June, mid-July, and mid-August. Samuelson, fortunately, had kept a personal notebook, during his years at Collins, which contained both circuits he had designed successfully at Collins and circuits "I'd like to build." His notebook enabled him to meet Halligan's goals.

The first two transmitters in the HT series (HT-1, 50 watts phone and 100 watts CW output; HT-2, 100 watts CW only) were promoted hyperbolically. On the one hand, an advertisement denigrated home-built or kit assembled transmitters, which, it said, suffer "from lack of proper facilities for testing and correlating the component parts." On the other hand, it proclaimed that "Hallicrafters engineers [had] visualized an ideal amateur transmitter" and had produced one "entirely functional in design and marking a bold departure from conventional transmitter construction" ("Advertisement," 1938c).

Samuelson's third innovation, the HT-3, a 50 watt transmitter-receiver, was for the non-amateur marine market. Apparently Hallicrafters produced the HT-3 after Halligan perceived a need for it among recreational boaters. More importantly, Samuelson's fourth creation, the HT-4, represented fulfillment of Halligan's dream when he worked in the 1920s at Radio Shack in Boston.

Hallicrafters assured readers ("Ad-


**The HT-4 predessor of the BC-610-E.** *Advertisement from QST, November, 1939.*

vertisement," 1938d) that in developing the HT-4, "there was no blind pursuit of tradition, the problem was approached from a fresh viewpoint with the principles of functional design ever in mind . . . "The result:"a distinct departure from customary design . . ."

Samuelson (ER, 1990, #11, page 27) reports that for a time at Hallicrafters one question was uppermost in Halligan's thoughts: 'how could we get a higher-powered xmtr into the living room -- not in an ugly six-foot rack, but in some kind of a pleasing console? One day Bill said "Look at that DD-1 receiver on that floor mount speaker cabinet! Doesn't that look great?"Then some time later: "Hey, let's set the HT-1 on the cabinet, and imagine it all in one piece!'

Samuelson's rendering of Halligan's vision is described eloquently in **QST**: "the Model HT-4 offers a new conception of transmitter design, a distinct departure from the traditional to the functional." Readers were informed that parts were logically coordinated, with the entire RF section on a single plane; operating controls were easy to reach and all parts were enclosed with ample ventilation. Pride permeated the commentary: "We present the Model HT-4 as the first of a new trend in Amateur Radio Transmitters" ("Advertisement," 1938f).

The fanfare notwithstanding, Halligan and Samuelson's HT-4 flopped in the prewar marketplace. Not one distributor advertised its availability in **Electronics**, **QST**, or **Radio**. A year passed before Hallicrafters advertised it again in **QST**. Only 20 HT-4s were manufactured during 1938-39 (Orr, 1979). Why? Perhaps most amateurs, accustomed as they were at the time to experimenting, constructing, and tinkering, resisted the ego-deflating prospects of being identified as one who would purchase a factory-made transmitter? Perhaps its dimensions and weight belied likelihood of it being easy to maneuver around a living room? Perhaps, too, these factors were compounded by a distractible price tag of $695? ER

**Ed.** Part 2 and Part 3 of this article will appear in the next 2 issues of ER. References will be at the end of Part 3.

# Boy Scouts Attracted to Ham Radio

**by John Hartman, NM1H**
**PO Box 201**
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Dozens of boy scouts attending Hidden Valley Scout Reservation summer camp in central New Hampshire got a special treat this summer when they got to operate a GRC-19 military radio and see a fully restored Korean war vintage communication jeep close up. The author, being a long time scoutmaster, always knew that boy scouts are attracted to military surplus gear and they often come dressed in camouflage on camp-outs. Furthermore, the scouts enjoy ham radio on troop camp-outs (see ER #69, P. 16). These two attractions were combined in a week long demonstration at this camp and it was a big hit!

Finding a place to set up proved easy when the camp health director and old friend, Bill Clark, KD1EX, offered the use of a small field next to his health lodge. This site proved ideal because it had 60 foot trees nearby to string up the 80/40 meter trapped dipole for the GRC-19. AC power was available from the lodge for the author's home-built 24 volt power supply. We also worked portable using a 24 volt gasoline generator for GRC-19 field operation. The use of the generator proved to be quite noisy and caused considerable QRM to both operator, person contacted, cabins nearby and the entire 8 square miles of Hidden Valley! It did have the advantage, however, of advertising to the scouts when we were operating. We were a little concerned that the camp director might revoke his permission to operate at Hidden Valley using that generator, so we did not use it much. The military jeep demonstration came about when Dale Gagnon, KW1I, agreed to show up in his just-restored Korean war vintage jeep with a GRC-9 radio set and whip antenna strapped on for talk-in demonstrations.

Ham radio demonstrations would start each afternoon by firing up the generator and the GRC-19 mounted in the author's van. That soon attracted groups of scouts looking to see what all the noise was about. After a brief lecture on radio fundamentals and LOTS of questions from the boys, they lined up to talk- AM mode! AM'ers up and down the East Coast and out to New York and Pennsylvania were contacted on both 80 and 40 meters. Each scout who participated was given a verifying QSL card to meet one of the requirements of the Radio Merit Badge. Some of the boys were already in the process of getting a ham license. Others became very interested in starting. They all handled themselves like pros on the air- no mike fright from these guys.

If the interest level shown by these young men was any indication, the portable use of big, noisy, smelly, military radios is the trick to getting young people interested in ham radio. The author would highly recommend this method to increase interest in ham radio to any of you AM'ers who have access to a Boy Scout Troop. Let's face it. We will be packing light when we all take that final hike to the great jamboree-in-the-sky, so, let's get more young people interested in taking care of our beloved vintage radio gear we leave behind! ER

**Station operator, John Hartman, NM1H, and a group of Boy Scouts waiting to talk on the GRC-19 at Hidden Valley Scout Reservation in New Hampshire.**

**Dale Gagnon, KW1I, (center, dark glasses) explains the features of his recently restored Korean war vintage jeep to an interested group of Hidden Valley Scout Reservation staff members and Boy Scouts.**

# A Multi-Purpose Control Unit

**by R.W. Berkemeyer, WØREP**
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**Ballwin, MO 63011**
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Over the last fifty years or so, I have gotten my greatest pleasure in ham radio by building various equipments and by repairing/refurbishing tube type equipment. My greatest operating pleasure is CW ragchewing. I guess I've gotten set in my ways, but there are certain operational conveniences which have become necessities. They are:
No switch send-receive
Adjustable delay switch from transmit to receive

My permanent equipment provides these features, but not long ago I was working on a DX60/HG10 setup and found I was throwing several switches to send and receive. The outcome was the unit described here.

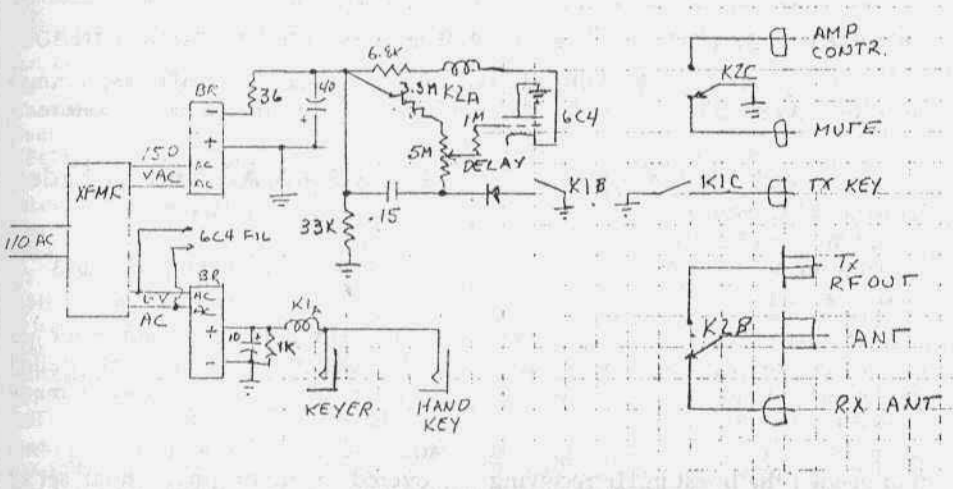
The following list of "must-dos" was set up:
Switch the antenna from receiver to transmitter and back without a manual switch
Adjustable delay on return to receive
Mute the receiver when sending
Switch an amplifier (if used) from receive to transmit and back
Key the exciter whether it is grid block or cathode keyed
Permit the use of an electronic key; Provide parallel hand keying.

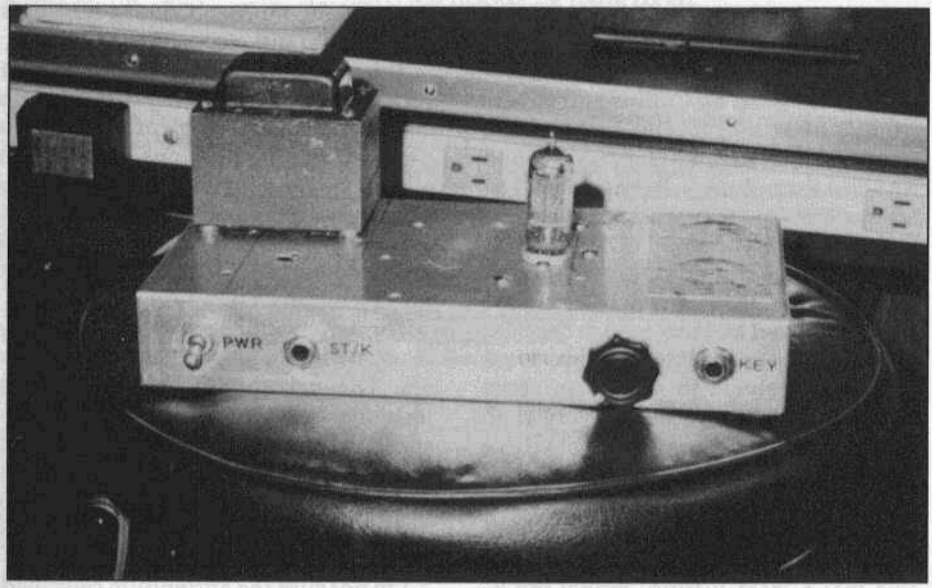
The unit illustrated performs all those functions or at least controls them without manual effort. A two pole double throw relay performs the switching and muting functions. This relay is a high voltage (90 volt DC) miniature relay readily available on the surplus market. Actually, the relay on hand was a 4 pole unit so there are contacts available for additional functions if needed. This relay forms the plate load of a 6C4 delay tube. An additional 6 VDC 2 pole relay is used to key the delay tube and to key the exciter. Relay keying eliminates the problem of keying either grid or cathode keyed exciters. A second key jack in parallel with the keyer input allows the use of a hand key. So all of the above criteria are met, with extra contacts for additional functions as desired.

The delay circuit consists of the 6C4, a resistor, a pot and a capacitor. The capacitor is charged up through the resistor and pot from the -150 volt supply, holding the grid of the 6C4 in the off condition. When the keying relay closes, the capacitor is rapidly discharged through the diode bringing the grid to ground potential. This allows the tube to conduct, closing the control relay. When the keying relay opens, the capacitor charges through the resistor and pot, eventually opening the control relay.

The unit is powered from a 150 volt transformer which also has a 6 VAC winding. Two transformers could be used if a single unit can't be found. The 150 volt winding is bridge rectified to minus 150 VDC for the delay circuit. The 6 volt winding is bridge rectified and filtered to supply the keying relay. Reference to the schematic should answer any questions as to the operation of the unit.

The antenna input and output uses SO-239 fittings but any preferred type of connector can be used. The switching functions are fed to phono jacks, and the keys use phone jacks. Use what matches your equipment best, it won't affect the operation. The relays are mounted using one or two layers of double sided foam tape. This is avail-




**The control unit sitting on a stool in the author's hamshack.**

able either at Radio Shack or your local rug installer. DO NOT use an AC relay for keying. Most electronic keyers are not set up to switch AC. While the schematic shows the resistance and capacitance values I used in the unit illustrated, different relays, transformers and available filter caps can be used and may require some changes in component value. Adapting circuits to available components is part of the fun.

This unit has proven to be extremely helpful when working on equipment other than the normal station gear. With its use the regular operating procedures may be maintained with almost any combination of receivers and transmitters. So dig into the junk box, heat up the soldering iron and build. HAVE FUN !!! **ER**

# Reviews of the R-390A and R-390A Addendum Videos

**Produced by Floyd Soo, W8RO and Chuck Rippel, WA4HHG at Hi-Res Communications. Available from Hi-Res Communications, Inc. or the ER Bookstore.**

## The R-390A Video

**by Michael Crestohl, W1RC**
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A bit of background on the R-390A is in order before we proceed to looking at the seven hour video. Collins Radio designed the R-390 in the early 1950s for the military and government agencies that needed the finest in HF receiving technology. In those days the "Cold War" was heating up and cost was no object! It was to replace the R-388 (51-J*) also designed by Collins and covers from .5 to 32 Megacycles in 32 bands, CW, AM and Radio Telegraph (called RATT in the military). It features a digital mechanical frequency readout that looks like a speedometer that is accurate to 1 Kc and modular construction consisting of several "decks" that are easily removed and replaced in the field by minimally-trained technicians to return the receivers to service in short order. The defective decks were then returned to a maintenance depot where they were repaired and circulated as spares back to the radio reception sites. They cost about $6,000.00 a copy in 1953 dollars. In fact the R-390 was so expensive that a "cost-cutting" model the R-390A was designed and put into production in 1954.

The R-390 and R-390A look very similar, although a trained eye can tell them apart from across a room. The secret: the R-390A has the ANTENNA TRIM control on the top center of the front panel above the metal identification

**continued on page 36**

## The R-390A Addendum Video

**by Paul Courson, WA3VJB**
**P.O. Box 73**
**West Friendship, MD 21794-0073**

This two-tape, nearly four-hour addition is the latest in a series of detailed instructional videos specifically made for the military R-390A receiver. The addendum expands and adds to points covered in the original 7-hour set of tapes from Hi-Res Communications which came out a couple of years ago.

This complicated, high-performance receiver unquestionably demands a comprehensive treatment in a video presentation like this one. The radio's allure has long encouraged interest in gaining a technical grasp of how it works, and this videotape series is the only known tutorial for the communications enthusiast.

The series appeals to people who already own one or more of these receivers. The presentation assumes some technical knowledge, but does not presume the viewer is already capable of the renovation methods outlined. It's a nice balance, and advanced viewers can easily "fast forward" over any parts of the discussion that are familiar.

I'm not sure the addendum can stand alone, however, since some prior demonstrations are referred to as we see the building blocks of how the radio is constructed.

