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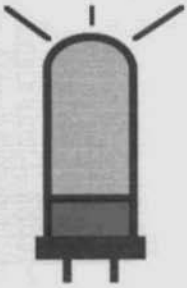
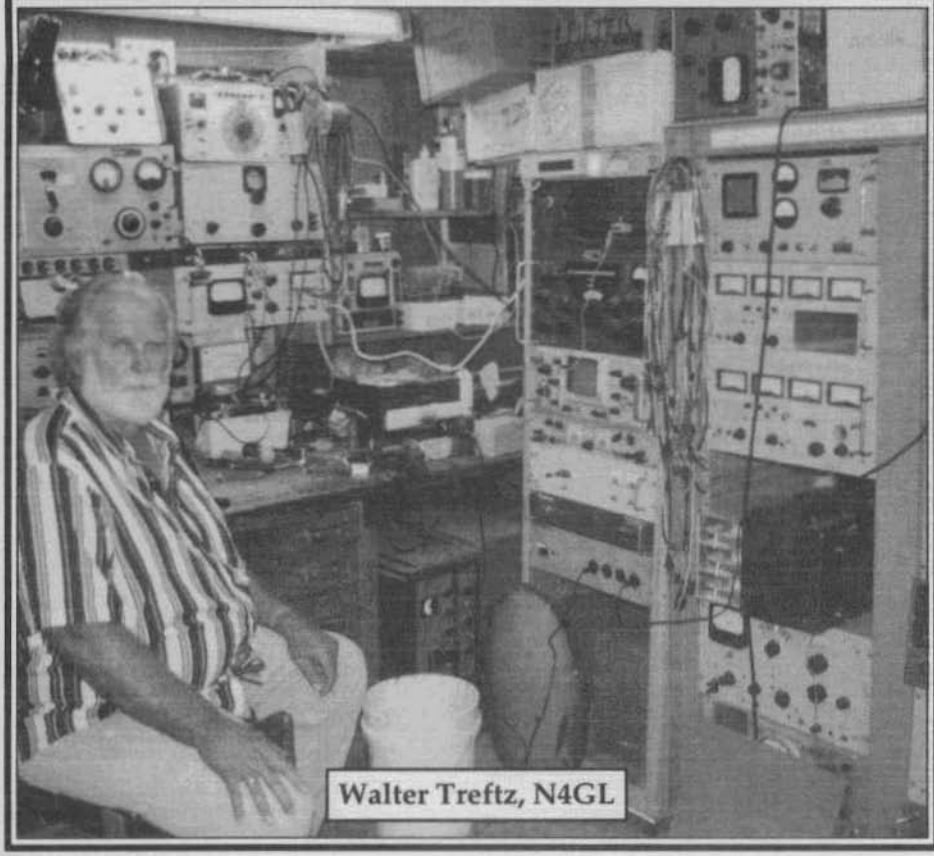


ELECTRIC RADIO

celebrating a bygone era

Number 130 February 2000



Walter Treftz, N4GL

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

Final report on this year's N2KSZ Memorial 160M Jamboree

This year band conditions were awful and this contributed to a very low turnout. The best log I received was from Gary Kabrick, W7GMK who managed to work 13 stations. From his QTH in Tucson his best DX was Comfort, Texas to the east and Hesperia, California to the west. NE1S worked 11 stations. Other years he has made 3 times as many contacts. His only comment was "Not much activity in the Northeast this year."

15 Meter Jamboree the weekend of January 8/9

I think this was the best event we've ever had on 15. I started out about 9 A.M., both days, Saturday and Sunday, and didn't shut down until about 5 P.M. For the entire time the segment from 21.400 to 21.450 was solid AM. It was really a delight to hear so many AM stations on the air at the same time. I'm quite proud of myself for having racked up 60 contacts for the two days but I'm sure there were others that did better than that. It was a great event. Even the SSB stations were having a good time switching over to AM to join in on the fun. I worked several stations who told me that this was their first AM contact and several who told me it was their first AM contact in 20 or 30 years. I did not hear a single station bellyaching about our AM activity.

Over the course of the two days I worked 25 states (which included both Alaska and Hawaii) and 5 Canadian provinces. I think the best DX was VY2DA, Deric, near Summerside, Prince Edward Island.

Dick Geordan, W6SGJ, wrote "First 15M AM contacts since the '50's... I'll check the band out and maybe call CQ before going to 29 megs from now on."

Paul Courson, WA3VJB, who made 21 contacts over the weekend wrote "Didn't we have a great weekend on 15!"

Brian Roberts, K9VKY, wrote "Only 14 contacts but all enjoyable."

Next month I'll announce the details on the next 15M Jamboree. N6CSW

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Cover: Walter Treftz, N4GL, in his hamshack.

Looking Back

by Lew McCoy, W1ICP
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I have never written much about working in the ARRL lab. However, that is where I spent a great deal of time. First, at 38 La Salle Rd. in West Hartford and then later in our lab in Newington. Both labs were similar in that we had metal working equipment. We would buy sheets of aluminum, 3 by 8 feet and then cut the aluminum on a shear. There was also a brake that was used to bend these cut sheets into chassis. We nearly always made the chassis into standard sizes that a ham could buy at his local supplier.

We had a large stock of socket punches and of course drill presses. It usually took a few hours to prepare a chassis for wiring. The procedure was to sit down and draw out and design a circuit that was eventually to be described in QST or the Handbook. By the way, the Handbook was set up to have almost completely new equipment every three years. In other words, we would replace one third of the equipment in the Handbook each year.

My job was mainly designing equipment for the Novices. It may seem like a tough job in that I had to produce something new each month. I usually came up with at least some antenna tuners each year plus at least three different transmitters and various test equipment (remember the Baking Pan Wavemeter?).

I had started in ham radio and built all my own equipment including a complete KW using RCA 810s. However, when I went to work at ARRL in the Technical Department I quickly learned what a terribly sloppy builder I was. Vern Chambers, W1JEQ, built absolutely beautiful equipment and I give him credit for teaching me. The first rig I built was a small transmitter and when he looked at it he really gave me a hard time. My wiring was a hodgepodge of connections. He quickly straightened me out regarding just how a rig should be wired. One of the most important things he told me was to keep the wiring parallel to the sides of the chassis.

After a rig was finished being built—then came the fun—getting it to work. As many hams so truthfully called it—the SMOKE TEST came first. You would turn on your rig, let's say a new transmitter, and keep your hand on the AC switch in case something started to smoke. Usually I had figured a resistor value wrong and they would burn up. (I am sure some of you burned up plenty of screen dropping resistors!)

Most of my problems came with VHF parasitics—I think I have probably made more parasitic chokes than anyone alive! When the rig was finished and tested I took my rigs home and used them for a few weeks on the air. Occasionally I would find that I had made an error but not too often.

I remember quite clearly when the CK722 transistor came out. I got a few of them from RCA and made a code practice oscillator that worked quite well for me. But after it appeared in QST I started getting letters that guys couldn't get it to work. I couldn't find anything wrong with the transistors I had so I checked back with RCA. I found that they had a cutoff frequency failure on the early 722s. Those sorts of problems just couldn't be avoided.