Tape One of the addendum opens with a delightful review of some of the various civilian contractors who manufactured this radio for the military, and

**continued on page 38**

**Mark you calendars now! Don't miss the 15-Meter Jamboree October 23/24**

# VINTAGE NETS

**Arizona 40M AM Group:** Meets on 7293 kHz at 10:00 AM MST (1700 UTC) on Sat. and Sun.
**California Early Bird Net:** Saturday mornings at 8 AM PST on 3870.
**California Vintage SSB Net:** Sunday mornings at 8 AM PST on 3835
**Southeast Swap Net:** Tuesday nights at 7:30 ET on 3885. Net controls are Andy, WA4KCY and Sam, KF4TXQ. This same group also has a Sunday afternoon net on 3885 at 2 PM ET.
**Eastern AM Swap Net:** Thursday evenings on 3885 at 7:30 ET. This net is for the exchange of AM related equipment only.
**Northwest AM Net:** AM activity daily 3 PM - 5 PM on 3875. This same group meets on 6 meters (50.4) Sundays and Wednesdays at 8:00 PT and on 2 meters (144.4) Tuesdays and Thursdays at 8:00 PT. The formal AM net and swap session is on 3875, Sundays at 3 PM.
**K6HQI Memorial Twenty Meter AM Net:** This net on 14.286 has been in continuous operation for at least the last 20 years. It starts at 5:00 PM PT, 7 days a week and usually goes for about 2 hours. Net control varies with propagation.
**Arizona AM Net:** Meets Sundays at 3 PM MT on 3855. On 6 meters (50.4) this group meets at 8 PM MT Saturdays.
**Colorado Morning Net:** An informal group of AM'ers get together on 3876 Monday, Wednesday Friday, Saturday and Sunday mornings at 7AM MT.
**DX-60 Net:** This net meets on 3880 at 0800 AM, ET, Sundays. Net control is Jim, N8LUV, with alternates. This net is all about entry-level AM rigs like the Heath DX-60.
**Eastcoast Military Net:** It isn't necessary to check in with military gear but that is what this net is all about. Net control is Ted, W3PWW. Saturday mornings at 0500 ET on 3885 + or - QRM.
**Westcoast Military Radio Collectors Net:** Meets Saturday evenings at 2130 (PT) on 3980 + or - QRM. Net control is Dennis, W7QHO.
**Gray Hair Net:** The oldest (or one of the oldest - 44+ years) 160-meter AM nets. It meets on Tuesday nights on 1945 at 8:00 PM EST & 8:30 EDT. URL: http://www.crompton.com/wa3dsp/grayhair.html
**Vintage SSB Net:** Net control is Andy, WBØSNF. The Net meets on 14.293 at 1900Z Sunday and is followed by the New Heathkit Net at about 2030Z on the same freq. Net control is Don, WB6LRG.
**Collins Collectors Association Nets:** Technical and swap session each Sunday, 14.263 MHz, 2000Z, is a long-established net run by call areas. Informal ragchew nets meet at 0100Z Tuesday nights on 3805 and on Thursday nights on 3875.
**Collins Swap and Shop Net:** Meets every Tuesday at 8PM EST on 3955. Net control is Ed, WA3AMJ.
**Drake Users Net:** This group gets together on 3865 Tuesday nights at 8 PM ET. Net controls are Criss, KB8IZX; Don, WZ8O; Rob, KE3EE and Huey, KD3UI.
**Swan Users Net:** This group meets on 14.250 Sunday afternoons at 4 PM CT. The net control is usually Dean, WA9AZK.
**Nostalgia/Hi-Fi Net:** Meets on Fridays at 7 PM PT on 1930. This net was started in 1978.
**K1JCI. 6-Meter AM Repeater:** Located in Connecticut it operates on 50.4 in and 50.5 out.
**JA AM Net:** 14.190 at 0100 UTC, Saturdays and Sundays. Stan Tajima, JA1DNQ is net control.
**Fort Wayne Area 6-Meter AM Net:** Meets nightly at 7 PM ET on 50.58 MHz. This net has been meeting since the late '50's. Most members are using vintage or homebrew gear.
**Southern California Sunday Morning 6 Meter AM Net:** 10 AM Sundays on 50.4. Net control is Will, AA6DD.
**Old Buzzards Net:** Meets daily at 10 AM Local time on 3945. This is an informal net in the New England area . Net hosts are George, W1GAC and Paul, W1ECO.
**Canadian Boatanchor Net:** Meets Saturday afternoons, 3:00 PM EST on 3745. For hams who enjoy using AM, restoring and operating
**Midwest Classic Radio Net:** Saturday mornings on 3885 at 8AM Central time. Only AM checkins allowed. Swap/sale, hamfest info and technical help are frequent topics.
**Boatanchors CW Group:** Meets nightly at 0200Z on 3579.5 Mhz (7050 alternate). Listen for stations calling "CQ BA" or signing "BA" after their callsigns.
**Wireless Set No. 19 Net:** Meets the first Sunday of every month on 7.175 +/- 5 kHz at 2000Z (3760 +/- 5 kHz alternate). Net control is Dave, VA3ORP.
**Beer Town Traders Net:** On 3885, 5:30 Central Daylight Time on Saturdays.
**Hallicrafters Collectors Assoc. Net:** Sundays, 1730-1845 UTC on 14.293. Net control varies. Midwest net on Sat. on 7280 at 1700 UTC. Net control Jim, WB8DML. Pacific Northwest net on Sundays at 22.00 UTC on 7220. Net control is Dennis, VE7DH.

**Nets that are underlined are new or have changed times or frequency since the last issue.**

# Better Audio for the Collins 75A-1

## Part 1

**by Thomas Bonomo, K6AD**
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**San Mateo, CA, 94402**

No doubt you have heard that the Collins 75A-1 is a great AM receiver. If you have never owned one, you have missed operating one of the best receivers ever made for working AM. It has enough bandwidth to sound good, and oh, is it ever stable. I have several solid-state rigs that drift much, much more. When properly aligned, its PTO calibration is also surprisingly accurate. It is no wonder that it is often said, "If you want to know where you are, get a Collins....." Unfortunately, the saying usually continues, " .... but if you want good sound, get a National."

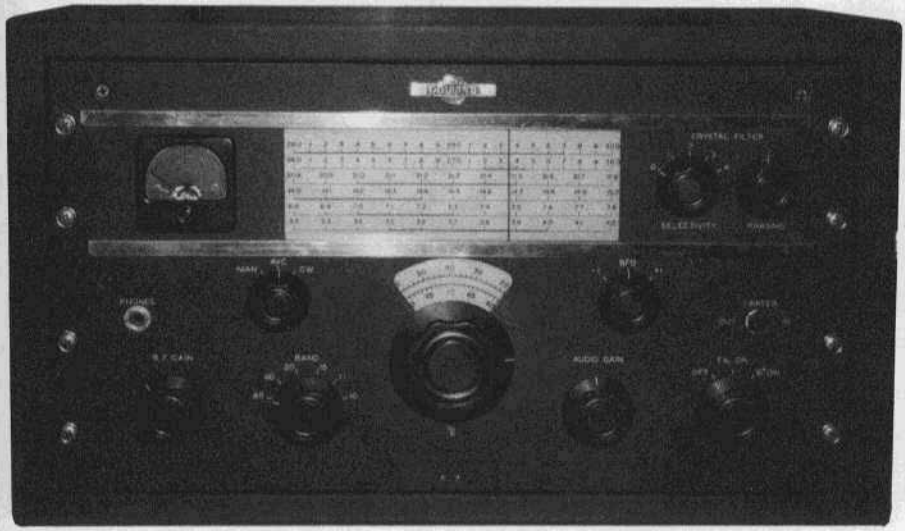
Certainly there are receivers like the National that have more audio bandwidth, but the stability and precision of the PTO in the 75A-1 go a long way towards compensating for its slightly more restricted bandwidth. But after the usual restoration work, I found that audio bandwidth wasn't my primary complaint with this receiver. Instead, I found its AGC system lacking, and the fact that the RF gain control couldn't be used to effectively reduce background noise and static crashes was very annoying. I also found the high level of audio distortion inherent in a stock 75A-1 completely unacceptable. This receiver simply destroyed what were otherwise very clean AM signals from operators who had spent many hours nitpicking their transmitters to ensure they put out a beautiful AM signal.

As you will soon see, there is hope for these maladies. Compared to the long list of problems that needed correcting in the Heathkit Mohawk to make it sound right (see New Hope For Your Heathkit Mohawk [ER #103, Nov. 97; #104, Dec. 97; # 105, Jan 98], there is really not much that needs to be done to make the 75A-1 sound great. This article presents two sets of modifications that will greatly improve the sound of your 75A-1 with less than two hours of work.

First, a very simple circuit modification will be presented that will convert the AGC system to a modern "threshold-type" nonlinear system. The theory for threshold-type systems was presented in Threshold-Type AGC for Boatanchors [ER #120 April, 1999]. The circuit also incorporates an improvement that provides a more flexible combination of AGC functions that can be switched from the front panel.

The second set of mods will reduce audio distortion. There are two separate sources of distortion in the 75A-1, but the detector/noise limiter circuit causes them both. One mod eliminates the distortion caused by clipping the negative half of the audio waveform, while the other cleans up the positive half cycle of the waveform. You'll be surprised to learn how much distortion was intentionally designed right into a stock 75A-1, causing distortion even when you aren't using the noise limiter!

Purists will be happy to learn that the mods are quite simple and don't require any new holes. When considering mods, my philosophy is to keep the chassis as close to original as possible and this is always a primary design goal of any modifications I make. As I have stated in other articles, this explains my preference, if feasible, for



**Collins 75A-1 receiver covers the 80-10 meter bands. Notice that it lacks a crystal calibrator. Perhaps Collins engineers thought that the PTO was acccurate enough and did not need one.**

using solid-state components "under the hood" where they can't be seen, rather than adding or changing out tubes. After you make these mods, don't forget to affix a note to the chassis referencing this article, so future owners will know what is going on inside.

There is only one problem with the 75A-1 that cannot be solved with simple engineering changes. The 75A-1 covers 80 through 10 meters. That's right (80 through 10. I wish I could say, "160 through 10," for then I would be really hard pressed to find anything to criticize about this great receiver at least after the mods in this article are incorporated). The fact that it lacks coverage of the 160-meter band is truly unfortunate, for there is a fair amount of AM activity that takes place on this band. There is no reasonable way to provide coverage of 160 without taking measures too drastic even to be considered.

In my shack the 75A-1 is usually paired with a transmitter that also lacks coverage on 160. The Johnson Viking 500 is the most notable example of a great transmitter that also lacks coverage of the 160-meter band. Of course, if you are like many hams that have an antenna that is squeezed onto a very small lot and so do not have coverage of 160 anyway, the problem is irrelevant.

**75A-1 History**

The 75A-1 was the first new receiver designed specifically for amateur use by Collins after the war. It was billed as "The first really new amateur receiver since the advent of the superhet circuit." Manufacturing began in 1946 and it featured double conversion, a five-position variable crystal filter and an automatic noise limiter. Its new PTO design and crystal oscillator first injection offered significant improvements over prewar designs.

In the Collins engineering department, the 75A-1 began life as a prototype designed by Roy Olson, then known as the "75." After finishing the design on a Friday night, he took it home to use it over the weekend. Un-

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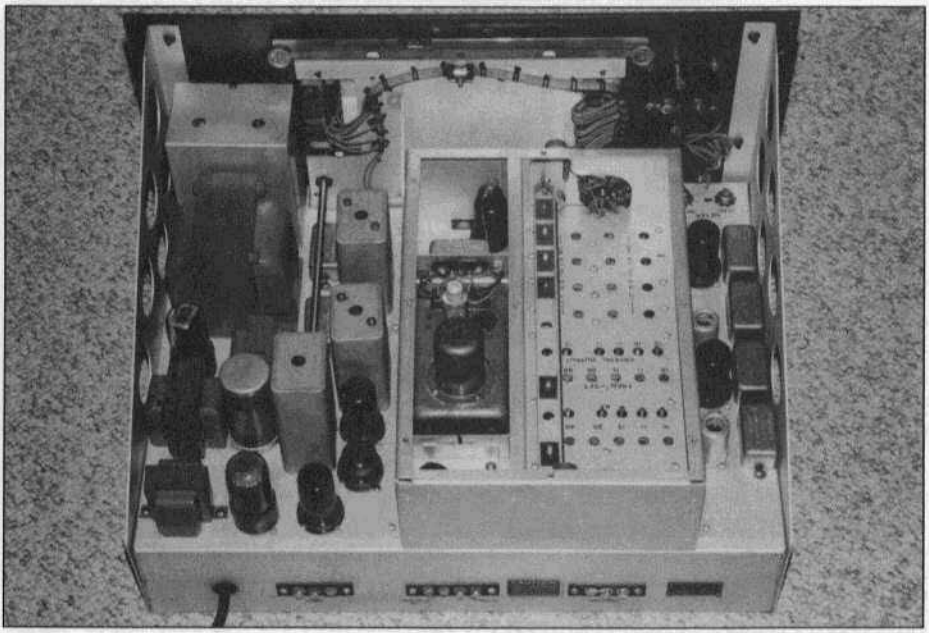


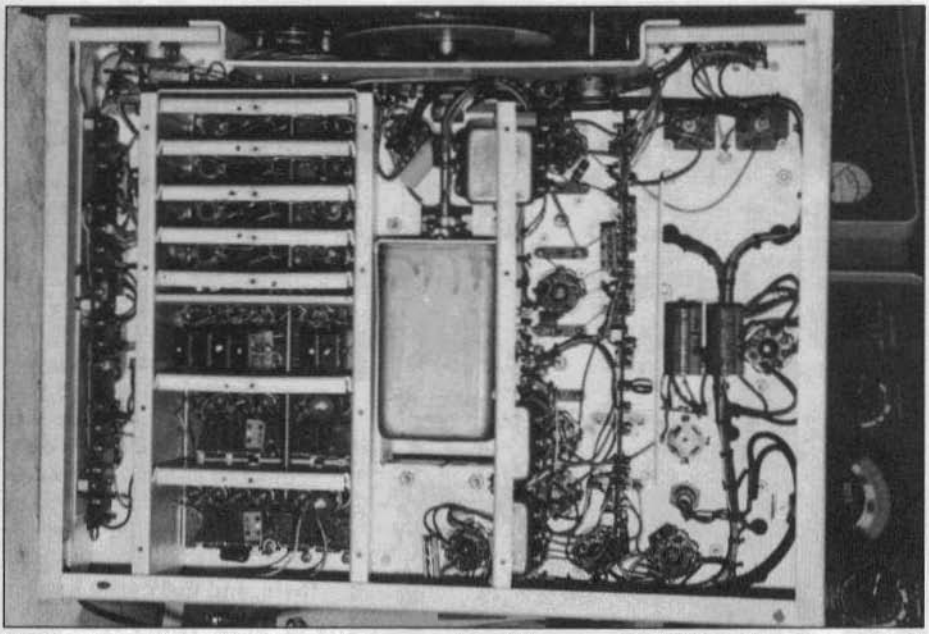
**Chassis layout with the top RF deck cover removed. Note the 3-section rectangular capacitors just to the right of the RF section.**

fortunately, Art Collins heard that it had been finished and showed up on his doorstep at 10 am that Saturday morning wanting, of course, to take the rig to test it out. Those were the only hours Roy had to use the 75 because he left the company shortly thereafter to take a position with Hughes. The 75 went through two more engineering iterations: the 75 became the "75A" and then ultimately the "75A-1." Both the 75 and 75A were prototype units and none were produced. The 75A-1 was the first production unit.

A great many people contributed to the permeability tuned PTO, but two individuals that played key roles were Ted Hunter and Roy Olson. Their efforts were primarily responsible for the high accuracy and stability of the PTO in the 75A-1. I recently spoke with Roy about the 75A-1 and he told me about the difficulties they had producing a PTO with a completely linear response while at the same time one that would not change with temperature.

The real key was winding the turns of the PTO coil in a nonlinear fashion, as opposed to using a constant linear pitch. In addition, since the coil's length and width both change as a function of temperature, they had to work out the right length and width of the coil in order to get just the right amount of expansion in each direction, so that expansion effects caused by temperature would cancel. This careful attention to detail has given us a whole generation of stable radios, a characteristic that sets Collins radios apart from the rest. Incidentally, Roy is still an active ham and regularly works 40M as WA6THD.

The engineers at Collins paid particular attention to the lighting scheme used on the 75A-1. As the band switch is rotated, only the selected band is highlighted with a narrow strip of light, making it a particularly attractive receiver in a dimly lit room. In 1952, Collins offered three plug-in mechanical filter adapters which plugged into the first IF tube socket. Someday I hope



**The bottom of the 75-1 is neatly arranged but the crowded RF deck was designed with stability, rather than serviceability in mind. (RF deck cover removed)**

to locate one of these little gems just to have the pleasure hearing how it would change the way my 75A-1 sounds.

Of course, one of the reasons the 75A-1 sounds so good on AM is precisely because it did not use narrow mechanical filters. Nevertheless, an article appeared in the January 1954 issue of QST titled "Adding a Mechanical Filter to the 75A-1" (page 35). The author, W3AM, makes an interesting case for using a mechanical filter with a narrow 3KC bandwidth (yikes!) to provide steeper skirt selectivity in cases where there is substantial QRM. When using the narrow mechanical filter, the author maintained that he could eliminate the heterodynes of competing AM stations with just a slight adjustment of the main tuning knob.

**An electrical restoration tip**

My 75A-1 was in excellent cosmetic condition, so I decided to give it the full electrical restoration treatment, which involved replacing all the paper and electrolytic capacitors and then performing a complete alignment. If you are considering a restoration, you should be aware that there are a very large number of small multi-segment bypass capacitors screwed to the chassis. They are all identical and each small rectangular can contains three .1 mFd capacitor sections.

Since the task of replacing these was rather daunting and there are not any terminal strips to solder the replacement capacitors to, I decided to first talk to a number of other 75A-1 owners to determine if these bypass capacitors had a reputation for problems. For the most part, they do not seem to have a history of becoming leaky. Several people told me that these capacitors were oil-filled and therefore quite reliable. I was unable to positively confirm that this was true, but it certainly appears plausible.