Writing up and describing a project was rather easy and usually took less than a day. We had a photographer come in and take the shots of the equipment that appeared in the magazine or books. The draftsman we had would take our diagrams and do them professionally. Something that I instituted was

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AMI Update—February

by Dale Gagnon, KW1I, President

AM Special Event Station at the Dayton Hamvention

An AM special event station will be operating in the Outdoor Exhibit area of the Dayton Hamvention this May. A group of AM ops led by Bruce, KG2IC will be operating an AM station with classic radio equipment from a vendor tent location throughout Friday and Saturday, May 19, 20. Preliminary plans call for operation with medium power on 80 or 40 meters throughout the day depending on propagation. A low power 10 meter AM station is also planned. Special event QSLs will be available for contacts with the station. A special AM International certificate will be awarded to AM stations who sign up for scheduled AM demonstration time slots from their home QTHs to ensure "wall to wall" AM at the special event station during the Hamvention. Since this year the Hamvention is also the site of a National ARRL Convention it will be a ideal opportunity to gain visibility for our favorite mode.

Reminder

The planned pictorial presentation "Meet the AM'ers 2000" to be shown at the AM Forum at the Dayton Hamvention on Friday May 19 needs a photo of you and your shack. Slides are best, but prints and digital images will be gladly accepted. It's important that the picture of you and your equipment is a recent one. This is a great opportunity for those AM ops who have completed broadcast transmitter and homebrew projects over the last few years since the last "Meet the AM'ers" slide show was created. The final slide presentation will be available after the Hamvention from AMI for use at other hamfests and amateur club meetings. Send slides and pictures to AMI Headquarters, Box 1500, Merrimack, New Hampshire 03054. Send images to dale.gagnon@compaq.com.

FCC Amateur Licensing Restructuring

Don, K4KYV wrote in to make a clarification to January's AMI Update report on license restructuring. The report suggested, "One benefit (of restructuring) may be the opening of the low end of the 10 meter phone band to the AM mode when the Novice license is eventually discontinued." The report implied that AM operation was not allowed in this segment. It may be impractical to operate AM in the 28.3-28.5 mHz segment as long as it is assigned to Novices, but Don correctly points out that it is legal for General, Advanced and Extra license holders to operate AM in this frequency segment. ER

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a procedure whereby all drawings of everything that went into the League's publications were placed on a table in the Technical Department and all Technical Editors had to check them for errors. This proved a very successful procedure and kept drawing errors out of the magazine.

In designing equipment that worked on CW we tried hard to get good keying characteristics. Guys like By Goodman and George Grammer were perfectionists about transmitted code—and I mean perfectionists! I know that the era that I worked at ARRL was the time such things as excellent modulation and keying techniques came into existence. Amateur radio owes a huge debt to George Grammer, By Goodman and Don Mix because if anyone led the way into a better world of ham radio technically they did. Another one was Doug DeMaw but I will write about Doug another day. W1ICP

R648/ARR41 Collins' Replacement for the BC-348

by Robert B. Login, AA8A
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I decided to give myself a Xmas present this year so I bought the complete set of Chuck Rippels R-390A videos. Without doubt, Chuck is one of the most knowledgeable -390A aficionados around and a terrific teacher. I rarely look at any video twice but let me tell you that you will review Chuck's over and over as you enjoy restoring your R-390A!

One big problem in my mind with the -390A is its weight. I have two 390A's and although great fun to restore and use, I wished they were lighter! Well the R648/ARR41 fills that bill to quite an extent!

Designed by Collins engineers and used to replace the fabled BC-348 in naval and other aircraft such as the Navy's antisubmarine patrol aircraft the SP-2E "Neptune". "It had the ARR-41 as a spare receiver and was usually tuned to a RTTY freq and coupled to a Mite Corp. teleprinter. The main HF rig was the ARC-38 transceiver. "(N4RT). Also used in the P2V subchaser/hunter, DC-3 & C-47 (WØOGH). An analysis of the serial numbers kindly supplied by current owners suggests about 1500 were produced by Collins in two runs and one run of a couple of hundred by Mfg # 05820 (?).

About the same size as the -348, but unlike the -348, it is a dream to repair in the field because the entire RX consists of modular plug-in units just like the -390's but these plug-ins are a fraction of the -390's in size and weight. The conversion scheme mirrors the -390A with xtal controlled front end. The 17-tube radio covers 190-550KHz and 2-25 MHz. It is single conversion on 2-4 MHz and double conversion on all the rest. Like the 390's, frequency is readout on an odometer in 1 MHz bands except for the lowest range. Unlike the -390A, the IF is 500 kHz with two mechanical filters (1.2 and 6.0 kHz for sharp and broad). It also sports two 6BA6 RF amp stages on all bands except 2-4 MHz. The PTO covers 2.5 to 3.5 and the 2 to 4 band also functions as a variable IF to heterodyne with the PTO. The xtal deck therefore generates the appropriate signal so that the mixer can heterodyne it into the 2-4 range. AVC is of the threshold type activated by signals of adequate strength and audio is for headphone operation, although it will adequately drive a small speaker. Obviously the -390A is more complicated but this little radio is like an "appetizer for R-390 mavens". Maybe Collins engineers designed it first to "cut their teeth" on a simpler version of the later receivers? Or is the -648 the beneficiary of their experience with the -390s? I think it's the later situation because the -648 like all miniaturization requires more not less engineering skill! When you first take it out of its case, you marvel at the "Swiss watch" quality to the mechanical mechanism. Like a fine watch, all of the gears and springs must work together or not at all.

The first -648 I obtained was at Dayton and came complete with outboard power supply enclosed in a matching cabinet with speaker. Whoever did this did a very fine job! The other two sets were obtained over the Rec-BA reflector and were sold as is. One looked complete but the other as advertised was missing a few noncritical parts (handles, broken on/off switch, missing extra fuse holder) but of critical

The author's 3 R648/ARR41 receivers. Notice the shock mounts on the top receiver and the R-390A in the rear for size comparison.

importance the large gear that drives the PTO and odometer was broken off. I could not figure out how to repair this problem without some surgery as the gear is supposed to be permanently attached to the shaft! If you obtain one of these RXs do not attempt to turn the kHz tuning knob until you ascertain if the system is locked up! You can't use this the kHz knob assembly to get the whole gear train moving if it's stuck! You have to diagnose the problem! Rule one is not to force this clockwork! If the MHz control turns set the RX on the lowest band before removing the RF/IF/PTO assembly because this lines-up the xtal module so that the Oldham coupler will easily go back together with the RF deck. Better to remove the PTO to make sure that it's not up against the stop? This is much easier to do with the assembly out of the RX. Don't rest the RF assembly on the plugs! Then try to turn the kHz assembly using one of the associated gears using your fingers. If it won't turn then it's stuck! Possibly the slugs are stuck in their holders? Check this out, I found several that had become corroded and frozen. Put a drop of liquid wrench and let it penetrate then carefully work them loose. Completely clean all the slugs with WD-40 and also use WD-40 on Q-tips to clean the receptacles. I used fine sandpaper to remove rust nodules from those slugs that were badly corroded. I then washed the gear assembly with a copious spray of WD-40 making sure as little as possible got on the RF coil deck itself. Using swabs made of wadded toweling attached to hemostats allowed me to clean up a rather dirty mechanical assembly. At that point the assembly turned freely. If it still won't turn, then it's possible that the rocker arms coming from the RF assembly integrated with the IF section are stuck. Free up the IF/190-550 slugs by removing the guides that they slip up and down on. This relieves some of the stress on those stuck rocker arms. This worked on the second RX. Don't worry about alignment at this point just free everything up. After all it's possible that your RX