Normally, I replace everything that even looks even remotely like a paper capacitor, but given their relatively good history and the thorny problem of



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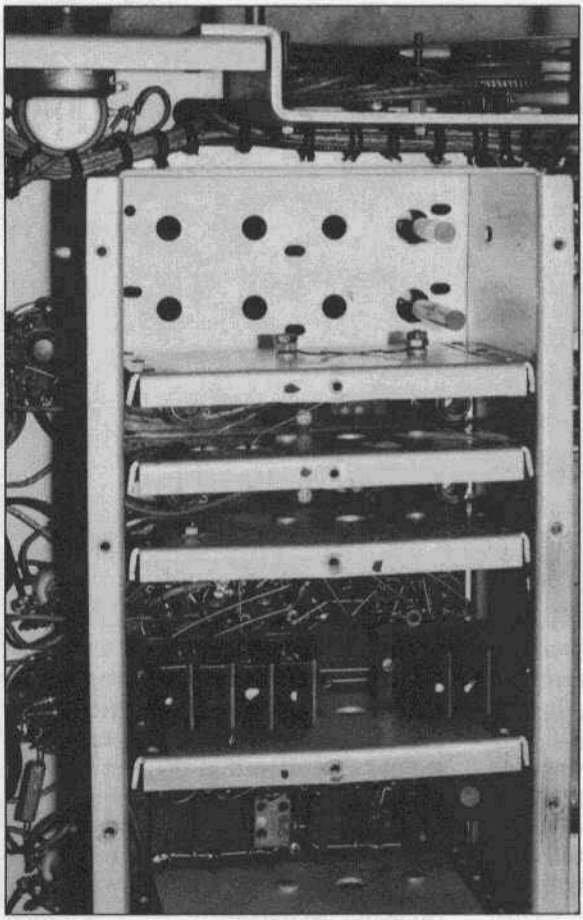


**Two of the seven RF sections have been removed. Notice the permeability slugs which remain attached to the rack. To disassemble the RF deck remove the front panel and then slide out the long band switch shaft from each deck section.**

replacing them, I decided to check them first and replace only if it appeared that leakage was causing a problem. A quick check of chassis voltages after a long warm-up confirmed that everything in my 75A-1 was operating within reasonable tolerance, so none appeared to be leaky enough to worry about.

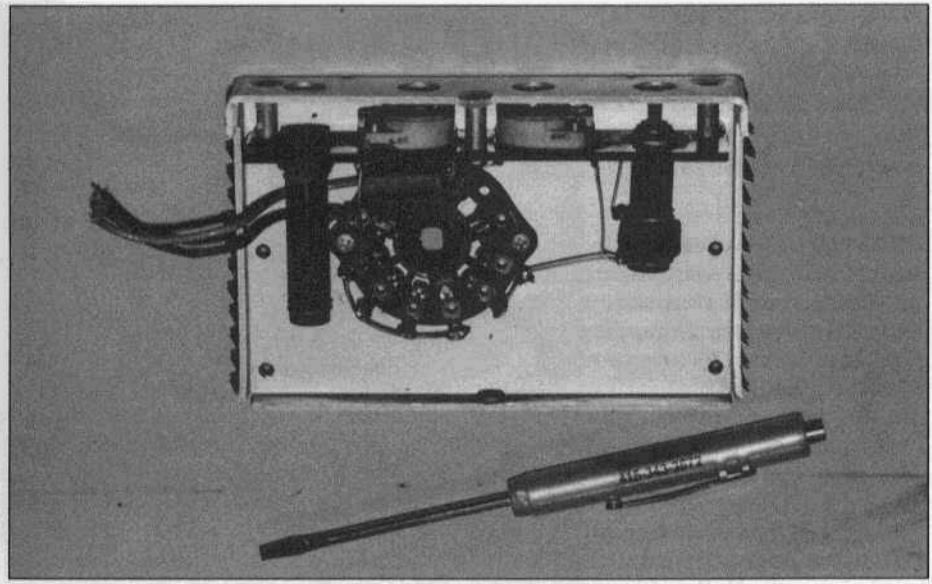
When it comes to these bypass capacitors, I suggest you use the same "check and replace only if necessary" technique that I did. If there is a serious problem, one of the chassis voltages is likely to show up significantly out of tolerance. Make sure to let the chassis cook for at least an hour, because leakage does not always show up right away.

I've been using my 75A-1 continuously now for over six months and it is still working very reliably. Of course, you could insist on replacing them all but the bottom of the chassis would really look like an abortion if you did. I have counted them, and there are a total of 36 .1 mFd capacitor sections, so you would make Antique Electronics quite happy if you decide to go the full replacement route!

**A Short RF Deck Horror Story**

Before proceeding with the mods, I have a short horror story to tell you. If you are contemplating restoring a 75A-1, it will be helpful to be cognizant of a problem I ran into, because there is a possibility you may run into it as well.

While performing an alignment, it became apparent that many of the trimmer capacitors were behaving strangely and would not produce an appropriate peak as is called for in the alignment instructions. They either seemed to be "dead," or produced an erratic "on-off" type of response. It was difficult to believe that so many trimmers could be bad, yet after staring at the schematic and poking around for an hour or two to eliminate any other possibility, I found myself faced with the extremely unpleasant prospect of completely dis-



**One module out of the RF deck. Nearly all of the trimmer capacitors in the RF deck were either 'dead' or erratic and required rebuilding.**

assembling the RF deck to check things out.

Now if you have ever taken apart the RF deck on a 75A-1, you know what a complete nightmare it is. It certainly does not look like it was designed with serviceability in mind (stability and precision-yes, serviceability-no). The chassis is crowded here, and there are lots of wires that must be unsoldered.

Well, after all seven sections of the RF deck were removed (roughly 4 hours and many choice words later), the problem of the "dead" and erratic ceramic trimmers became apparent. They had simply seized the ceramic top, which should rotate, but had become "glued" to the bottom. When the screw in the top of the capacitor was turned, it had merely broken away from the ceramic top and then spun freely on its own.

**That's why they wouldn't peak!**

I suspect that someone had used a liquid cleaner on the chassis and it had wicked into the trimmer capacitors and then dried, acting as reasonably good bonding agent. This is reason enough to be careful when cleaning a chassis with this kind of capacitors! It doesn't take much force to break the screw free from the ceramic top either. If they offer any resistance to turning, proceed with caution unless, of course, you really just enjoy rebuilding RF decks for the heck of it.

Now, on to repairing these little devils. The plate to which the capacitors are mounted must first be unscrewed from the module assembly. The only important thing to remember here is that Collins used a Loktite-like compound on the screws and you will never get them loose unless you first apply a good amount of heat to them with a soldering iron. Once the screws are removed, the capacitor board will move out just enough to give you access without needing to unsolder them from the switch assembly.

Now that you have access to these errant little parts, you will quickly see that these capacitors are riveted permanently together (unlike the trimmers used in later Collins radios that can be



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# A Globe King 500 Restoration Project

**by Mike Cowart, WA5CMI**
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**Garland, TX 75043**

The Bell County Hamfest in Belton is one of the best in Texas. There are fewer "junk" dealers and more serious traders than at most others. It happens twice a year, in April and October, and I try to make them both. This year I went with one of my good friends, Emile Imberman , W5EMI. He and I are kindred spirits; we both love the old tube gear.

We got to the hamfest about an hour before the doors opened at 6AM. We had to leave the Dallas area around 3 in the morning! What we hams won't do to find a few "treasures." At the 'fest was the usual mix of old and new radios. I wandered out of the pavilion to see what treasures might be hiding in the parking lot and came upon a truck loaded with old gear. A piece that caught my attention was a big, old rusted, Globe King 500. I can't remember when I last saw one, but it had to have been over 30 years ago. When I saw this no one was taking an interest it. I guess it just appeared to most people to be just too far gone. I began to examine it closely wondered how much work it would take to bring it back to life.

It belonged to Gary Harmon, K5JWK. He really didn't want to take the transmitter back home and did his best to talk me into taking it. After a little bantering, we struck a deal and now the Globe King was mine. I found out later from Gary that he rescued it from a metal salvage yard in Comfort, Texas. It must have set out in the weather for who knows how long. It was covered in rust, filled with mice and roach nests, and neglected for years, but I was now a member of small group of Globe King owners. It was Leo's top-of-the-line transmitter in the 50s, a fine piece of gear that runs close to today's legal limit.

Emile and I loaded '500 into the bed of my pick up (you have to have a pick-up in Texas) and headed back home. At 250-plus pounds, it was a real chore loading and unloading it.

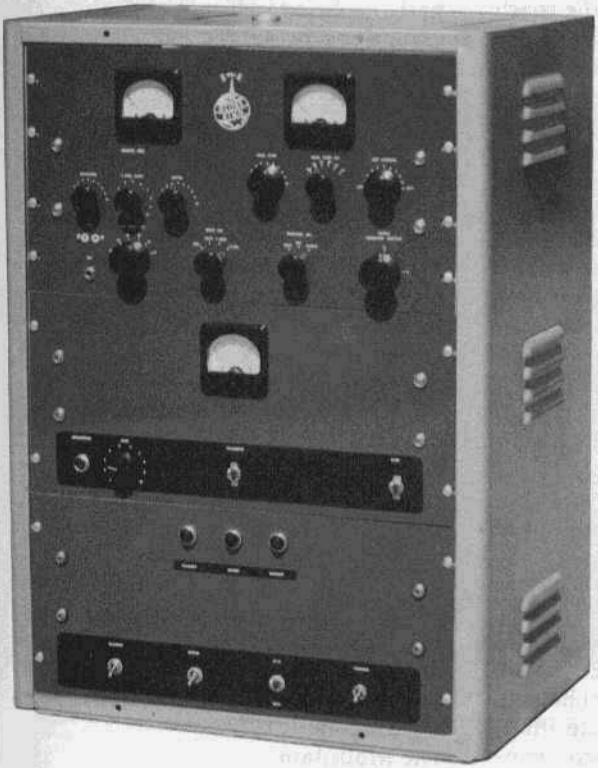
**High-Voltage Power Supply**

I decided to start on the high-voltage power supply first, since the power supply is the first thing I tackle for any of my projects. I also knew that if this transmitter were going to be worth saving, the iron in the power supply and modulator had to be in good enough shape.

The top of the power supply was very rusty, but under the chassis (and in the modulator, too) there were signs that mice had once lived there. Transformers had been eaten into it where the windings were visible. One choke was so bad the wiring had been severed and pulled out from the core! What were they after? Also, under both chassis was leftover roach pupa. It was at this stage that I began to question the wisdom of trying to go further.

**The Wiring Harness**

I made the decision early on to try to save the wiring if at all possible. If the insulation were not brittle, chafed, or cracked anywhere, I could remove the wiring as a harness with many of the original parts still soldered. I began to remove the "harness," and to my relief, the wiring was in great shape. Not having to completely rewire the unit would save a lot of time and there would be less chance of mis-wiring. Also, if any



**The completely restored Globe King 500.**

of the parts attached to the harness were in obvious need of replacing, I could do it easily outside the chassis. Another benefit was I didn't have to buy all those different colored wires and the unit definitely would be "more original."

I had to remove the wiring from some parts: tube sockets, power connectors, indicator lamps, and any part that had to be removed by going through a hole in the chassis. For these I carefully identified the removed wire end with tape. The original wiring had been laced with waxed lacing cord. For you younger hams, this was standard practice for the electronics industry, especially military contractors. Of course, with today's circuit boards, there is hardly any need for wiring harnesses. I actually learned how to lace a bundle of wires when I worked at Texas Instruments years ago.

The lacing holds the wiring tightly together and can withstand solvents and other cleaners. So I cleaned the harness first with an acetone and then with soap (Windex) and water. I then let it dry in the Texas heat for an afternoon. It came out looking like new. The wire shows no signs of age at all! The lacing is still in place.

**The Iron**

I removed each large piece of iron, opened it, and gave it a close visual inspection. All looked good except for the swinging choke. It had arced between the winding and the core. I knew I was going to replace it for the time being, but I intend to tear it down and rewind it some day (but you know about the best intentions).

It seems that the large iron had rusted only on the surface. I took a few laminations of the power transformer apart, and they looked great. To stop the rust, I applied some rust reformer obtained at the local builder's warehouse (Home Depot). This stuff works on the ferrous oxide overnight turning it into an inert phosphate. It can be sanded and painted.

On most of the transformers and chokes I redressed the leads, put them back together, and then sanded and painted them with a high-temperature, semigloss black paint. Each transformer tested good on the bench; I knew the King was coming back to life.

**Restoring the Chassis**

Once everything was removed from the chassis, I realized just how much this transmitter had been neglected. Not only was it covered in rust, it had oil spilled on it, as well as some corrosive



**continued next page**

material. This in addition to the roach and mouse habitats!

To remove the paint, I used a spray-on stripper that worked very well, but oh is it messy! After removing the bulk of the paint, I used an orbital sander with 60-grit paper. The heavy-grit sandpaper was enough to smooth out the rust spots. After sanding I applied some rust reformer and let the chassis stand overnight, then more sanding the next day. Once the chassis was reworked, I sprayed it with primer and applied the wrinkle finish. It is odd that WRL painted the chassis of the power supply and modulator. They did not, however, paint the RF deck. I did want to restore the transmitter to its original configuration, so I was going to repaint those two chassis. Had I known how good the zinc plating would turn out, I would have plated them.

I found a black wrinkle paint at a national auto store chain (PEP Boys). To get the wrinkled finish, you have to apply three coats in 20-minute intervals. After doing this I used a commercial-grade heat gun to hasten the wrinkle process (this is recommended). The finish came out very well, and after spending the night under a heat lamp, it turns very hard. The under chassis was not wrinkle finished but plain semigloss black. I covered holes to which solder lugs were to be secured in order to make a good ground connection.

**The Front Panel**

I initially tried to match the color of the panel with a model airplane spray, Panzer Grau (grey). It was somewhat close but not enough. I taped off and sprayed the black area with a flat black and applied dry-transfer lettering. The panel looked good, but it was not good enough; the paint didn't match. I knew I would have to work the panel again, but more on that later.

**Rebuilding the Power Supply**

It took a couple of evenings to put this heavy unit back together. Very few parts needed to be replaced, the main exceptions being the swinging choke and the HV rectifiers. All the tubes sockets, relays, transformers, chokes, and capacitors went back together without a hitch. The wiring harness went in with no problems, and once installed, the supply was ready for testing.

At first I got no voltage out; I replaced the 866s and the second time was the charm, 2,000 volts no load. It was great seeing those mercury-vapor rectifiers glowing purple--like I said, "personality."

At this point, I decided to get the RF deck working to see if the old boy had any fire left. As it turns out the RF deck had only a bad filter cap in the screen supply, an open resistor in the driver (6146) HV line, and a bad switch. I hooked the PS to the RF deck and got almost 350 watts out on 40 meters and about 300 on 75. I was pumped to say the least! The Globe King was not only coming back to life; it was a fire-breathing dragon!

**The Modulator**

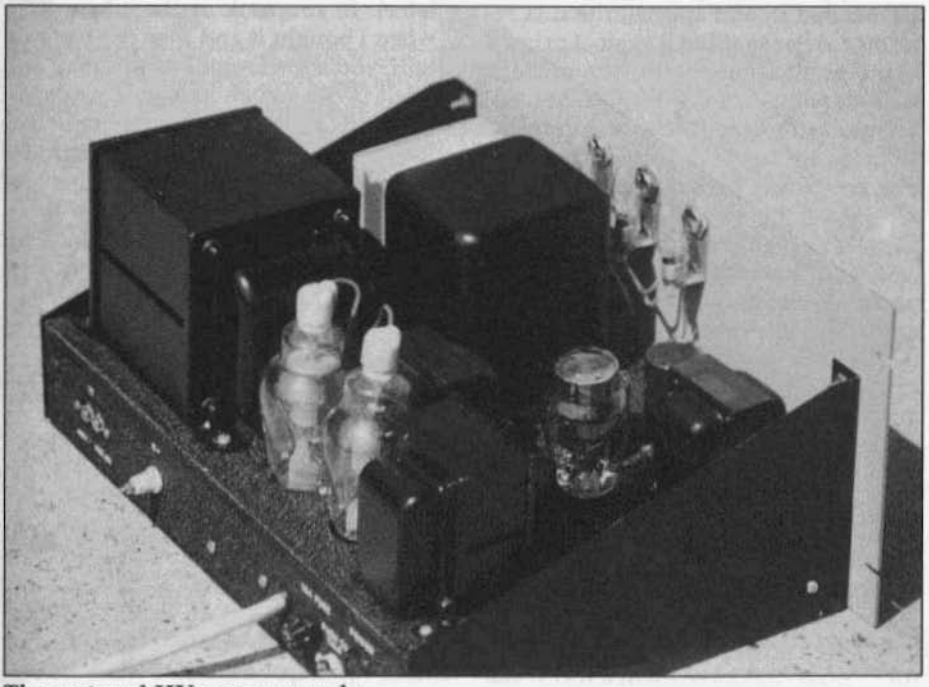
For any voice transmitter, the modulator is the key component. The Globe King 500 modulator is a self-contained unit, which means it has its own plate power supply. This is acceptable, as long as the plate voltage is equal to or greater than that of the modulated final.

For a class-C final stage to be 100% modulated, the B+ to the final should be applied to the plates of the modulator, or more specifically the center tap of the modulation transformer primary. This does not guarantee that the final will be 100% modulated. Usually the screen of the final and/or the driver must be modulated as well.