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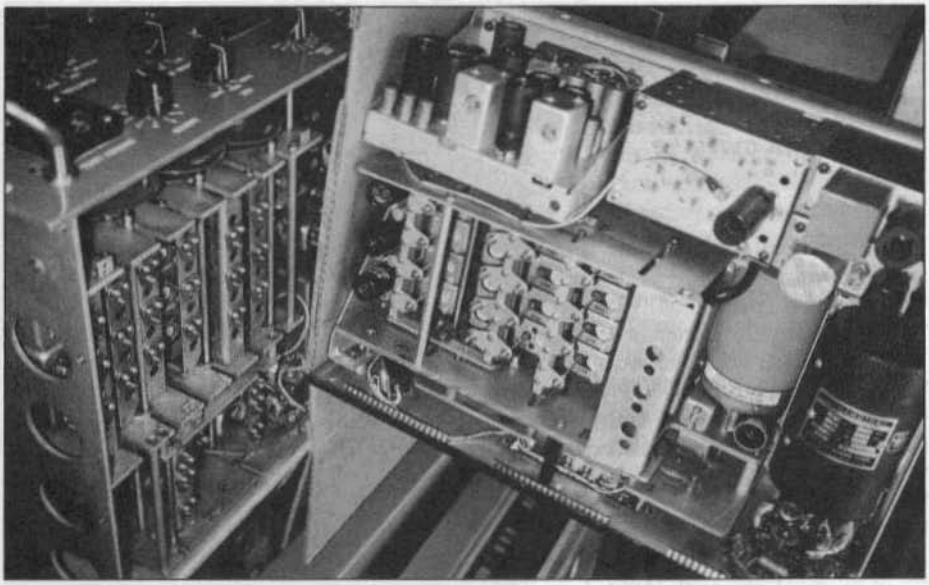
has been sitting in some garage or basement for the past 20 or 30 years. Take it slow and carefully free up everything. WD-40 does a good job of initial lubrication and will help free the gears.

I solved the mechanical problem concerning the broken PTO/odometer drive gear by cutting a slot in the gear and shaft with my Dremel and using it to fashion from a piece of steel of similar thickness a bar that would fit into the slot. The whole assembly is held in place by the tension from the kHz knob assembly. This is working very well.

Remove all the modules from the radio and clean the chassis with WD-40. Clean the plugs with Deoxit. Check all the tubes. Open up the xtal module and mark the Oldham coupler so that you can put it back to where it was, then spray Deoxit on the switch contacts that are just visible. I personally have never had a problem with Deoxit even when overdoing it but drain out the excess after you work the switch around to make sure it will clean those contacts. Reinstall all the modules except the RF/IF deck and PTO.

I have the NAVAER 16-30ARR41-502 manual but although it seemed at first glance to be very detailed, my copy lacked any real detail concerning the RF/IF deck. I have a few pages from the 501 manual and probably like the -390's there are several manuals with the required detail. If you have them, I sure would like copies. Lucky for me that the good receiver worked very well, so I was able to use it as a model to diagnose problems. The RF/IF deck, a real gem of a clockwork, is a mechanical device where all the components work together. If the RF/IF deck is complete and working then it seems a straightforward job to set up the deck. Turn the MHz control to the lowest band and turn the kHz control to 190 kHz. Watch the low band slug rack descend to around the 190 mark on the slug rack itself then stop as you continue to turn the kHz below 190. If not the case then the slug rack has to be adjusted. This is easily accomplished by loosening the clamps at both ends of the low band rack and this allows you to move the rack without engaging the gears. Adjust it to the 190 mark. Turn now to 500 kHz and see if the 2-4 MHz rack is at the index mark. Adjust it similarly if not. Then move to 550. You can use the odometer to set the frequency initially but use a calibrated signal generator as these settings will determine the overall performance of the RX (this of course assumes you got the RX working)! Make sure the rocker arms are parallel and line up to the 550 mark inscribed on the RF part of the deck, FRONT and BACK (there are two arms). You will see that the 2-4 MHz slug rack assembly allows you to adjust each rocker arm independently by loosening the sleeve. Hopefully the odometer will not be far off but you never know who messed up your RX , after all it's been 30-40 yrs since this device left the military! Check everything after you tighten up the Bristol clamps. Notice how the gear with teeth on one half (in the gear train associated with the PTO) allows the slug rack to descend to 190KHz and stop while the tuning continues below this point to 0000 on the odometer and as you move the other way, the 190 rack moves up as do the 2-4 rack and they correlate with the marks for 500 & 550 on the RF/IF deck as do the rocker arms. Obviously, you need the manuals and what I have to say is based on my limited knowledge of the radio but hopefully it will get you going.

Reinstall the RF/IF deck, set it to 190KHz. The RF tube deck can be attached at this point. Hold the deck so that you ease it down to engage the xtal deck oldham coupler. This should engage the RF/IF deck plug before the tube deck plug. Tighten down the red screws carefully and evenly so as not to break any plug pins. Now plug in the PTO propping it up so that you can attach a tuning knob to it. If the PTO is hard to turn, you will need to remove the two screws hold-



R-390A on the left and R648/ARR41 on the right.

ing the rubbing notched piece. The holes the screws were in expose the shaft and you can add some ptfe type superlube. Put 27-28 volts DC on pin D (around 10 o'clock facing the radio). Use a Variac to bring up the voltage, the dynamotor should come to life and the radio should come on. Switching surplus power supplies might not work because they limit current to the dynamotor. It requires a load of juice to get started so just a simple power supply is needed capable of 20 amps surge and 5.8 amps continuous. If the radio comes on with audio only and the sharp and broad positions and BFO sound like what you expect, the problem could be the xtal osc is out of sync or its switch has dirty contacts. If the xtal osc sounds OK in another RX then the bandswitches might be out of sync. Otherwise look for the usual suspects.

Listen for the PTO in another receiver and adjust it to 2.69 MHz. The odometer should be at 190KHz. Pull out the RF/IF deck and without touching anything, reinstall the PTO. Put the whole thing back into the receiver and it should now be in-sync. The big problem now is to get the PTO to track and this may require turning the PTO padder to get the end points to correlate. I have not done this because my manual doesn't have the detail so I'm really guessing here based on watching the -390A videos. Although not perfect, I felt they were close enough for the time being.