This would ensure the modulator's peak-to-peak output swing to be twice that of the B+. Not only is this modulator self-contained, WRL chose an operating voltage of 1,000 (as required by the 5514s operating in push-pull), well


Text continued on page 30

**Look at the rust on the HV power supply**



**The restored HV power supply**

below the 1,700 volts applied to the final.

Why then did WRL produce a modulator with its own power supply, and how did they account for the lower operating voltage? The answer is WRL intended to (and did) sell the modulator separately, and it used a rather ingenious way to fully modulate the final: a swinging choke in the screen circuit. The choke causes the screen to be self-modulating.

**Modulator Restoration**

Restoration of the modulator was very similar to that of the power supply. It too had roach pupa, and mice had chewed on the small transformers and chokes. I began by stripping the unit down to the chassis. As with the power supply, I was able to keep the wiring harness intact. Removing the harness was more involved, because it connected to the four tubes in the speech amp.

I stripped off the paint from the chassis, sanded it, and applied the rust reformer. After sanding it again, I primed it and applied the three coats of black wrinkle paint. After the paint hardened, I applied the large white dry-transfer lettering on the back of the chassis. It was now ready to be rebuilt.

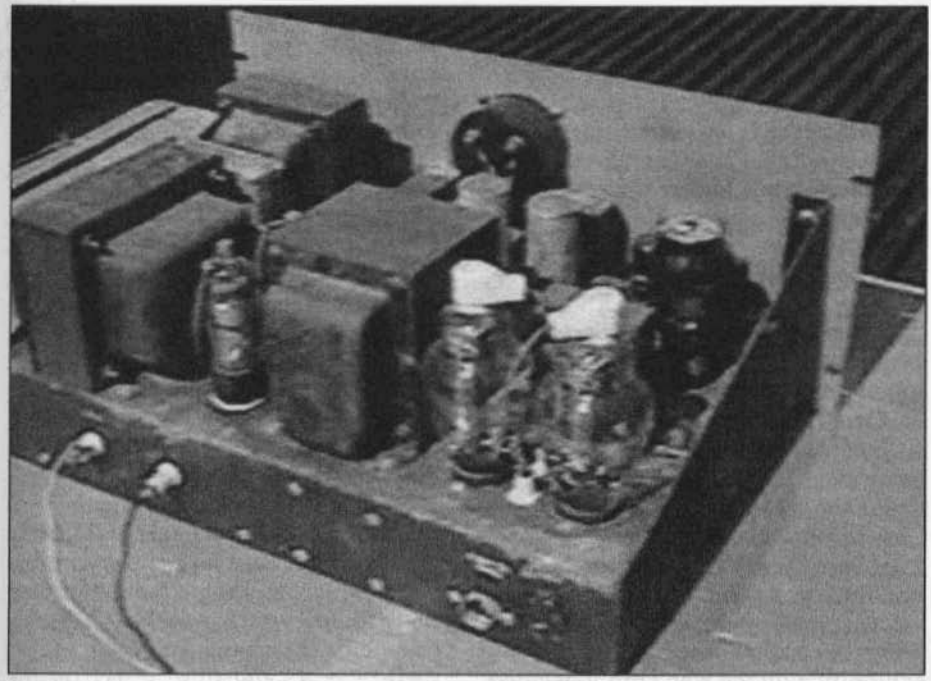
Most of the small (filament) transformers needed replacing, because they had been chewed so badly. The wiring harness when cleaned went back in with no problems. I put the modulator together to a point. That is, I did not rewire the speech amp. I was anxious to test the modulation transformer. If it were bad, I had a search on my hands. I wired the modulator tubes and the driver transformer but left the primary of that transformer loose. After checking the wiring I applied power. The quiescent current was very low, indicating that one or both of the 5514s were bad. I had a couple of old 811s in my tube caddy and gave them a try, voila!

To load the modulator I connected a 2,000-ohm, 225-watt resistor (I bought just for this purpose) to the secondary of the modulation transformer. I then connected an audio signal generator to the loose primary leads and my oscilloscope probe to the load. I then applied power and increased the gain of the generator. Yes! There was the audio signal at the load; it looked perfect, no visible distortion. The plate current steadily rose as I increased the gain of the generator to about 175 mA. The output never did flat top, but it was delivering more power to that resistor than it had to deliver to the transmitter final, and that was good enough!

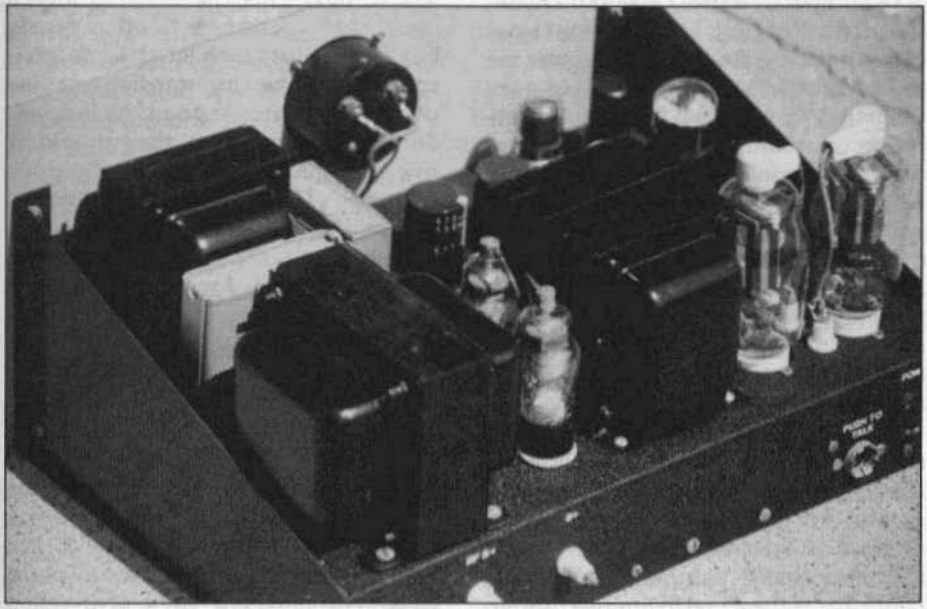
The next evening I rewired the speech amp. I used all new parts. The original circuit uses three tubes ahead of the 6L6 audio driver. Later models reduced that to two and used the extra tube as a speech compressor. One of the previous owners modified this modulator to that configuration (it appears he used the WRL modification that was sold later). If you look at the Globe King when I bought it and then the restored unit, you'll see I removed this mod and filled in the switch hole in front panel. WRL also used a device called a "couplate." This is a kind of IC consisting of resistors and capacitors in a hermetically sealed wafer. The three couplates provide interstage coupling and frequency compensation. These I removed, because I wanted the speech amp to have as flat a response as possible. Yes, I know this is deviating from the original, but the aforementioned owner had already modified it.

I wired only two tube stages (two preamp stages in addition to the driver), figuring I would have plenty of gain. This turned out to be a good assumption. I hooked up the filament of the third tube; it glows but that is all. Eager to try out the newly wired amp, I stayed up late to test it. Again, the modulator came right up; I had rewired the modulator without a single mistake! It pays


text continued on page32



**The modulator deck before restoraation**



**The mod deck after restoration**

to take your time, mark all the wires, and check yourself again and again. You learn these things after 30-plus years as a technician.

As far as the 811s are concerned, from the beginning I wanted to switch to these tubes, but I wasn't sure that the match to the modulation transformer would be close enough. As it turns out, there seem to be no problems or modifications required to use the 811s rather than the extremely hard-to-find 5514s, except to change out the 5-volt filament transformer with a 6.3-volt one.

**RF Deck**

After playing with the transmitter and being away for three weeks of vacation, about the middle of July I decided it was time to finish him up.

I started by pulling off the front panel. I initially was going to get a silk screen or decal made of just the "WRL" logo. The more calls I made and the more exploration on the web I did, I decided to have the entire panel silk-screened. I hooked up with Mike Swift at Swift Screening in Garland. He said if I made the artwork myself, I could save at least $200; that was a no-brainer. He gave me a sheet of clear Mylar that I placed over the panel. I put on the dry-transfer lettering on it kind of like tracing. I later used the same package of lettering to refinish the modulator and high-voltage power supply. I had to use three different size letters to match the original lettering. The "Model 500" is 14 points, the band numbers (80, 40, etc.) are 8 points, and the rest is 10 points. It took me about an hour to do the panel artwork.

Next, I had to paint the panel. As stated earlier, the color I initially used for the modulator and power supply panels was not anywhere close to the original. So I decided to repaint them at the same time I painted the RF deck panel. I took the panel to English Colour in Plano. They matched it pretty darn close, and they didn't mind charging me for it either. A pint was $22! I tried painting the panels with my air brush, but I never could get an even coat (I tried three times, and that means resanding the panel each time!). So I bit the bullet and bought an air gun and compressor. Hey, I'll have plenty of uses for it, right? I got a 4-horsepower, 12-gallon compressor at Lowes. The air gun made all the difference. I could get a smooth, even coat (after buying another quart of paint--$40!). Anyway, I shot all three panels at the same time and they look great, and I used a hardener so the paint is really tough. I accidentally dropped my Exacto knife on one and there was no scratch!

I took the RF deck panel and the "artwork" to Mike the next day. He made the screen and shot the panel in one day for $65. Now this came out better than the original which had been "double pumped" while being screened, so that there was a "ghosting" effect on the lettering. Now the lettering is sharp and clear. It was worth every bit of the $65 to have this done. I had almost decided to silk screen the other panels, but there is not much lettering and as it turned out, the dry transfer lettering came out looking as good. As long as I don't scratch on them, they should be fine. For the black areas on the other two panels I used tape and my airbrush, no problem.

Next for the RF deck was stripping down the chassis. I was thinking about cleaning the chassis up the best I could without taking all the parts off, but the more I looked at the rust spots and dirt, the more I knew I would have to replate it to make it look good. I removed and discarded all of the hardware. I carefully drew out in a notebook all the wiring and marked the loose wires in the wiring harness with tape. I then cleaned the wiring harness and all parts, first with solvent then with soap (Windex), and rinsed them with distilled water. I took the chassis plus the

panel-support brackets and RF shield to a place called Gleco Plating in Rowlett. They charged me $37.50 to plate them with zinc, and they had it done in half a day. The plating came out great. There are, however, places on the RF shield where the plating is somewhat dull (where the rust was really bad). But it's not that bad considering how it looked when I got it.

I took off from work early the next day to begin rewiring the RF deck. I worked on it for about 10 hours Thursday night, another 10 Friday night/Saturday morning, and then another half a day Saturday. Unlike the modulator, I had one wiring mistake! I had mismarked a wire that was supposed to be on pin 7 of the oscillator (filament) that was on pin 6. The RF deck came right up putting out over 300 watts on 75. What a relief having it done!

**Cabinet and miscellaneous**

I started on the cabinet when I first began the restoration. My boss told me he had done some sandblasting and offered to do it for me. I gave it to him one day and he had it back the next, blasted and primed. Since I had not yet bought my paint sprayer, I got three cans of Krylon silver-gray hammertone paint from Home Depot.

I do not recommend this paint at all. First, it is textured kind of like a texture on sheet rock, and second, it's too silver. It's OK, but I knew I would repaint the cabinet if I ever found the right paint. So I set the cabinet aside and worked on the transmitter. Once I finished the transmitter, I took another hard look at the cabinet and decided to repaint it. I ordered three cans of grey hammertone from Antique Electronic Supply. When I received the paint, I couldn't believe the label read "charcoal" grey. It was way too dark, but I tried it anyway, a mistake.

I could not get a good even finish with the spray cans and ended up trying twice. Yes, I removed the paint from the cabinet twice using a wire brush on my drill motor. The second went on OK, but there was no hammertone effect at all, a very homogeneous dark-grey color. I do not recommend this paint if you want the "Bud cabinet" hammertone grey finish.

I removed the finish on the cabinet yet again and set out to find the right paint in the Dallas area. I found something that had promise at a True Value hardware store, the Hammerite brand. It comes in about a half a dozen different colors, and one is silver grey. I tried a can on a piece of test aluminum and it showed real promise. So I got a quart can and grabbed my air gun. On the label, it is recommended to apply the paint when the temperature is between 60 and 80 degrees. In Texas in August, that means just before sunup. I hope my neighbors weren't too mad at me for running that compressor at 6 AM. Even though the label recommends to not thin the paint, I did (1:1) so it would flow through the gun. The finish came out great! The hammer finish looks almost like that of a "Bud cabinet" with the exception that there is a slight (and I mean slight) texturing. The finish is glossy and the right color... finally!

**Summary**

Sometimes we all get the urge and energy to take on a project like this, but I frankly don't see how some guys can do this all the time, especially for a living. I don't know if I will ever get into a restoration project as I did this one. My office mate at work (we have shared an office for five years) knows me pretty well, and he can attest to the obsession that this became (not to mention my poor wife).

It was a very fulfilling and rewarding project. To take something so old and neglected and turn it into new again gives one a Zen-like feeling. By giving it your all, it keeps a part of you and you it. I love to turn the transmitter around and watch the mercury-vapor rectifiers



continued on page 41

# The Last RME Preselector

**by Chuck Teeters, W4MEW**
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**Augusta, GA 30909**

The end of the line for RME preselectors, the DB-23 still carried the RME name even though it came after they were a division of Electro Voice. When I saw a rusty RME DB-23 on the ground in the Shelby flea market this year it was the first I had ever seen. I remembered the full page ads in the 1954 QSTs and wondered if anyone ever bought one. Obviously someone had, but the seller knew nothing of its history, including what it was. Sensing some bargaining room, I talked him down from his $10 price and brought the preselector home. I had used RME DB-20 and 22 preselectors years ago but had never run into the DB-23 before.

Radio Manufactures Engineers of Peoria, IL was the only major manufacturer of communications receivers that I know who admitted that a preselector could pep up their receivers. Other receiver manufacturers said buy a bigger and more expensive model to hear better. RME only built the model 69 receiver when they started their preselector series in 1936. Obviously you couldn't move up in the RME line. Instead they offered their preselector as a separate unit or built into the same, but larger, cabinet with the RME-69 receiver.

The use of preselectors slowed up in the fifties and disappeared in the sixties. Receivers had gotten better and transceivers were replacing separate receivers. Double conversion with a high first IF eliminated image problems and tubes like the 6DC6 fixed the front end gain and overload problems. Back in the thirties and forties receivers used 455 kHz IFs and images were a problem, even with an RF stage. And RF stages using 6D6s and 6K7s lost a lot of their oomph on the higher bands. The preselector was the answer to both problems.

A preselector is a tuned radio frequency amplifier that is connected ahead of the station receiver. It adds RF gain and RF selectivity to pep up the receiver, adding tuned circuits and amplification ahead of the mixer. If you can get enough selectivity ahead of the mixer the image frequency will be eliminated. When RME built their first preselector, the DB-20, they employed three tuned circuits with two RF amplifiers to get gain and selectivity. With the receivers of the thirties it was a welcome addition. The DB-20 was modified into the 20A in 1940 with a change of tubes from 6K7 to 1852. The 1852 was a hot new tube made for the new RCA television receivers.

New tubes were developed during WW II and 7 pin miniatures were the rage for RF amplifiers in 1946. RME came out with the DB-22A employing two 6BA6s with three tuned circuits. Even though the tubes had gotten smaller the DB-22 got larger. Made to match the RME-45 it was a third larger than the DB-20. By the time you lined up a VHF-152 converter, the DB-22 preselector, and the receiver you used a whole table and had enough switch and dials to look like a broadcast station. If you added a Meissner 150-B transmitter, you could have over 7 linear feet of amateur radio station on your operating table.