At this point, I was able to align the first RX. It tuned up to afford what I thought was excellent sensitivity but after going through the extensive alignment, it went dead! I was convinced that the IF rack had mechanically slipped somehow and proceeded to muck it up! Well after a detailed trouble shooting procedure, I discovered that one of the interstage caps in the RF tube deck was open. I replaced all three (easily seen when the RF tube deck is removed to reveal the caps in question feeding three of the pins that plug into it). The radio came back to life and I repeated the alignment. The other RX unfortunately had a bad (low output) 6 kHz mechanical filter. Otherwise, alignment proceeded as expected. Replacement parts are available from Fair Ra-

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The Deltronics CD-144A 2M Transceiver

by George Maier, K1GXT
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Antique collectors of all types are unanimous in the joy of finding rare and unusual specimens. Vintage radio enthusiasts are no exception. The pages of ER are filled with accounts of rare to nonexistent prototypes that never made it to production, as well as limited production units that disappeared from the scene almost as quickly as they arrived. Recall the story of Johnson Viking Avenger and the Thunderbolt II[1], only a few of which were ever made, or the mystery Collins prototypes that are now coming to light thanks to Jay Miller's efforts in his new book[2]. Thanks also to Joel Thurtell, K8PSV, we now know what the Central Electronics 100-R receiver[3] would have looked like, but I still wonder how the CE 2500L amplifier and CE VHF transverters would have turned out. They were referenced on data sheets, but there's no evidence that they ever materialized. Then there's the never produced Heathkits that we learned about from Randy Kaeding, K8TMK[4].

Fortunate as we are to have people who share their knowledge of these unusual pieces with the rest of us, I can't help from getting a twinge of envy over the lucky folks that have actually found one of these ultra rare collectibles. Accounts of this type certainly cause one to wonder if they'll ever be as lucky. Well, from first hand experience, I can tell you that the longer you wander the rows of tables at flea markets, network with other collectors, stop at yard sales, surf on eBay, and pay attention to classified ads of almost any description, the better your chances are. The truth is, you never know when you'll strike pay dirt.

Most of the really unusual items I've found have been pretty much by accident. In some cases, the scarceness of a particular item was recognized only after some time had passed, or horror of horrors, after it was sold it, like the rare and pristine Heathkit HX-11 I once owned. This is the story of one rare find that I had the good fortune to stumble across some years ago. Unlike the others I have found, this radio had an unexpected personal twist.

The setting for this discovery was Deerefield, NH, a few years before the HossTraders bi-annual flea market moved to Rochester, NH. While poking around at the spring session, a tailgate display caught my eye. One of the items for sale was a Deltronic CD-144A two meter transceiver. If I hadn't been looking through back issues of early 50's CQ and QST magazines just a few weeks before, I never would have recognized this rather diminutive radio. It was pure luck; I vaguely remembered seeing the Deltronic in one of the ads, but I have to admit, I never expected to see one in the flesh, so to speak.

The CD-144A was interesting for two reasons; first, it's relatively rare. Given my background in VHF boatanchors, I thought I had seen them all. In fact, my first interest in radio was as a 6 & 2 meter SWL in the second half of 1950's. I received a Novice license in 1958, when Novices could operate on two meter phone between 145 & 147 MHz, and went on to operate 6 & 2 extensively once I had earned a Technician Class license. Getting a general in 1964 added HF once again, but not to the exclusion of VHF. During those early years VHF

Front view of the CD-144A.

hamming, I worked stations that used every conceivable type of 2 Meter rig available, but until I spotted those ads, I had never heard of a Deltronic transceiver.

The second and perhaps more compelling reason this rig interested me was that the original owner appears to have been W1JJE, a personal acquaintance of mine since novice days, who became a silent key some time in the 1980's. This second observation was simply based on the fact that Ernie's call letters were neatly placed in the upper corner of the main tuning dial (a National MCN) with stick-on letters, and there were large call letter decals on each side of the unit. For all the time I knew him, W1JJE ran a Gonset Communicator II, with stacked five element Yagi's, and never mentioned this rig once. I lost track of Ernie, somewhere in the late 1970's. How his rig wound up at the flea market will likely remain a mystery.

To get back to the flea market scene, in the few milliseconds that it took to make a visual assessment, analyze, process, and make an offer, another buyer beat me to the punch. Disappointed but undaunted, I jumped into the negotiations and happily discovered that the buyer's interest in this obscure little piece of history was limited to a one-inch miniature panel meter. The meter in question was suspended above the unit by two short pieces of #14 insulated copper wire that had been soldered to the meter lugs and plugged into two tip jacks on top of the transceiver.

After a moment or two of discussion, I offered to buy the radio from the first bidder at the same price that he paid, minus the meter, which he would keep. Luckily he accepted, and we were both happy with the deal.

The CD-144A is a small, low powered two meter transceiver that was designed in 1952 by the Deltronic Corporation at 9010 Bellanca Avenue in Los Angeles, California. The original model was the CD-144. Just what the "A" revision means is unclear, but I think it has to do with the transmitter frequency multiplication scheme, which was changed from one version to the next. The CD part of the model number (notice the speaker grille) refers to the fact that it was primarily aimed at the two meter Civil Defense market, which at that time was being stimulated by the cold war, and growing fears of atomic attack.

When this rig was designed, I was an eight year old elementary school student, but I can vividly remember the TV

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public service announcements of that era, warning people about what to do when the air raid sirens rang. The scene they described was one of a bright flash of light, followed by a blast, and what to do when these events occurred. Years later, we all heard the tongue-in-cheek jokes about how to position yourself for that sort of event, but as an impressionable preteen, this was a very scary time in my life. On more than one occasion, I recall having anxiety attacks when a jet aircraft passed overhead. Jets were new in those days, and the engine whine sounded to me like the whine of a falling bomb as it was so often portrayed in the movies. Others that I've talked to, that were children during that era, had similar memories. Remember fallout shelters?

THE CD-144A - When you first look at the CD-144A, it looks like a nicely done home project. The cabinet is a louvered carrying case, finished in gray hammertone. It measures 9 1/2 H x 7 W x 6 3/8 D, and weighs 13 pounds; not bad for a self contained heterodyne transceiver of that age. The simple front panel includes an on/off toggle switch, volume control, rotary T/R switch, a National MCN tuning dial, mike jack, earphone jack and a two inch round speaker. There is also a small military looking hooded light that illuminates the main dial, but I think this may have been added after the original purchase.

The antenna connector is located on top of the case along with two tip jacks that provide a DC voltage for transmitter tuning, and of course, a carrying handle. On the rear panel there is a 16 pin Jones plug used for AC/DC power input, and an SPST slide switch that operates the noise limiter circuit.

The transmitter frequency multiplier and PA tank tuning controls are accessible through a series of holes located on the left side of the cabinet where an access slot for the transmit crystal is also located.

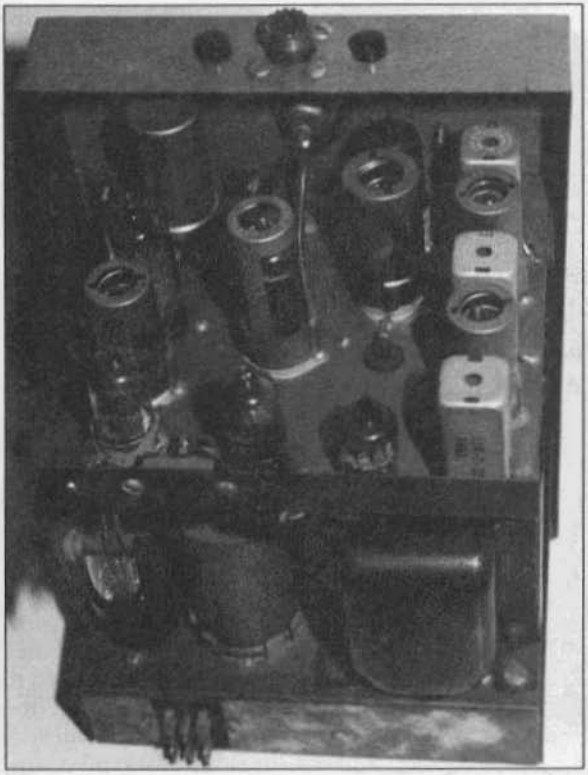
The construction is done on two chassis within the cabinet; one is an RF subassembly, the other, a power supply subassembly. Interconnection is via one laced cable between the two. The RF deck is completely self contained, with a single conversion receiver, and a crystal controlled transmitter sharing the same chassis. The power supply has a transformer with a traditional rectifier/filter, and a DC interrupter (vibrator), allowing the unit to be powered either by AC or DC sources.

As I looked this radio over, I couldn't help but notice some parallels between this little 1952 rig, and the Gonset Communicator, which was introduced about two years later. Functionally, there are numerous similarities. They could be coincidental, but you have to wonder.

TRANSMITTER SECTION - The CD-144 transmitter section starts off with an 18 MHz 6AK6 tri-tet oscillator tuned to 36 MHz at its output, followed by a 6AK6 Class A doubler driving a 5763 final amplifier. Transmitter tuning is accomplished by adjusting variable inductors for the oscillator and doubler stages, with a variable capacitor to resonate the series tuned final amplifier plate circuit, and another to optimize the link coupled RF output.

The only available metering is via a 1N34 diode that rectifies a small portion of the RF output, and presents the resulting DC voltage to the tip jacks that straddle the antenna connector on top of the cabinet, just in front of the carrying handle.

The modulator section, which also functions as the receiver audio amplifier, consists of a carbon microphone input to a 6AU6 audio preamp which is capacitively coupled to a 6AQ5 Heising modulator stage, using the primary of the audio output transformer as the modulation choke. One peculiarity is that the carbon microphone bias is derived from the cathode circuit of the 6AK6 doubler stage; in essence the mi-



Rear view.

crophone element is the cathode bias resistor. If the microphone is not connected, the doubler will be inoperative, and the final may overdissipate due to the lack of grid drive and no way to clamp the PA the current.

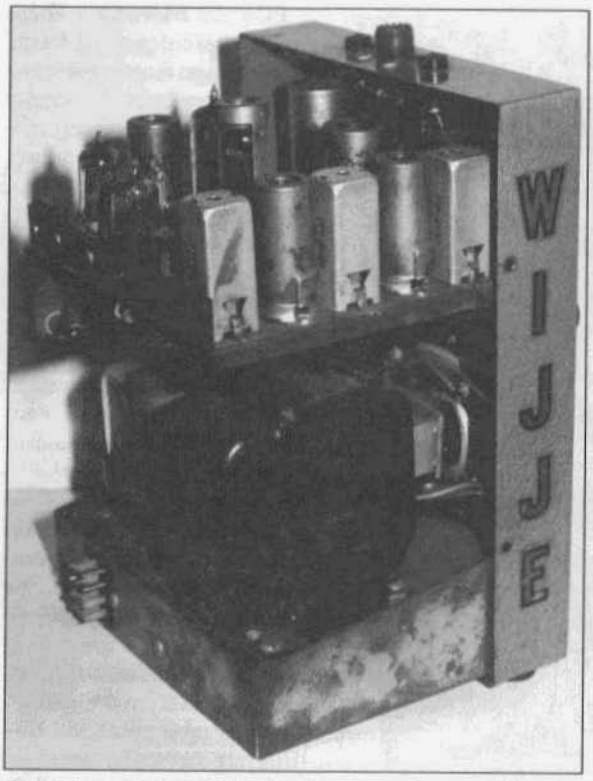
RECEIVER SECTION - The receiver is a straightforward single conversion superhet with a 10.7 MHz IF. The front end is a 6BQ7 cascode RF amplifier followed by a 12AT7 oscillator - mixer, two 6BA6 10.7 MHz IF amplifiers, a 6AL5 detector/AVC/ANL, and finally to the 6AU6/ 6AQ5 audio section through the output transformer to a 2" round speaker mounted on the front panel. An earphone jack is provided directly across the voice coil leads. The IF bandwidth measured out at 12 kHz, which sounds about right for something of that vintage, given the expected receiver LO drift.

POWER SUPPLY - There are several interesting facets to the design that Gonset fans will recognize immediately. The power supply is an AC/DC design that, depending on the mode of operation, uses different primary windings of the same transformer to produce the required DC voltages at the secondary. In the AC mode, the supply uses a 6X4 rectifier. In DC mode, a traditional vibrator is used to chop the voltage. The input power connector is a 16 pin Jones plug. The choice of input voltage (AC or DC) is automatic and dependent on the power cord that is connected as the socket on the cord includes appropriate internal jumpers for accessing the correct input circuit.

IN OPERATION - One of the probable reasons this little rig never became too popular is that it is relatively deaf. When I first fired it up, the receiver took 100 uV to get anything out of the speaker. After a complete alignment of the IF & RF circuits, the CD-144A still lacked sensitivity, with the least discernible signal just under a microvolt. In contrast, the Gonset II and III could easily hear signals down to 0.3 uV. I thought I would revisit in the future this to see if any further improvement could be made.

As for making a QSO, I couldn't really get on the air with this rig as the only crystal I have is for 146.99. Into a dummy load, however, the audio sounded about right for an F1 carbon microphone as heard on a Gonset III, or alternatively, a Tapetone XC-144 converter into a 75A-4 with a 6 kHz filter. A little tweaking of the transmitter tuned circuits got the output up to a maximum of 1.2 watts on a Bird 43 with a 5W

continued next page



Side view of the CD-144A showing the original owner's callsign.

slug. It's entirely conceivable that the power might vary somewhat with crystal activity, but not to any great degree. The measured power level seemed appropriate given the tube lineup, and the operating conditions (doubling in the final).

Both sides of the dual power supply appeared to be operating adequately, although when using the DC input, the vibrator caused more mechanical noise than I expected, and I found myself wondering just how long this little box might hold together under such operation. Eventually, I remembered that vehicles of that era were not as quiet as what we drive these days, and it's doubtful that the mechanical vibrator noise would even be noticed in a 1952 mobile environment. Needless to say, AC operation was much more appealing for the tests.