A new term that came Into the ham



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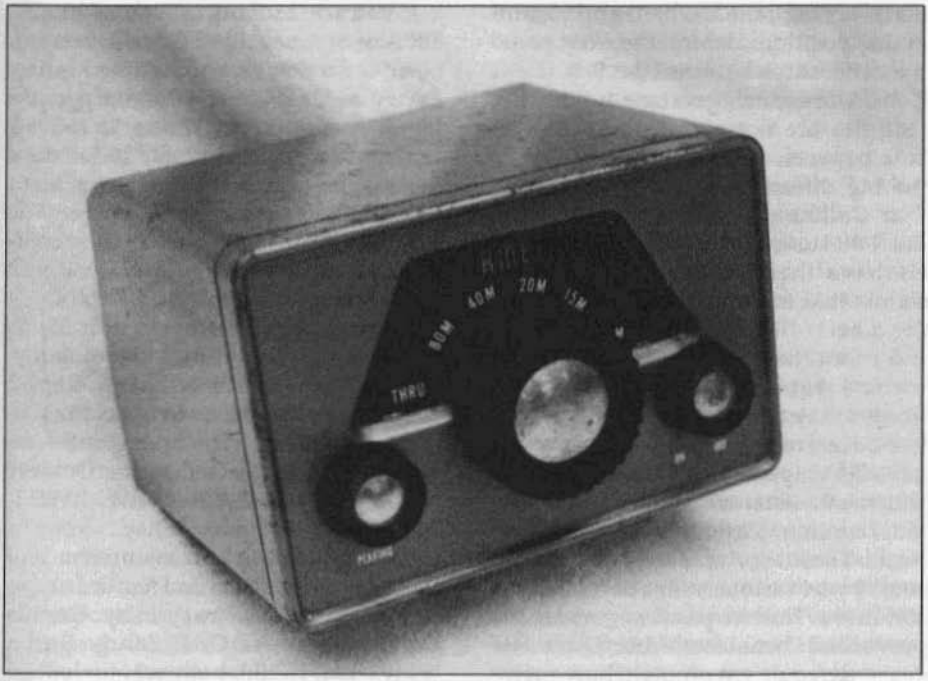
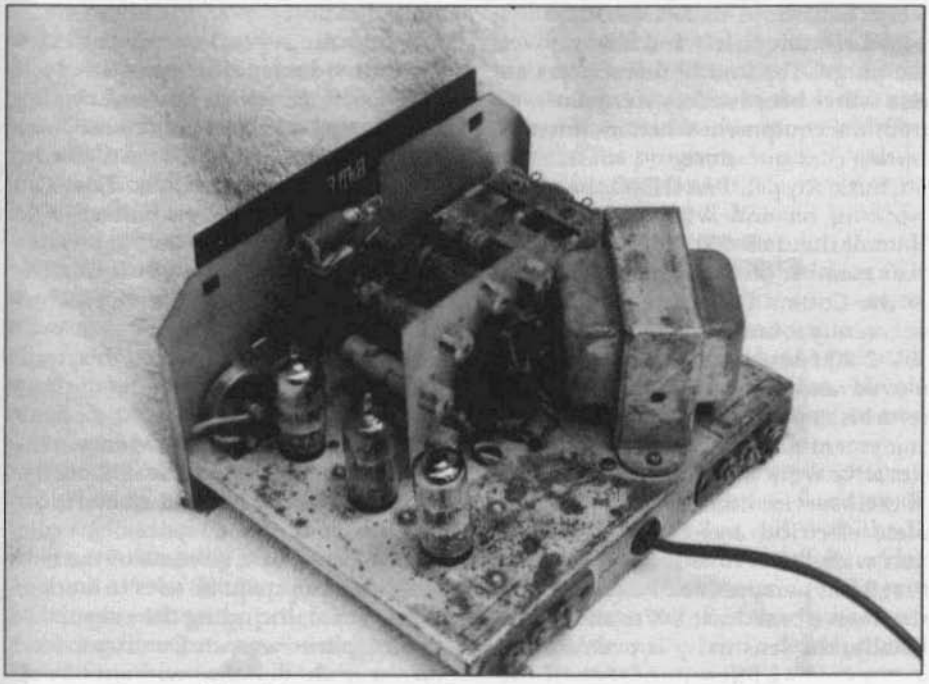



**The RME DB-23 preselector**




**The preselector with cabinet removed**



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R-390A Video Review from page 18
plate, or "tag", the R-390 has no control in that position. Behind the front panel the differences between the R-390 and R-390A are much greater—indeed the modules are not readily interchangeable between the two models. One of the big differences is the R-390A has four Collins mechanical filters where the R-390 uses L-C filtering. Both models have their adherents with some claims that one model is "better" than the other.

It is not the purpose of this article to become embroiled in this debate. Suffice it to say that both the R-390 and R-390A are excellent radio receivers that have developed a cult following among shortwave listeners and vintage amateur/communications receiver enthusiasts. These receivers are fairly easy to come by in various states of repair and condition. The two panel meters are the proverbial "hens' teeth" because a few years ago some government bureaucrat decided that the meter dials and needles were "hazardous materials" to be disposed of immediately and few survived the purge. Top and bottom covers are also scarce because they were removed from the equipment when mounted in certain configurations.

Chuck Rippel, WA4HHG, has been working on and with R-390As and Hammarlund SP-600's for 27 years. A 5 year member of the Board of Directors of the Collins Collectors Association, he recently found and restored a Collins 20V-2 AM broadcast transmitter then moved and retuned it for 160M! He refurbishes these fine radios for the enjoyment derived from the actual restorative work and resultant extension of their service life. He performs complete electrical and cosmetic restoration with the results judged from the first hand perspective of an ham and a shortwave broadcast DX'er since 1971. Finally, the sensitivity is tweaked and measured on a full suite of state-of-the-art, Hewlett-Packard test equipment.

If you are thinking of having your R-390A or Hammarlund SP-600 restored, be advised that an appointment is necessary as Chuck insists on only working on one radio at a time. An R-390A will require approximately 10 full days of work before it will meet his standards, SP-600's take a little longer. The results are, however, absolutely incredible! He says his best R-390A sensitivity figures were .07 uV for 10dB S/N + N and typical figures are .15uV to .35uV.

Floyd Soo, W8RO, and his company, Hi-Res Communications have produced a series of instructional videos for several Collins Radios including the S-Line 75S-3/32S-3 (reviewed in the October 1997 ER), KWM-2/2A, 75A-4, KWS-1, 30S-1, 30L-1 and more. They cover service, modification and maintenance of these popular radios and feature narration and demonstration by Dennis Brothers, WAØCBK and Butch Schwartau, KØBS, both acknowledged "experts" in their areas and radios of specialization.

It took me several evenings to view the four videotapes in the series. I had planned to watch an hour an evening but found the subject material so interesting that this plan was soon discarded in favor of a tape a night. Tape One begins with an overview of the R-390A and contains advice on how to buy one. Chuck points out some of the salient features such as the mechanical filters, 3TF7 regulator tube and more. As an aside on the versatility of this radio Chuck mentioned that some of the more senior intercept operators at a certain three-letter government agency actually prefer the R-390A to the current solid-state receivers. Not a bad recommendation for a 40 year-old radio! Chuck also shows us some of the tools and test equipment he uses to work on these radios, including the essential #8 Bristol splined wrench. Don't try to work on one of these radios without it!

Next, a lecture on the theory of opera-

tion—Chuck uses what appears to be a large schematic diagram and traces the signal path with a laser pointer. I was impressed by the clarity of this diagram on the video. It was very well done technically and Chuck's explanation was clear and easily understandable.

Tape One continues with a tour of the front and rear panels, how to remove the power supply, audio and I.F. modules and some tips on cleaning and mechanical work such as tightening screws, cleaning and a short discussion of tube shields—what they are for and why you should paint the silver ones black. Chuck suggests using Windex to clean the dirt off the tubes—but a caveat from me here is to make sure that you do not wipe off the tube numbers in the process which is easy to do if you're not careful. Chuck also shows us a couple of important modifications such as changing C-553, a plate blocking capacitor that is supposed to keep B+ away from the mechanical filters. If this cap shorts (and they have been known to) the expensive mechanical filter(s) will surely be ruined. This one bit of information alone is well worth the cost of the videos if it saves one or more of your filters.

Tape Two continues with more about the IF module and how to reinstall it as well as a one hour lecture on the Permeability Tuned Oscillator (PTO). This remarkable device is the heart of the R-390A and Chuck gives it the attention it deserves. He covers disassembly of both the Collins and Cosmos units as well as detailed instruction on end point adjustment. This is one of the most misunderstood service procedures that is very important to maintaining the readout accuracy that the R-390A is capable of. Also covered on the second tape is the removal of the front panel—another seemingly daunting procedure until you know how its done. Although Tape Three continues with discussions on the RF module, aligning the cams and reinstalling the front panel, it really focuses on the electrical alignment procedures that will make the receiver perform like it was designed to do. Chuck makes it a point to warn viewers that alignment will not cure a receiver that is "dead" on one or more bands. The last one-hour tape deals with modifications, some troubleshooting, restoration and evaluating your R-390A's performance. Obviously there is so much material on these four video cassettes that it simply cannot all be assimilated with one viewing. Both Chuck and Floyd felt the seven-hour length was necessary to adequately cover the material to their satisfaction. The nice feature of having this seminar on video is that it may be watched over and over again to truly absorb the material. A printed table of contents is supplied with the set so you can find a particular area of immediate interest. It is indexed in elapsed time.

One question in my mind lingered while watching the videos—given the great differences between the R-390 and R-390A radios, how applicable is the material for R-390 owners? Chuck does not profess expertise in the R-390 and so did not include this model's differences in his program. Virtually all the modules are different. However, as an owner of both an R-390 and R-390A I would say in my opinion that there is enough common material such as PTO disassembly, endpoint adjustment, front panel removal and some of the mechanical instruction that would make the R-390A video of sufficient value to the R-390 owner to warrant its purchase price of $109.95.

Video production is very high quality with sharp, clear images and excellent audio. As I observed with the S-Line video, this is an instructional video without all the "schmaltz" found in entertainment titles. It is strictly business and "hands-on." Floyd's description of "heavy duty" is fitting. I was particularly impressed by the clarity of the



continued next page

schematic diagram when Chuck walks us through the circuit with his laser pointer. The video may be purchased for $109.95 plus $4.50 S&H from the ELECTRIC RADIO Bookstore or from Hi-Res Communications, 8232 Woodview Drive, Clarkston MI 48348. Tel: (248) 391-6660 e-mail: hires@rust.net. Check out Floyd's Web site: http://www.rust.net/~hires.

I found this detailed video a delight to watch. There is no doubt that Chuck Rippel knows the R-390A inside and out and he is to be commended for sharing this specialized knowledge with the radio community. There are others who service R-390As for a fee, perhaps seeing themselves as high priests or gurus, tending to keep their dark secrets to themselves in the belief that disclosure will harm their businesses. Chuck has often told me that he does not believe in keeping these secrets to himself; that they are to be shared with his fellow amateurs and shortwave listeners. Judging from his service calender, his revelations do not affect the numbers wanting him to perform his magic. His address is: 2341 Herring Ditch Road, Chesapeake VA 23323-6419, (757) 485-9660. E-mail: crippel@usa.net.

Chuck and Floyd get full marks for this incredible video! ER

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**R-390A Addendum Review from page 18**
includes a brief checklist for someone hoping to confirm the heritage of a given radio.

We also see an example of the rare, civilian-market R-390A, showing its special serial number plate, and a 1968-vintage advertisement in one of the ham magazines.

As in the original series, host Chuck Rippel, WA4HHG, takes us through various restoration, repair, and maintenance procedures. The viewer is treated as an audience of one in a classroom-style setting. Chuck refers to returning to "the lecture" as a way of exiting and rejoining the segments in the presentation, and I felt invited as an interested spectator to his workbench and training laboratory.

The un-scripted classroom setting, while informative and illustrative, makes these tapes differ from corporate videos and vocational training tapes. Hi-Res proprietor Floyd Soo, W8RO, has told me cost considerations discouraged the use of an expensive "broadcast" style of television presentation. But, keep in mind this is intended to reach the communications enthusiast, who may or may not also be a professional bench technician.

Nonetheless, the tapes could benefit from some inexpensive, consumer-grade technology now available. For example, instead of a camera close-up of a paper enlargement of a schematic, the video would have illustrated better with a computer-generated graphic captured and sustained as a video frame. Most R-390A schematics are now available electronically.

Tape Two moves toward finer points to help enjoy this receiver. Chuck discusses techniques of obtaining the highest-quality audio, and in a very subtle way encourages users to try their hand at homebrew. He shows an easy connection with a handful of inexpensive, externally-mounted components to the receiver's rear-terminal "diode" output.

Chuck also shows us some specialized transformers from Hammond Manufacturing which can help a user connect the R-390A to an audio monitoring system. Fred Hammond, VE3HC, formerly manufactured transformers for Collins, and has advertised frequently in ER.

Building a user's confidence is part of Chuck's goal in explaining this receiver, although he never pressures the viewer they should simply tackle the job. Seeing him do it, and hearing his cautions what to watch out for, allows a viewer

to draw a positive conclusion about doing the repair, modification or restoration being described.

Hi-Res missed an opportunity to dramatize the good audio available from this receiver as Chuck staged a monitoring demonstration with a completed, restored radio. We hear Chuck's microphone casually picking up the loudspeaker in the room, instead of having the receiver's audio directly connected to the video's audio track. I found it difficult to discern the audio being illustrated, even on a "hi-fi" television.

The viewer sees good ways to restore the appearance of the front panel and knobs, with before-and-after examples to dramatize the point. Tape Two concludes with a review of external accessories such as digital signal processors, single-sideband adapters, and powered loudspeakers.

Chuck's expertise with the R-390A is well known among enthusiasts for this radio. He tells us the addendum was inspired by discussions via e-mail, internet postings, and on-air QSOs. Having known Chuck for more than 25 years, I can attest that his interest, enthusiasm, and receptiveness to appeals for help are plainly obvious in this video.

He is not an instructor by profession. Consequently, when he takes the time to go through a procedure with this radio, you get the impression he has invited you into his workshop to personally share with you his experience and knowledge. This may draw out the duration of the tape, but it would be a shame to shortchange the explanation.

Chuck conveys an important recognition of the future as he takes to heart the effort to bring people into a knowledgeable understanding of the R-390A. In an interview, he told me his mission is to show how the radio, if maintained properly, "can easily last through several generations of owners."

With the vast majority of examples of the R-390A now more than 30 years old, they've already been through one set of parents -- the military. Now we kids have them, and how we treat these radios will determine whether tomorrow's kids years from now will have a batch of well-cared for receivers to take custody of and continue to enjoy.

This video series, and the latest addendum, shed a lot of light on a popular receiver.

The tapes are available through the ER bookstore. **ER**

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**It's an RA-17L (A Saga) from page 3**

quired funny connectors, to me in San Francisco.

Back home, I waited. And waited. No RA-17L. Finally, after a couple of months, word came that "my" RA-17L and everything else had gotten as far as Heathrow - then no trace. But in a kind gesture, Johns Radio offered to ship replacements which duly arrived several months later. The RA-17L and the RA-137 were the equal of the ones I'd picked out. Beauties! But no connectors. For months now, the receiver has been in my rack but I've had no way to turn it on, lacking the proper funny British power connector. Fax after fax to Pat and still no connectors. The first anniversary of my visit to Johns passed - and still no connectors. My joy in acquiring a RA-17L had turned by now into the bitter ashes of disappointment.

But upon my return from Christmas holidays, there was a little package from England. The connectors! And new ones, too! A bit of wiring and the AC Mains and AE (antenna) connectors were ready. I plugged it in, turned it on, and... nothing. The dial lights lit (beautiful) and the tubes lit but, upon probing, it appeared that there was no B+... er, I mean no H.T. Closer inspection showed the telltale white coloring inside the rectifier indicating a broken envelope. Now the selection of a "pure" British receiver came back to haunt me. Where does one get a replacement CV-1377? Ah, but the CV-1377 appears to be equal to the 5AR4 which AES has available for a reasonable price... from Russia!

Today the tube arrived and was gingerly installed. The H.T. bus was checked - no shorts. On with the A.C. Mains switch (by moving it downwards, of course). Signs of life. Signals! It works!

For the last hour I've been copying everything from the BBC (of course) to FAX on my RA-17L. It's stable as a rock, wonderful to tune and very beautiful. I'm about to button it up and put it back in the rack but I wanted to share my good fortune with my BA colleagues. You're the only ones who will really understand. And somehow I like the idea of a British receiver in the U.S. perking along on a Russian tube.

The moral? Patience does have its rewards. **ER**

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**Editor's Comments from page 1**

been on the air in years and this might be a good chance to get the cobwebs out of them. Other participants might find doing that interesting too.

I received some comments regarding a lack of advance publicity for the AMI Discovery Weekend. I'll try to be better in that area in the future. Maybe those with websites can post a notice regarding the 15M Jamboree. It might contribute to greater participation.

For some reason, over the last while we haven't been receiving the usual number of photos of AM'ers in their shacks with their equipment. I urge everyone to contribute to this part of the magazine. Over the years it's one of the things that has helped popularize ER. I also think it's about time that some of the AM'ers update their photos in ER. Some of the photos are now over ten years old. It'll be interesting for us all to see how we've all aged over the years and how our shacks have changed.