A SAD DAY!! - In doing the final work on this article I felt that the receiver should be capable of better performance, and thought I'd take the time to give the original designers all the credit they deserved rather than point out some inadequacy that might be based on a component weakness. So, a few weeks ago I decided to go looking for trouble, which I unfortunately found, but not in the way I expected. In my quest to wring the receiver out one more time, I turned CD-144A on, along with the signal generators, tube tester, and other work bench goodies in my basement lab, and proceeded to head upstairs to join the family for dinner, while the equipment warmed up. When I returned to the work area, I was greeted by the smell of burning electronics, and it didn't take long to figure out that the aroma was emanating from the Deltronic. I'm still not sure what happened, but the transformer was overheated, and in the early stages of melting down when I arrived on the scene.I quickly shut the rig off, and allowed it to cool down. Later, I unplugged the rectifier and the vibrator to get a quick reading on whether the problem was related to the transformer itself, the filter caps, or DC-DC section. Alas the minute I plugged it back in, that sickening frying sound started, signaling that the transformer had an internal short. The chances of finding an acceptable substitute are probably slim, so it looks like a trip to the re-winder is in order.

EPILOGUE - I wrote most of this a few years ago, but kept from submit-

continued on page 41

Repair/Restoration Tips

by John Poplawski Sr., WB2GFR
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PTO alignment tool for the R-390A

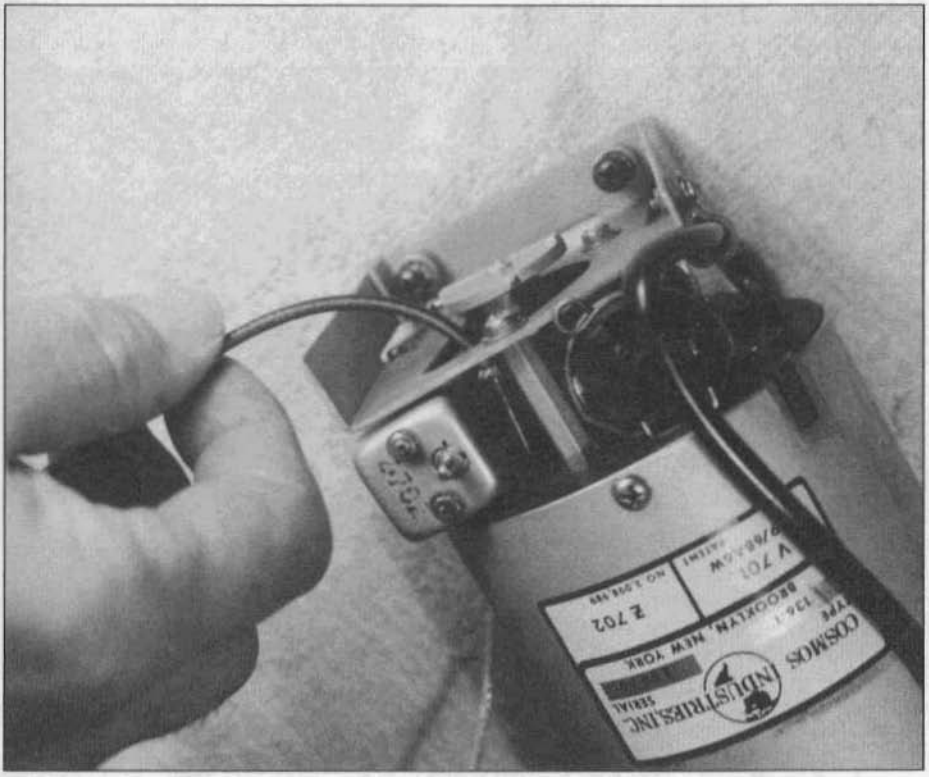
First off, find an alignment tool that fits the PTO adjustment point comfortably.

Next, find approximately 1 foot of speedometer cable. Most auto repair shops would have an old one laying around.

Cut the alignment tool down to about 2 inches. Drill the center of the cut side to snugly accomodate the speedo cable.

Apply a little glue and let cure.

Now you can do your end point adjustments much easier and quicker. No need to remove coil covers on the PTO and no more catching your fingers on the gears.



Korean War Era Clandestine Transmitter

by Dong-Hyun Cho, HL2DDK
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Chun Chon 200-701
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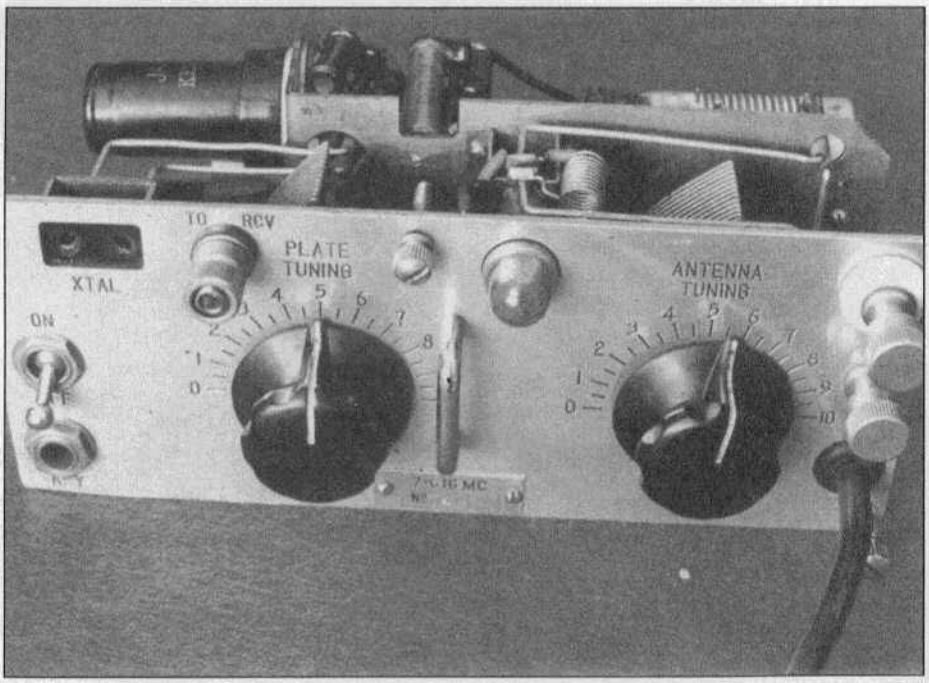
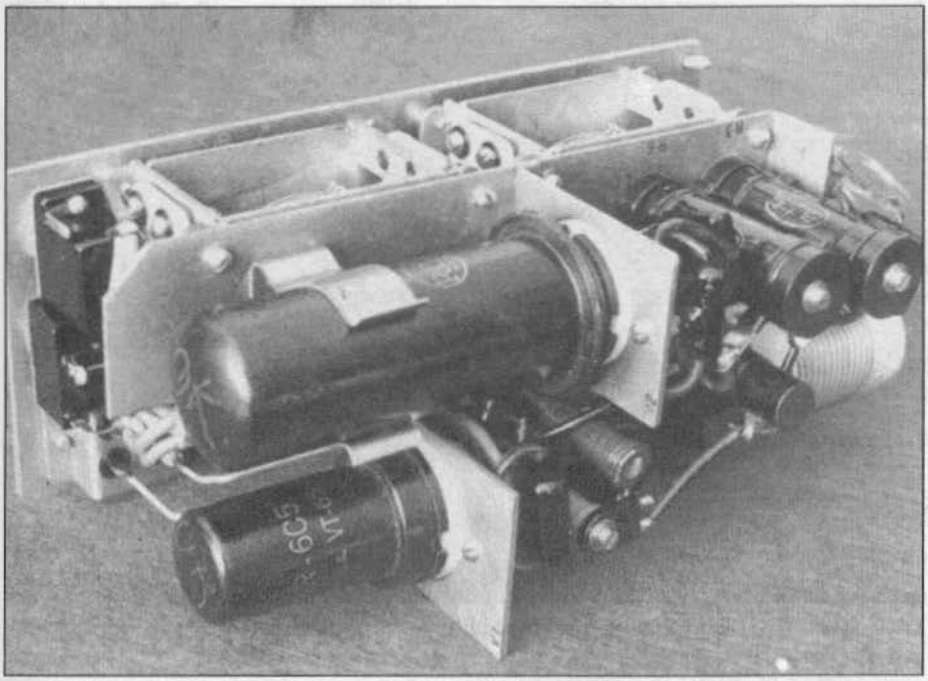
dhcho@cc.kangwon.ac.kr

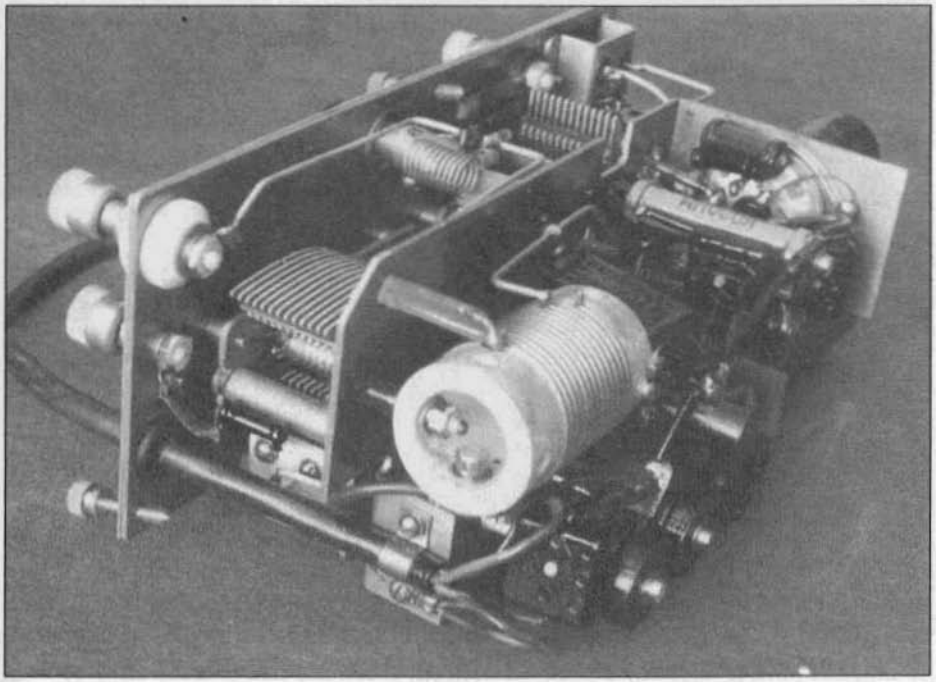
Two years ago I was lucky to obtain this odd transmitter from a junk market in Seoul. It is a Korean War era clandestine transmitter, the companion to the RSK-253 receiver (see CQ April 1978, "The RSK-253 Receiver"). There are no markings on the transmitter that would indicate what country it came from or who manufactured it. The only marking is "X'MITTER' on the side of the steel box. It is dated 1953 and is made from Japanese parts that were then commercially available. It has two tubes. It consists of two stages, 6C5 crystal oscillator and a 6L6 power amplifier. The xtal socket on the front panel is the FT-243 type. The set is built into an olive drab small military ammunition box. The set has the serial no. 1411. The frequency range is 7-16 Mc. ER



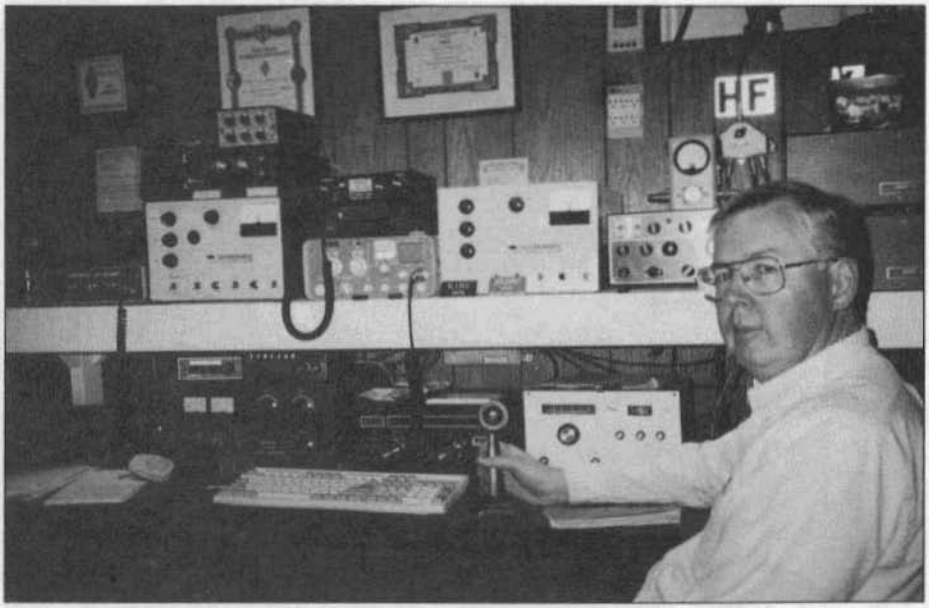
Front panel



Rear view



Side view



Dick Bean, K1HC, at one of his vintage operating positions.

A more complete view of Dick's hamshack. Note the heavy-duty shelves he's constructed that sit on the banquet tables.

Frank Temple, WA4FCM, in his hamshack.

Another view of Frank's shack, this one showing his work area. The HRO on the left is certainly an eye-catcher.

Product Review
DFD103 Universal Digital Frequency Display

by Thomas J. Bonomo, K6AD

No doubt you have seen the DFD103 Universal Digital Frequency Display advertised by Ron Hankins (KK4PK). In appearance, it looks like the big brother of the C75S display (also made by Ron), which is specific to the Collins S-line. The DFD103 offers one big advantage, however. Not only can it be used with the Collins S-line, but it can also be used with most other transmitters or receivers you have in your shack.