Please don't forget the 15M Jamboree on the weekend of October 23/24. N6CSW



**A complete index of the entire 10 years of ER is available for viewing or downloading at the following website: http://www.qsl.net/n9oo**

**The Last RME Preselector from page 36**

vocabulary in the late forties was noise figure. Developed during the war to measure radar receiver performance it became a buzz word for VHF receiver performance thanks to QSTs VHF editor, Ed Tilton, W1HDQ. Noise figure measured receiver generated noise, so it was not a factor in HF receiver performance. Atmospheric noise, with the possible exception of 10 meters, was the limiting factor in weak signal reception. But this didn't stop RME from cashing in on the term. The DB-23 preselector full page ad in February 1954 said in big print their new unit had a 7.5 dB noise figure. Employing 3 6J6 push pull triode amplifiers it did have a low noise figure, and would have been useful on 6 or 2 meters, but the RME DB-23 covered the 80 to 10 meter ham bands. At least the 23 was a moderate size as it was only 5 by 6 by 8 inches.

I don't think it was much of a success as the one at the Shelby hamfest was the first I ever saw. I don't remember working anyone using one. The price of $49.95 was high for something you didn't need unless you were using an S-38 or SW-54, and why buy a preselector that cost more than the receiver. Most hams must have felt the same as it dropped off the market the next year. If you needed a preselector both Ameco and Lafayette had them for under $25 and the ARRL Handbook described how to build one until 1961.

My DB-23 was a bit rusty but looked usable so I opened it up and checked the 3 6J6s. All had excessive grid emission, must have been subjected to a lot of RF in the past. Three new 6J6s took care of the problem. The selenium rectifier was not producing much B plus. A silicon brought the voltage up. The filter caps checked out good. A shot of Deoxit took care of the band switch. The neutralizing caps were made with twisted wires. It didn't take long to neutralize, the amplifiers oscillation could be heard in my receiver easily. Other than neutralization, there were no trimmers to adjust. A front panel peaking control was the trimming for each band.

To give the DB-23 a fair chance I connected it ahead of my 1939 SX-24. It brought CHU on 7335 kHz up from S8 to 20 dB over 9, of course the noise came up from S2 to S6 so I broke even. Catching W1AW code practice on 28.067 MHz the DB-23 brought them up to S4 from S nothing, and gave a noticeable improvement in the signal to noise. Using my signal generator I put a 27.16 MHz signal into the receiver-preselector combination. It took over 800 uV to bother W1AW. I would guess the image rejection was something better than 30 db, which is great because the SX-24 by itself has practically none. The SX-24s RF stage might knock the image down a bit but its hard to measure any rejection.

The DB-23's 3 RF stages only use 2 tuned circuits. Its predecessors used three tuned circuits with two RF stages. That extra tuned circuit should make the older preselectors better for image rejection. But I've only got the DB-23 and it works fine with my SX-24 on 10 meters so that's where I'm going to sit waiting for the AM action to begin. **ER**

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**Globe King 500 from page 33**

glow purple and pulsate with modulation. Oh, the now-gone days when ham radio was in its glory, when AM was king, when on-the-air manners prevailed, when gentlemen operators respected each other (and the FCC), to flip the plate switch and talk for 10, even more, minutes, I can go back there by turning on the Globe King 500 and its vacuum tube receiver mate. There are more and more AM operators showing up on 3.880. Do all of us get this nostalgic when we cross the 50-year mark in our lives? **ER**

**Collins 75A-1 from page 25**

taken apart, cleaned and repaired). Even so, I came up with a method to repair them without taking them apart. The objective is to re-bond the adjustment screw to the ceramic top, free the stuck halves, and then reestablish the broken electrical connection.

To re-bond the screw, I used thick viscosity cyanoacrylate glue ("CA" to the trade; cheap consumer versions called "superglue") and spray accelerant that makes it set instantly. This is preferable to epoxy, which is not as strong and takes a long time to set thoroughly (I guess that makes me from the instant-gratification "I want my project finished now" generation). Don't use the usual thin superglue available at hardware stores as it will wick into the capacitor and then it will never be usable. Pool a thick bead of CA around the edge of the screw and then hit it a dose of spray "accelerant." Thick viscosity CA and spray accelerant are available at most good hobby shops.

The strength of the CA will allow enough force to be applied to the screw to break the bond between the two ceramic elements, allowing the capacitor to turn again (give the CA an hour to fully cure first). After you have the top half rotating freely, re-solder the small silver wire attached to the top plate element to the adjustment screw. If this wire has been stripped off, you can still solder a wire to the metal plate which is deposited on the top half of the ceramic element, but you will need some good soldering flux. Solder quickly, because you run the risk of lifting the metal pad, which forms one plate of the capacitor, off the ceramic disk if you heat it too much.

**Part 2 next month**

Part 2 of this article will appear next month, and we will dive right into making a few simple mods that will greatly improve your enjoyment of the 75A-1. That gives you one full month to recap and align that 75A-1 that has been sitting on your shelf all these years! ER

**Looking Back from page 2**

Eva and I walked over to the sound stage where she was working and after a red light went off (the red light indicated that a scene was being shot) we went in. The building was huge—and I do mean huge! There was a dressing room trailer set up for Eva to change. She invited me to come in while she changed. The trailer was large and had a screen at one end where she dressed. After she finished dressing I accompanied her over to the set. I should mention the entire sound stage was filled with perfumed smoke. The reason being that the scene she was in was being shot in a cabaret. I saw Elizabeth Taylor and Van Johnson but didn't get to meet them. The shot with Eva only took a few minutes and then she came back and we went to her trailer where she changed her clothes again.

Doug showed up and the three of us went up to a theater where he was working on the sound part of a movie. One thing I remember him showing us how he added the sound of a door closing. He pressed various controls on the panels and each had a different sound of doors closing. He played around with the various sounds until he got what he wanted and then added the sound into the film. After Doug had finished showing us around he asked me where I would like to go to dinner. Not being bashful I said I had heard a lot about Romanoffs and asked if that was possible. He told me that was the place he was going to suggest. Eva surprised both us and asked if she could go along—of course we invited her.

That night at Romanoffs the newspaper guys were taking pictures and of course they got our table where a lot of stars were sitting. I remember that I called my wife Martha and told her all about my adventures just so if she saw the photo I would not be in trouble. Hah! You are going to have to wait until the next issue of Electric Radio to hear the rest of this story. W1ICP

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**FOR SALE:** 75A4, SP-600, Atwater Kent 10, SW3, SW5, SX-23, Transoceanic, Viking II. Carter Elliott, 1460 Pinedale Rd., Charlottesville, VA 22901. CElliott14@aol.com.

**FOR SALE:** Repro Nameplates, R-390A generic - $9; 51J-3 and 51J-4 exact replicas - $12. Tom Marcotte, N5OFF, 242 Chestnut Oak Dr., Mandeville, LA 70448. marcotte@iamerica.net

**INFORMATION:** Available on classic communications gear. Just look at: http://www.geocities.com/SiliconValley/6992/index.htm. Thanks for your visit!. Jose, EB5AGV, eb5agv@amsat.org

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**FOR SALE:** Send SASE for large list of excess parts, publications, ham & test gear. K4AFW, 104 Glenwood Dr., Williamsburg, VA 23185.

**FOR SALE:** Panel, cabinet refinishing - Johnson Rangers. Will look better than original! $250. set (+shipping). Yes, we still sell tubes-- Visa/MC/Am-xp - Dee, W4PNT, 534 W. Main St - Waynesboro,VA 22980. (540) 249-3161; cell:(540)471-7023, w4pnt@rica.net

**FOR SALE:** Collins meatball lapel pin - $5.95 + $.75S&H. George Pugsley, W6ZZ, 1362 Via Rancho Prky, Escondido, CA 92029

**FOR SALE:** Hallicraftes S-20 rcvr, fair to good condx, no book. Fred Clinger, OH, (419) 468-6117 after 6 PM.

**FOR SALE:** NOS TCS baseplates, most still in factory paper - 2/$15 + shpg. Carl, KN6AL, POB 3531, Laramie, WY 82071. (307) 742-0711, kn6al@uwyo.edu

**FOR SALE:** Hallicrafters SX-101 Mark IIIA rcvr in very good condx w/orig box & manual, plus Hallicrafter's R42 Bass Reflex spkr - $350. PU only! (too big to ship). Bob Eckert, 133 E. 7th St., Clifton, NJ 07011-1104 (973)-340-0579

**FOR SALE:** RCA 7360 tubes. $25 ea. John H. Walker Jr., 11015 W. 126th Terr., Overland Park, KS 66213. (913) 782-6455

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**FOR SALE:** Collins drum overlays. 75A-2, 3, 51J#. For 75A-4 & KWS-1, specify new/old - $8.50 ea. 2/$15 ppd. Correct colors. Charlie Talbott, K3ICH, 13192 Pinnacle Ln., Leesburg, VA 20176-6146. (540) 822-5643.

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**FOR SALE:** Lots of amateur parts/stuff in the K7FF SSuper-Close-Out sale, big discounts, e-mail for list, Derek, mailto:k7ff@inreach.com

**FOR SALE/TRADE:** Collins 310A-1, KY-45/FRT-5; TMC/SBE-2 EFJ: Matchbox-275, Electronic/TR-5W; 4-125A/pulls. List. Sam Timberlake KF4TXQ, P.O. Box 161, Dadeville, AL 36853-0161 256 825-7305, stimber@lakemartin.net

**FOR SALE:** Henry 2K-2 console, all orig., cabinet needs paint, works great - $600 FOB, with 4 tested 3-400Z spares - $800 FOB. Sandy Blaize, W5TVW, 40460 Edgar Traylor Rd., Hammond, LA 70403. ebjr@i-55.com

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**FOR SALE:** Heath Warrior HA-10 linear plus Johnson Matchbox - $175. PU only. Don, WA2EWP, NY, (914) 739-5843, wa2ewp@juno.com

**FOR SALE:** Gonset Commander HF 5 tube xmtr, 1.7 to 54 mc, CW & Phone. Marvin, 2957 Gaffney Rd., Richmond, VA 23237. (804)275-1252 wa4tqt@juno.com

**FOR TRADE:** Two good RCA 833A's for one Taylor 833A; also looking for Taylor 204A, 813, 875A. John H. Walker Jr., 11015 W. 126th Terr., Overland Park, KS 66213. (913) 782-6455, johnh.walker@alliedsignal.com

**FOR SALE:** Books; old Hifi; send SASE. **WANTED:** Stancor/Chicago PCC200, PCC55, PCO/PSO150, RC8150. Richard Robinson, POB 1425, Wallingford, CT 06492. (203) 949-0871, richmix@erols.com

**WANTED:** Collins - Amateur catalogs, sales literature, manuals, promotional items & Signals. Richard Coyne, POB 2000-200, Mission Viejo, CA 92690.

**WANTED:** Howard radios of any type. Andy Howard, WA4KCY, 105 Sweet Bay Ln, Carrollton, GA 30116. wa4kcy@usa.net

**WANTED:** E. F. Johnson Co. HAMALOGs, unusual photos and information 1923-70. Bruce Hering, 41120 State Highway 13, Waseca, MN 56093. (507) 835-5619. bhering@efjohnson.com

**WANTED:** Top dollar paid for Winchester Radios and Winchester related items. Donald Daggett, 122 Hall Rd., Grahamsville, NY 12740. (914) 985-7249, wc2e@webtv.com

**WANTED:** For purchase. Equipment & technical information related to AN/ARN-6 Radio Compass. Jim Cavan, 6 Timberline, Norfolk, MA 02056. (508) 528-0908, jcavan56@aol.com

**WANTED:** Gearshift for Teletype Model 28, or complete machine with one. Ivan, WA6SWA, POB 248, Reno, NV 89504. (775) 329-7738, idh@cs.unr.edu

**WANTED:** SW3 #33A and #35 coils. I will trade my extra coils SW3 coils. Hank Bredehorst, 2440 Adrian St., Newbury Park, CA 91320. (805) 498-8907

**WANTED:** Parts for a TMC GPT-750 xmtr. I need the AM modulator deck and other parts to restore this unit. John, KF2JQ (716) 873-0524 jprusso@acsu.buffalo.edu

**WANTED:** Long wire ants AT101, AT102, GRC-9; DY88/105; PP327GRC9; counterpoise CP12 & 13 GRC9; BC348 pwr conn PLQ102/103. KA1ZQR, 348 N. Main St., Stonington, CT 06378.

**WANTED:** WW-2 Japanese military radio of any kind, Hammarlund PRO-310. Takashi Doi, 1-21-4, Minamidai, Seyaku, Yokohama, 246 Japan Fax 011-8145-301-8069, takadoi@carrot.ocn.ne.jp

**WANTED:** Manual for RAL-7 rcvr and Plate/Tune knobs for KWS-1. Bill Gittere, K2LNU, 10510 Clarence Center Rd. Clarence, NY 14031. (716) 741-3776, bgittere@juno.com

**WANTED:** A quartz crystal historian is seeking a sample variable frequency crystal from Bliley, Scientific Radio Products, and Valpey to add to his crystal display. Jim Musgrove, K5BZH, 4217 Buckeye, Fort Worth, TX 76137. (817) 232-9438).

**WANTED:** G-133 receiver, G-186 display For Sale: equipment, parts, crystals, manuals, books long list $ 1.00 Joe Orgnero, VE7LBI, 1349 Leask Rd. Nanaimo, BC V9X 1P8 Canada 250-722-2707 joseph@pacificcoast.net

**WANTED:** AOR DDS-2A VFO for Collins 75S and KWM2/A; Collins 55G-1; National HRO-50T1 coil set. Al, (909) 734-0623, al_royce@hotmail.com

**WANTED:** WW II German, Japanese, Italian, French equipment, tubes, manuals and parts. Bob Graham, 2105 NW 30th, Oklahoma City, OK 73112. (405) 525-3376, bglcc@aol.com

**WANTED:** Heath Gear, unassembled kits, catalogs and manuals. Bill Robbins, 5339 Chickadee Dr., Kalamazoo, MI 49009. (616) 375-7978, billrobb@net-link.net

**WANTED:** I wish to correspond with owners of National FB7/FBXA/AGS coil sets. Jim, KE4DSP, 108 Bayfield Dr., Brandon, FL 33511. j.c.clifford@juno.com

**WANTED:** Anyone having info on the Deltronic Corporation of Los Angeles, CA, please drop an email, letter or call. The company was in operation in the early 1950's. Thanks, George Maier, K1GXT, 64 Shadow Oak Dr., Sudbury, MA 01776. (978) 443-9659, gmaier@ultranet.com

**WANTED:** SW-3 coils any band; any early ham, spark or wireless equipment; early ARRL Handbooks. Mike Bald, WD5GLW, (918) 492-7361, radiomb@aol.com

**WANTED:** Aircraft radios, xmtrs and airport ground sets prior to WW II. James Treherne, 11909 Chapel Rd., Clifton, VA 20124. (703) 830-6272, treherne@erols.com

**WANTED:** British, Commonwealth W.S. 62, W.S. 22, W.S. 18, W.S. 48, W.S. 46. George Rancourt, K1ANX, MA, (413) 527-4304

**WANTED:** Knight-kits; Ocean Hopper, Star Roamer II, T-150A, and others. Also Allied/Knight catalogs, especially 1959-1962, 1965, 1969-1972. Steve Donahue, 1773 Sterling Pointe, Cleveland, TN 37312.

**WANTED:** 2 1/2" round meter for 1-177B Supreme tubetester or junker with working meter. David Boardman, 10 Lemaistre, Sainte-Foy, Quebec G2G 1B4. (418) 877-1316. davidfboardman

**WANTED:** Heath DX-20, DX-35, DX-40 xmtrs, VF-1 VFOs. Also, J-38 military hand keys; Navy RBM-4 HF rcvr; National converters for NC-300s, Derek, CA, mailto:k7ff@inreach.com

**WANTED:** B/W coils 40 JVL and 20JVL also 40HDVL. Thanks Fred, KC4MOP, 6922 Furness Ave, Oxon Hill MD 20745. (703) 307-1557

**WANTED:** TM 11-272 for SCR-245, Navships 91235 for GRC-13. Joseph Pinner, KC5IJD, 180 Circle Dr., Harriman, TN 37748. kc5ijd@sprintmail.com

**WANTED:** Iowa QSL cards pre1940 during the '9' call district era. Also want any 1950s QSL of KNØCER or KØCER at Ames, IA. W5USM, CBA or w5usm@aol.com

**WANTED:** AS-4, AS-574 antennas, tuning cap, output xfmr, 4TH IF xfmr, 3RS IF xfmr, output connector for dynamotor base for BC348. Dean, MN, (612) 869-9264

**FOR SALE:** Hallicrafter's manuals, copies starting at $5, some Johnson, WRL, others. SASE for list. DSM Diversified, 909 Walnut St., Erie, PA 16502.

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**FOR SALE:** Tube type kits for CW/AM. Vintage Radio Kit Co, 427 North Main St., Sharon, MA 02067. email us at CPCW-5 @aol.com or visit our web site at: http://www.mnsinc.com/bry/vintage.htm

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**FOR SALE:** Vintage radios on display, bought, sold, traded and repaired. Webpage - http://www.tiac.net/users/hobfact. Rick Galardi, W1DEJ, Boston, MA, (781) 485-1414, Fax 289-1717, hobfact@tiac.net

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**FREE:** Encyclopedia of Amateur Radio Equipment. Hundreds of photos & descriptions spanning over 80 yrs. http://www.aade.com/hampedia/hampedia.htm

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**FOR SALE:** LSASE for list of old parts, many V caps, Hphones, mics, accessories, rigs. Carl, WA7LUY, 644 Pineview Pl, Casper, WY 82609.

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**TRADE:** Unbuilt Heathkit HW5400 100 watt, SSB/CW, all-band (includ'g WARC) xcvr. Trade for Collins mech filters, 6KC & 1KC for my 51J4, & an 8KC for my 75A4. Dick Dixon, W7QZO, 16032 Lost Coyote Ln, Mitchell, OR 97750. (541) 462-3078, richdix@bendnet.com

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**FOR SALE:** Heathkit SB-102 xcvr w/SB-620 spkr & pwr sply, really nice -$150. Robert Braza, W1RMB, RI, (401) 434-1629

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**FOR SALE:** ARRL handbooks at 1991 prices, 1929 to 1987. LSASE for complete list & price; also Jones books from 1930s. John Snow, W9MHS, 4539 N. Bartlett Ave., Shorewood, WI 53211. (414) 964-0194

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**FOR SALE:** Back issues of Antique Radio Classified 1989 thru 1997, 9 yrs + 3 issues of 1988. All mint condx - $10 per yr + shpg; 5 yrs Electric Radio 1993, 95, 96, 97, 98 - $10 per year + shpg. John Snow, W9MHS, 4539 N. Bartlett Ave., Shorewood, WI 53211. (414) 964-0194

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**FOR SALE:** Hickok 752A tube tester w/manual & supplementary test data, exc condx electrically & physically - $125 + shpg. John Snow, W9MHS, 4539 N. Bartlett Ave., Shorewood, WI 53211. (414) 964-0194

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**FOR SALE:** TCS-12 dynamotor pwr sply - $50; Heath Twoer - $25; Poly Comm Senior 23 CB - $100; Knight KA-40 audio amp - $75; B&K 600 tube tester - $20; B&K 465 CRT tester $25; Heath ET-3200 breadboard - $35; Dynakit FM-3 tuner - $50. Norbert C. Wokasch, WAØKJE, 3312 W, Bijou, Colorado Springs, CO 80904. (719) 633-5661

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**FOR SALE:** Collins S-line cabinet top lid support supports - $12 a pair shpd. Butch Scahrtau, KØBS, 5361 St Mary Dr., Rochester, MN 55901. (507) 282-2141

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**FOR SALE:** WACO-5NWX telephone filters. Just plug in. 1/$13.95, 2/$25, 3/$34. Money back. Cecil Palmer, 4500 Timbercrest Ln., Waco, TX 76705. (254) 799-5931, w5nwx@juno.com

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**FOR SALE:** Collins 30L1 owners new Cetron 811A's - $19; 32V owners Raytheon 4D32 - $19; major credit cards accepted. Don, W4GIT, FL, (352) 475-3306.

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**FOR SALE:** Heath Nostalgia, 124 pg book contains history, pictures, many stories by longtime Heath employees. (See BOOKS inside back cover.) Terry Perdue, 18617 65th Ct., NE, Kenmore, WA 98028.

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**FOR SALE/TRADE:** Manuals for Johnson, Elmac, Gonset, RME, Harvey-Wells, Morrow, Drake, Clegg, Swan. NI4Q, POB 690098, Orlando, FL 32869-0098. (407) 352-5536, ni4q@juno.com

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**FOR SALE:** Hallicrafters S-19R, works, looks good - $115; Heath HP-23B sply - $60; EFJ 250-30 LoPass - $25; Multi-Elmac PMR-7 rcvr w/manual - $65; Multi-Elmac PS-2V AC sply for AF-67, w/cables - $80; Swan 500 w/117x AC sply, orig owner - $175; Swan 410 VFO - $80; Gonset 3069-12 pwr sply for G-66B - $40; pwr sply/modulator for Gonset G-77 - $95. U-ship. WA7HDL, ID, (208) 756-4147 after 0030Z.

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**FOR SALE:** 75S-1/32S-1/SS pwr, very good - $325; CE 20A & VFO - $60; BK-35M dual trace scope - $160; assorted canon plugs/RF connectors unused - $1/pound U-shp. Mike McDermott, WØBVA, 305 N. Keith St., Scammon, KS 66773. (316) 479-2756

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**FOR SALE:** Hallicrafters SX-100 - $285; HT-40 - $75; Johnson Challenger - $75; Heath HR-10B - $85; HO-13 - $130; HW-16 - $115; Drake 2-NT - $115; 2-C - $165; Lafayette HA-410 - $150; Clegg Venus - $375. Free List. Richard Prester, 131 Ridge Rd., W Milford, NJ 07480. (973) 728-2454 rprester@warwick.net

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**FOR SALE:** 10 lbs T/C plug-in coil sets; NIB SW4 coils; 4 headphones, WE others; NIB Philmore mic; Heath freq meter; grid dip, coils, manual; extra set coils; Collins AC control panel; HP AC volt meter. Bill Coolahan, 1450 Miami Dr. NE, Cedar Rapids, IA 52402-2933. (319) 393-8075

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**FOR SALE:** Galena xtal radios or parts; small radio parts are FREE S & H not. L. Gardner, 1158 Two Mile Creek Rd., Tonawanda, NY 14150. (716) 873-0447

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**FOR SALE:** "Complete Guide To WWII Military Communications Equipment", 117 pg info on almost all WWII equip. - $15 + $2 domestic mail. Sam Hevener, W8KBF, 3583 Everett Rd., Richfield, OH 44286-9723. (330) 659-3244

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**FOR SALE:** Convert any wattmeter to read PEP! Perfect for AM/SSB - $19.99 ppd for complete kit! HI-RES, 8232 Woodview, Clarkston, MI 48348. (248) 391-6660, hires@rust.net

**ELECTRON TUBES** FREE Catalog, over 2,000 types in stock. **Electron Tube Enterprises,** Box 8311, Essex, VT 05451. (802) 879-1844, FAX (802) 879-7764

**FOR SALE:** T-Shirts w/Johnson Viking logo - $15, state size. Viking Radio Amateur Radio Society, POB 3, Waseca, MN 56093.

**FOR SALE:** Used technical books - radio, electronics, math, military, magazines, etc. List: $1 (stamps OK). Softwave,2 Dept. ER, 1515 Sashabaw, Ortonville, MI 48462

**FOR SALE:** Strong steatite antenna insulators. Lengths from two to fifteen inches. SASE for list. John Etter, W2ER, 16 Fairline Dr., East Quogue, NY 11942. (516) 653-5350

**FOR SALE:** Dial/clock covers. Send bezel, old or drawing, make/model, guaranteed satisfaction - $10 ppd. William P. Turner, WAØABI, 1117 Pike St., St. Charles, MO 63301. (314) 949-2210

**FOR SALE:** Globe VHF xmtr; Hallicrafters S-85; Electronic Engineers SS-75 exciter, manual; 1964 QSTs. Louis L. D'Antuono, WA2CBZ, 8802 Ridge Blvd., Brooklyn, NY 11209. (718) 748-9612 after 6 pm.

**FOR SALE:** ARRL & other Amateur Radio books, mostly new. SASE for list. Bill Riley, 863 W. 38th Ave., Eugene, OR 97405-2375. (541) 345-2169

**FOR SALE:** Heathkit: xcvr model HW17, unused; multiplier model QF1; electronic keyer model HD1410; electronic switch model MOD53; scope model 1010 w/probes; 5-inch push-pull oscilloscope model 07. Military Gear: pwr sply AC-DC M1070; reel to reel unit w/CW tape model TG34A; navy portable test oscillator; 6-mtr xtal set 42 xtals 50.0-54.0 encased; xmtr tuning unit-pullout mod TU8-8. CW keys: Vibroplex bug-Blue racer SN105600; Lionel bug mod J-36 SN 17470; two finger kitkey SN110; Palomar Paddle keyer; Sip and Puff keyer; Railroad key & keyer mounted w/battery; EICO Electr keyer mod 717; Microcraft Morseaword; Morsematic; Heath Electr paddle keyer mod HD1410. Misc: Regency 11-mtr CB base xcvr w/mic; Drake W4 wattmeter; Tompkins 2-mtr tunaverter mod 1450; Tompkins CB-10 tunaverter mod 273X; pwr sply Pyramid 50 amp; pwr sply Ambitrol 0-40 VDC mod 4005; Pyramid capasitor-resister analizer mod CRA1; Viking Challenger SW xmtr; Twoer mod HW30 w/mic; Weston Analyzer 1600-VDC-VAC mod 980; bare bones xmtr good tubes, free; Dynamotor 12V West-Electric mod 273X. All units PU or you ship. Prices up to buyers will. Dick Squires, KA6JGP, 5021 Roberts Rd., Yucca Valley, CA 92284. (760) 228-9888

**FOR SALE:** Repair, upgrade, performance modification of tube communications & test equip. Accepting most military, all Collins & Drake designs, & the better efforts from others. Laboratory performance documentation on request. Work guaranteed. Chuck Felton, KDØZS, Felton Electronic Design, Box 187, Wheatland, WY 82201. (307) 322-5858, feltoned@coffey.com

**FOR SALE:** Dr. Radio repairs vintage ham gear. Steve Trimble, K5DJH, Box 73, Weston, TX 75097-0073. (888) 73-K5DJH. k5djh@texoma.net

**FOR SALE:** Collins 51J series drum overlay - $10 ea, specify which. Ron Hankins, KK4PK, 555 Seminole Woods Blvd., Geneva, FL 32732. (407) 349-9150

**FOR SALE:** Copies: Hard to find schematics for radios, also kit radios 1922-1950; manuals: test equip. ham gear. Contact me for prices, availability. Duane Ballew, KB7QZK, 6813 152nd St. Ct., NW, Gig Harbor, WA 98332. (206) 851-4505

**FOR SALE:** Tube list, new & used, wide variety audio, ham. Recently expanded. SASE 52¢. Bill McCombs, WBØWNQ, 10532 Bartlett Ct., Wichita, KS 67212-1212.

**FOR SALE:** 'The Gonset Guy', basement full of Communicators, 10 meters thru 144 MHz, including CD aircraft versions; many mobile converters & VFOs, phone patches etc - Ask. Steve Gross, N4PZ, IL, (815) 734-4255.

**FOR SALE:** Tubes galore. Send SASE for new list AA; also test equip (list); tube sockets & extenders; Amphenol plugs & sockets; 4 thru 12 pins, ditto; Cinch Jones, Ballast tubes, time delays, HV caps; teletype repair parts, Typetronics, Fred Schmidt, N4TT, POB 8873, Ft. Lauderdale, FL, 33310-8873. (954) 583-1340, fx 583-0777

**FOR SALE:** TenTec SP325 - $300; Autek RF1 analyzer - $85; Radio Works vertical or line isolators - $15. Harry Blesy, N9CQX, 9S740 Clarendon Hills Rd., Hinsdale, IL 60521. (630) 789-1793

**FOR SALE:** (2) Gonset Communitor II xcvrs, both working good - $35 for both. Robert Martin, 111 Bancroft, Rochester, NY 14616. (716) 663-4182

**FOR SALE:** BC348; ARC 5; old BC sets. Ken Kolthoff, K8AXH, 8967 Scott Dr, DeSoto, KS 66018. (913) 585-1196

**FOR SALE:** Amplifier repair, tube types only. 45 years experience. Steve Gross, N4PZ, 602 W. 1st St., Mt. Morris, IL 61054. (815) 734-4255, n4pz@aol.com

**FREE:** To a good home complete SRT-14/15 xmtr, big, heavy PU only. Howard Rock, NC, (252) 441-1360 dys, 441-6038 eves. hrock@interpath.com

**FOR SALE:** Precision ES oscilloscope, works - $20 + shpg. Henry Mohr, 1005 W. Wyoming, Allentown, PA 18103.

**WANTED:** Hallicrafters Village/Hamlet radios TR-5/TR-20 & Gonset Civil Defense 6m radios/accessories, manuals also. Daniel Cahn, 3444 Greenwood Ave., Los Angeles, CA 90066. Fx/msg (310) 398-7159 or danielc411@aol.com

**WANTED:** Broadcast gear; tube or solid-state, compressors, limiters, equalizers, microphones, consoles, micpreamps, recorders. Mike States, Box 81485, Fairbanks, AK 99708. (907) 456-3419 ph/fax or mstates@polarnet.com

**WANTED:** Cash for Collins: SM-1, 2, 3; 312A-1, 2; 55G-1; 399C-1; 62S-1; KWM-1; 302C-3; 51S-1; 75S-3C; 32S-3A. I buy any Collins equip. Leo, KJ6HI, CA, Ph/Fx (310) 670-6969. radioleo@earthlink.net

**WANTED:** Collins 310B3 w/ant tuner, 70EBA oscillator assembly, & Chicago 500W CMS-2, high level modulation xfmr. Jerry, W8EGD, CO, (303) 979-2323.

**WANTED:** Information-WW2 TCS Radio System: Design, Manufacturing & Operation for article. Any help appreciated. Thanks. Greg Greenwood, WB6FZH, POB 1325, Weaverville, CA 96093. (707) 523-9122 (message) gregfzh@aol.com

**WANTED:** Tube-type Hi-Fi & guitar amplifiers by ACRO, EICO, Fender, Marantz, McIntosh, Pilot, Triad, UTC. Rob, CA, (510) 845-2625.

**WANTED:** Antenna switch wafer for Drake MN-2700 antenna tuner or entire parts unit. D. Humbertson, HC 86 Box 123A, Fort Ashby, WV 26719. daveh@hereintown.net

**WANTED:** Kleinschmidt teleprinter models: 311, 321, (AN/FGC-40, AN/GGC-16, AN/UGC-39...) Tom Kleinschmidt, 506 N. Maple St., Prospect Hts., IL 60070-1321. (847) 255-8128

**WANTED:** Old tube amps & xfmr's by Western Electric, UTC, Acro, Peerless, Thordarson; Jensen, JBL, EV, Altec, WE spkr's. Mike Somers, 2432 W. Frago, Chicago, IL 60645. (312) 338-0153

**WANTED:** Military survival communications equip: radios, beacons, manuals, books, historical info/photos. Daniel Cahn, 3444 Greenwood Ave., Los Angeles, CA 90066. (310) 398-7159. danielc411@aol.com

**WANTED:** Visitors and tubes by museum. Old and odd amateur or commercial tubes, foreign and domestic purchased, traded or donations welcome. All correspondence answered. K6DIA, Ye Olde Transmitting Tube Museum, POB 97, Crescent City, CA 95531. (707) 464-6470

**WANTED:** WW II Japanese, German, Italian radios & communication equip for display in intelligence museum. LTC William L. Howard, 219 Harborview Ln., Largo, FL 33770. (813) 585-7756, wlhoward@gte.net

**WANTED:** RCA 140, 141, AVR5A. GE K80, K80X, K85. Any condx. James Treherne, 11909 Chapel Rd., Clifton, VA 20124. treherne@erols.com

**WANTED:** Meter for EF Johnson Ranger. Ron, K1PW, rwf@nixonvan.com

**WANTED:** Parts for TCS rcvr & xmtr that I am restoring. K6GPB, 5319 Sierra Vista Rd., Murphys, CA 95247. earlw@goldrush.com

**WANTED:** Scott Special Communication rcvr; Hallicrafters SX73. EA4JL, contact in the States, Kurt Keller, CT, (203) 431-6850.

**WANTED:** A "junker" BC-375/BC-191 for parts, any condx. Ted Bracco, WØNZW, 203 E. Main St, POB 730, Teutopolis, IL 62467. (217) 857-6404 x306, braccot@hotmail.com

**WANTED:** Service manual for RCA Radiomarine Direction Finder model AR8712. Al Kaiser, W3LEQ, 713 Marlowe Rd, Cherry Hill, NJ 08003-1551. (609) 424-5387

**WANTED:** TV-2/U manual missing pages: Title, 1, 2, 24, table contents, parts section. Bob, KC5LHR, NM, (505) 291-0950, Harding632@email.msn.com

**WANTED:** Rhode & Schwarz ED 07 rcvr. Harry Weber, 4845 W. 107th St., Oak Lawn, IL 60453-5252

**WANTED:** June 1945 edition of CQ mag. Tom Berry, K9ZVE, 1617 W Highland, Chicago, IL 60660. (773) 262-5360 or 262-0016.

**WANTED:** EF Johnson attenuator, cat. # 250-42-1; 6dB attenuator for Ranger. Michael Behar, WM1O, 17 Gerlach Pl., Larchmont, NY 10538. (914) 834-7678

**WANTED:** Collins R389, 30K-, 310-, 399C-1, KW-1, HF80 i.e. HF8014, 851S-1, Hallicrafters SX-115. Richard, WAØAKG, NE, (402) 464-8682.

**WANTED:** Test equipment & tube audio amplifiers. Mike Nowlen, WB4UKB, 2212 Burgee Ct., Reston, VA 20191. mike@3dnet.com

**WANTED:** McKay Dymek radio literature & info. Gene Peroni, KA6NNR, POB 58003, Philadelphia, PA 19102. (215) 665-6182

**WANTED:** Cash for Collins: SM-1, 2, 3; 55G-1; 62S-1; 399C-1, 515-1; 75S-3A, C 32S-3A; any Collins equip. Leo, KJ6HI, CA, ph/fx (310) 670-6969, radioleo@earthlink.net

**WANTED:** National HRO black wrinkle spkrs, oak coil boxes, coils; Western Electric horns, spkrs, amps, mics. Barry Nadel, POB 29303, San Francisco, CA 94129. bnadel@ccnet.com

**WANTED:** Tube type shortwave converters, preferably pre-war. David L. Muse, 510 Minturn Ave., Hamlet, NC 28345.

**WANTED:** TMC GPT-750, TAC Tuner, GPR-90/92 & GSB-1. Alan Gray, W3BV, PA, (215) 795-0943.

**WANTED:** Narrow base Vibroplex bug (3" or less); schematic on Collins PM-2 pwr sply. Brian Roberts, K9VKY, 130 Tara Dr., Fombell, PA 16123. (724) 758-2688

**WANTED:** Documentation R274D FRR military SX-88 modification replacing xtal filter w/3 Collins mechanical filters professional modification but have no schematic. From estate W5HWJ. Clement Burke, W5IXR, NM, (505) 689-2367

**WANTED:** Johnson Viking Valiant II w/TR switch & orig manual. C6ANI, POB N4106, Nassau NP, Bahamas.

**WANTED:** Mackay marine 3010-C rcvr, must be 100% orig, unmodified & complete, will consider B model; SRR/FRR switch arms; R-388 parts. K7MBK, AZ, (480) 962-0220. micspec22@aol.com



**WANTED:** Navy xmtrs: MQ, TCA, TCE, TCN, TCX, TDE; rcvrs: RAW, RAX, RBD, RBJ. Steve Finelli, 37 Stonecroft Dr., Easton, PA 18045. (610) 252-8211. navrad@enter.net

**WANTED:** Tektronix memorabilia & promotional literature or catalogs from 1946-1980. James True, N5ARW, POB 820, Hot Springs, AR 71902. (501) 318-1844, Fx 623-8783, james.true@ibm.net

**WANTED:** Millen 90831 modulator and 90201 pwr sply. - Don Buska N9OO, 4805 64th Ave., Kenosha WI 53144, (414)654-0072, n9oo@qsl.net

**NOTICE:** For the new millinea, K7FF is sponsoring an antenna /operating 'contest'. It will involve the building of a vertical antenna along the lines of the 'beer can' antenna featured in QST magazine in the late 50's, any band/bands, preferrably the lower frequencies. 'Creative' designs encouraged (ie. different size cans, distintive shapes, etc.) For the operating portion, entrees must have used 'vintage stuff', etc. Certificates. If you or your club would like to sponsor a certificate, or small 'appropriate' award, and/or for contest rules, e-mail. Derek, CA, mailto:K7ff@inreach.com

**WANTED:** A quartz crystal historian is looking for documentation, specifications, films, and other materials relating to crystal resonator design, manufacturing, and use both before and during WW II. Common items (QST articles, Buchannan's book, etc.) are not needed. Looking for items like: The 62 mimeographed bulletins which were published by the Galvin Manufacturing Company of Chicago, Illinois during WW II; MIL-C-16B Crystal Unit, Quartz (CR-1A/AR, Pressure Mounted); Frondel, et al., "Handbook of Manufacture of Quartz Oscillator Plates", Quartz Crystal Section (OCSigO), 20 August 1942. Contact me for a list of items sought. Ken Burch, WB9TRY, 11309 April Dr., Austin TX 78753-2946. ep5231@email.sps.mot.com

**WANTED:** Johnson Invader, can pick up in the vicinity of Reading, PA. Dan, (610) 670-2980. k3xr@juno.com

**WANTED:** Hammarlund noise immunizer (silencer) for HQ170/180 rcvr. Ed, N5BFW, (817) 337-4464, ecuevas@juno.com

**WANTED:** Collins R390A tuning knobs; Hammarlund Comet Pro knobs or parts set; National NC-80 knob; Heath SB300 tuning knob; SBA300-6 converter; Skyteck tubesters. Dennis Henrichs, POB 1717, Medical Lake, WA 99022. radio2den@webtv.net

**WANTED:** Service manual & schematic for Apelco marine xcvr AE-274M. W7ISJ, POB 18436, Tucson, AZ 85731. (520) 886-3087

**WANTED:** Heathkit SB series knobs 2 large, 3 small Robert Perlstein, W1IV, PO Box 642 Old Orchard Beach, ME 04064. (207) 934-9206 perls@ime.net

**WANTED:** A metal enclosure (cabinet) for the WRL Globe Chief #90 xmtr. James T. Schliestett, W4IMQ, POB 93, Cedartown, GA 30125. (770) 7485968, imq@bellsouth.net

**WANTED:** Hallicrafters S-39 rcvr Skyranger. Bob, K1YJK, CO, (303) 768-9200, k1yjk@arrl.net

**WANTED:** Watkins-Johnson or Communications Electronics Inc. info, catalogs, manuals or equipment. Terry O'Laughlin, WB9GVB, P.O. Box 3461, Madison, WI, 53704-0461, 608-244-3135

**WANTED:** Hallicrafters HT-1, HT-9, HT-31, 5-T, SX-11, SX-17, SX-25; Howard rcvrs; Harvey xmtrs. Ken Seymour, KA7OSM, 9115 SW 176th Ave., Beaverton, OR 97007. (503) 306-7439 24 hrs. ken.seymour@attws.com

**WANTED:** Bendix RA-1B aircraft rcvr; Soviet aircraft radio sets. Leroy Sparks, W6SYC, 924 W. McFadden Ave., Santa Ana, CA 92707-1114. (714) 540-8123, leroysparks@earthlink.net

**WANTED:** Collecting military electronics including radio, radar, RDF and test, manuals & literature. William Van Lennep, POB 211, Pepperell, MA 01463. (978) 433-6031

**WANTED:** Early 2 & 3 digit tubes. E-mail fathauer@home.com for bid list. George H. Fathauer, 688 W. First St. Ste. 4, Tempe, AZ 85281. (480) 921-9961, Fax 921-9957.

**WANTED:** Parts unit National HRO-50, PE 73C dynamotor, HT-18 high tower antenna. W7RBF, AZ, (602) 864-9987.

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**FOR SALE:** Books, all electronics related; 300 titles; SASE. Paul Washa, 4916 Three Points Blvd, Mound, MN 55364. wøtok@email.msn.com

**FOR SALE:** SASE for list of reconditioned gear. Ed Clink, WA9PFB, 1285 New Salem Church Rd., New Berlin, IL 62670

**FOR SALE:** Military and commercial communications items: www.maxpages.com/murphyjunk. For up to date lists: murphy@cts.com. Mike Murphy's Surplus, 401 N. Johnson Ave., El Cajon, CA 92020. (619) 444-7717

**FOR SALE:** Hammarlund HQ-120 - $100; RF-403 6-ch VHF 12 volt xcvr - offer. Al, WA1RWB, MA, (508) 325-7122.

**FOR SALE:** Join SPAM, the society for the promotion of AM. Lifetime certificate $1, SASE. W4CJL, 202 Baker Dr., Florence, AL 35630.

**FOR SALE:** Mackay Marine 138B rcvr, MF and HF from a merchant ship. Complete but needs restoration - $90 obo. **WANTED:** Scott SLR-F Must be clean, original and nice working. Tom Mackie W2ILA 14 Washington St., Jamestown, RI 02835 401-846-1200 Days, 401-423-2474 nite.

**FOR SALE:** Heath DX-60B with RCA handmike, very clean - $75 . Will ship. Werner, AA4IX, aa4ix@juno.com

**FOR SALE/TRADE:** Allied Knight-kit manuals: Ocean Hopper, Spanmaster, Spanmaster II, Space Spanner, Star Roamer, Star Roamer II, Transister DXer, R-55, R-55A, R-100A, T-50, T-60, T-150, T-150A, T-175, V-44, V-107, G-30, X-10, P-2, KG-650, C-100, Crystal Set. N14Q, POB 690098, Orlando, FL 32869-0098. (407) 351-5536, ni4q@juno.com

**FOR SALE:** Atlas -180 xcvr, needs repair - $90; Spectronics DD-1 digital frequency display for Yaesu FT-101, 401, 560, 570 xcvrs - $85. John B. Keil, 4618 Norwalk St., Union City, CA 94587. (510) 471-4838

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**webside www.feltondesign.com**

**TUBE COLLECTORS GROUP FORMED:** The new tube collectors associtation is now in operation. This is a non-profit, non-commercial organization of collectors & history enthusiasts focusing on all phases & vintages of tube design. The founding president of the group is Al Jones, W1ITX, who is known for his award winning tube collection. For more details & complimentary copy of the association's bulletin contact Al Jones, CA, (707) 464-6470, Ludwell Sibley, OR, (541) 855-5207, or mail request to POB 1181, Medford, OR 97501.

**FOR SALE:** RIT for KWM-2 and S-Line. No modifications for KWM-2. $59.95 tested/42.95 for kit. SASE for details and order info. John Webb, W1ETC, Box 747, Amherst, NH 03031.

# The Collins Video Library

**The Collins KWM-2 Video** 4 hours - $89.95

Highly detailed video on operation, rebuilding, alignment, troubleshooting and neutralizing of this classic! A must for anyone who owns and operates a KWM-2/2A. Printed documentation included.

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An in depth examination of the most popular version of the S-Line. Operation, modification, alignment, neutralizing and more! Much of this information applies to all versions of the S-Line!

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**The Collins Amateur Radio Equipment Video Spotter's Guide** 1 hour, 40 minutes - $24.95

Close to 90 individual pieces of Collins Radio equipment are shown in the video. Examples of some of the gear covered are: KW-1, KWS-1, 30K-1, 20V-3, 75A-4, KWM-2, S-Line, KWM-1, 30S-1, 30L-1, KWM-380 and much more!

**The Collins KWS-1 Video** 2 hours - $39.95

This video is the perfect companion to the 75A-4 video for owners of the "Gold Dust Twins"! Butch Schartau, KØBS, shows you how to operate, maintain and repair your KWS-1. Watch as Butch goes through the entire alignment and neutralization process, as well as showing you how to properly operate this famous transmitter.

**The Collins 75A-4 Video** 4 hours - $89.95

This video is four hours of information on how to repair, maintain and restore this classic receiver. Butch Schartau, KØBS, guides you through all aspects of keeping your own 75A-4 running like a top.

**R-390A Video** 7 hours - $109.95

Here it is! Long awaited by serious "boatanchor" enthusiasts! The ultimate receiver now has the ultimate video to go along with it. R-390A expert Chuck Rippel, WA4HHG, covers an absolutely incredible array of information in this "heavy duty" video. This video looks at operation, its modules, circuit description, front and rear panel details, complete mechanical and electrical alignment, PTOs, performance evaluation, modifications, troubleshooting and restoration. There is nothing like this video available today, at any price!

**SP-600-JX Video** 4 hours - $89.95

Chuck Rippel,WA4HHG, takes us through all aspects of the SP-600-JX—repairs, restoration and modifications. This video is a must for any newcomer attempting to work on the SP-600.

**All videos are now available in PAL version!**

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Produced by Floyd Soo, W8RO (ex-KF8AT)

## New video just introduced!

**"The R-390A Addendum Video"** - Another 3 hours and 40 minutes of R-390A information from Chuck Rippel, WA4HHG - $49.95

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## *WANTED*

***Collins promotional literature, catalogs and manuals for the period 1933-1993. Jim Stitzinger, WA3CEX, 23800 Via Irana, Valencia, CA 91355. (805) 259-2011. FAX (805) 259-3830***

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**rh8421@usa.net**
**www.rdtnet.net/kk4pk**

**WANTED:** Hallicrafters S-2, S-33, S-35; HT-2, -3, -8, -12 (old series); AC p/s for HT-45; BC-669 or parts; complete BC-729. **Chuck Dachis, WD5EOG, "The Hallicrafters Collector"**, 4500 Russell Dr., Austin, TX 78745. (512) 443-5027

**WANTED:** Soviet military aircraft radio equip; US AN/ARC-19; R550/ARR-40. Leroy Sparks, W6SYC, 924 W. McFadden Ave., Santa Ana, CA 92707-1114. (714) 540-8123, leroysparks@earthlink.net

**WANTED:** New or used unmodified BC459A, BC696, T18/ARC/5, T19/ARC/5, CBY52232. Louis Lytch, K2DET, 117-33 230th St., Cambria Heights, Jamaica, NY 11411-1806. (718) 528-5065

**WANTED:** Squires-Sanders SS-1R, SS-1T, SS-1V, SS-1S, see my web page tulsa.oklahoma.net/~wd5jfr. Hank, WD5JFR, OK, (800) 364-4265

**WANTED:** Hallicrafters SX-88 in good working order, will pay top price for clean radio. John Evans, N3HBX, MD, (301) 253-1847

**WANTED:** Manuals, manuals, manuals for radio-related equipment to buy or swap. Catalog available. Pete Markavage, WA2CWA, 27 Walling St., Sayreville, NJ 08872. (732) 238-8964

**WANTED:** Any info for Navy xmtr model GN. Western Electric, circa 1935. Really, anything. William Donzelli, 15 Gen. MacArthur Dr., Carmel, NY 10512. (914)225-2547, aw288@osfn.org

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**WANTED:** WW II Japanese xmtrs & rcvrs (parts, plug-in coils) for restoration & ER articles. Ken Lakin, KD6B, 63140 Britta St., Ste. C106, Bend, OR 97701. (541) 923-1013. klakin@aol.com

**WANTED:** HQ100A or HQ110, HQ145, HQ160; dead HF tube rcvrs, xmtrs. Prefer complete. John KF7OM, NV, (702) 727-8171.

**WANTED:** National SW-3, model 1 version 3 (uses 32-32-30 tubes). Dean Showalter, W5PJR, 72 Buckboard Rd., Tijeras, NM 87059. (505) 286-1370

**WANTED:** Swan HF amplifier & 600 & 700 series equip. Ted, NØTTZ, CO, (303) 680-3922 or nøttz@aol.com

**WANTED:** Keyer paddles of all kinds. Cap, WØXC, CO, (970) 247-0088. capallen@frontier.net

**WANTED:** Electric Radio; Antique Radio Classifieds; Old Timers Bulletin. Alan Mark, POB 372, Pembroke, MA 02359.

**WANTED:** National S-101 impedance coupler; SW3 coils; HRO black wrinkle spkrs. I love National. Sylvia Thompson, N1WVJ, 33 Lawton Foster Rd., Hopkinton, RI 02833. (401) 377-4912

**WANTED:** Mics: Astatic JT 30/40; UT-48; Shure CR80/81/41; 707A; Turner VT-73; CD/BD; parts for same. Tom Ellis, Box 140093, Dallas, TX 75214. (214) 328-3225. tomsmics@flexcomp.com.

**NEW:** Flyer 199. For details send 2-stamp LSASE to: Olde Tyme Radio Company, 2445 Lyttonsville Road, Suite 317, Silver Spring, MD. 20910. Ph/FX (301) 587-5280, oldetymeradio@juno.com

**WANTED:** Limpanders, RCA, Gates, Fairchild, Langevin B'cast gear. R. Robinson, CT, (203) 949-0871. richmix@erols.com

**WANTED:** Top dollar for PE-120 pwr sply's WWII & S-39 rcvr. Steve Bartkowski, 4923 W. 28 St., Cicero, IL 60804. (708) 863-3090

**WANTED:** National SW-3, coils, doghouse ps, National FB-7. Scott Freeberg, WA9WFA, (651)653-2054, scott.freeberg@guidant.com

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All back issues are available at $34 per year or $3.25 for individual copies. Buy the entire first 10 years (#1-#120) for $265. This price includes delivery in the U.S. Foreign orders please inquire.

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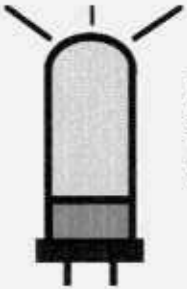

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