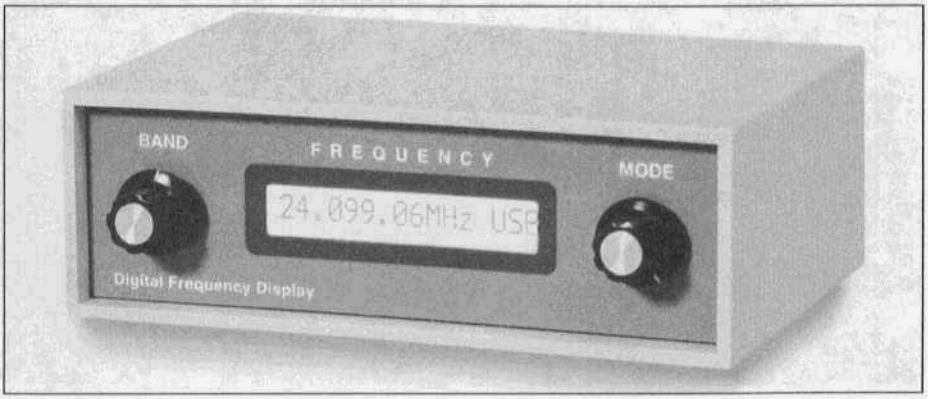
As shipped, the unit comes preprogrammed for 74 different radios! If yours isn't on the list, no problem: you can easily program it manually – right from the front panel. Talk about flexible!

The preprogrammed list of radios includes Collins, Heathkit, Drake, Yaesu, Kenwood, ITT MacKay, National, SBE, Hammarlund, Squires-Sanders, Galaxy, Allied and Hallicrafters.

The DFD103 works by sampling the output of the VFO. Although many radios do not provide a VFO output, it is a simple matter to tap into the VFO circuit to obtain the needed signal. Ron prevents this task from seeming intimidating by providing a good set of hints to get you started. What a good excuse to get back inside your radio!

The operation of the display is not entirely automatic as is the C75S. There are two operating controls (BAND and MODE) and a Calibrate button on the rear. When you switch bands on your radio, you must also change the band on the frequency display to match. Selecting from the preprogrammed list of radios is simple and you can also calibrate the display to accommodate crystals in your radio that have drifted. Each band and operating mode may be adjusted separately. There is only one internal adjustment that is used to match the VFO output for a stable display.

Considering its tremendous flexibility, this display is pure simplicity. Like all of the other products made by Ron, the DFD103 is sturdy and well built. You will have hours of fun trying it out on different radios in your shack. It is available through the Electric Radio Store for $169 plus $4.50 shipping. **ER**



The DFD103 Universal Digital Frequency Display can be used with most radios and will provide a readout to 30 MHz with a display accuracy of 10Hz.

VINTAGE NETS

Arizona 40M AM Group: Meets on 7293 kHz at 10:00 AM MST (1700 UTC) on Sat. and Sun.
West Coast AM Net **meets Wednesdays 9PM Pacific on or about 3870kc. Summer conditions have moved the net control to California with John, W6MIT and Tom, K6AD as net controls. In the winter months Randy, KK7TV usually runs the net.**
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.
Arizona AM Net: Sundays at 3 PM MT on 3855. On 6 meters (50.4) 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. http://www.crompton.com/grayhair
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 on Tuesday nights on 3805 at 2100 Eastern and on Thursday nights on 3875. West Coast 75M net that takes place on 3895 at 2000 Pacific Time.
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, W8NS; 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.
K1JCL 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 Calif. Sunday Morning 6 Meter AM Net: 10 AM Sundays on 50.4. NC 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.
Midwest Classic Radio Net: Sat. mornings on 3885 at 8AM Central time. Only AM checkins allowed. Swap/sale, hamfest info and technical help are frequent topics. NC is Rob, WA9ZTY.
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.
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.

The Viking Mobile

Part Two

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Backtracking

In addition to questioning why Johnson Mobiles have little presence today, in Part One (ER, January 2000, #129) I described the transmitter's physical appearance and features, provided a brief circuit description, discussed the restoration of one of my five examples and suggested a simple modification to improve the bias supply.

Without doing an alignment, I succeeded in getting #4 to heat a 40 Watt lamp to a nice orange on all bands, so I felt it could easily drive a grounded cathode amplifier. Wanting to quantify its power output, I attached a Waters dummy load/wattmeter to #4. Although I coaxed 10-15 Watts output with the 300V plate supply, I felt an alignment might be beneficial.

While waiting for the assembly manual to arrive, I restored another Mobile, this time #1. Since I wanted to observe a Mobile's performance with more voltage on the 807 final and because #1 may actually see mobile service with a 500V dynamotor, I maintained its 12V filament and carbon microphone wiring, while configuring it for the higher voltage. Aside from replacement of its crumbling SO-239 connectors, all this second transmitter needed to make it operational was six new capacitors, three new resistors and cleaning and lubrication. With a 500V plate supply it achieved 30 Watts on 40 meters and 35-37 Watts on 75, 20 and 10 meters. Efficiency was 60-67% except on 40 meters, where it was but 46%. Although alignment might increase the 40 meter output, I suspect the low efficiency stemmed from the decreased plate tank Q and/or excessive antenna coupling inductance, both of which can result from the use of a common coil for 40 and 75 meters. A headphone check of the audio revealed that it sounded better than #4.

Mods

No doubt the most common modification to Mobiles was conversion to 12V operation. In fact, a procedure to convert one previously wired for 6V is included in the Operating Instruction Manual and the Assembly Manual contains instructions describing how to wire one for 12V operation initially. Both procedures put the 807 final filament in series with one of the 807 modulator filaments and the other modulator filament in series with the parallel combination of the filaments of the three 6BH6's and the 6AQ5. Naturally, the 12AU7's dual filaments are wired in series instead of parallel.

Upon inspecting #3 I discovered another 12V conversion method which consists of wiring the 807 modulator filaments in series, replacing the 6BH6's with 12AW6's (they have the same base pattern), and installing a wirewound resistor in series with the 807 final filament. The 12AU7 conversion is as mentioned before. This modification was likely performed by W5CLP, whose call remains dymo'ed on #3's front panel.

One owner reported purchasing a Mobile with a front panel mounted toggle switch for shorting the modulation transformer secondary on CW. After reversing this modification, he replaced the 6BH6's in the audio section with a 6AU6 and 6C4, installed negative cycle loading and regulated the 807 modulator and 6AQ5 driver biases, along with the screen voltage of the 807 final.

In addition to 12V conversion, my rust bucket (#5) had its 7-pin octal male rear panel socket replaced with an 8 pin

VIKING MOBILE TRANSMITTER KIT

Designed especially for amateur mobile use, the Viking Mobile Transmitter Kit features dash mounting and instant bandswitching for operating convenience. Maximum PA input is 60 watts on 10, 20, or 75 meters. Provision for one additional band, either 15 or 40 meters. All inductors contained within the transmitter. 100% amplitude modulation, sufficient audio gain for either high impedance or carbon microphones.

Three gang tuned RF stages, 6BH6 oscillator, 6AQ5 buffer/doubler, and an 807 amplifier. Separate adjustable antenna coupling links, one for each band, tailored for 52 ohm coaxial line. Front panel crystal mounting—four position crystal selector switch. The transmitter may be driven to full output with the Viking VFO, and VFO RF input and power receptacles are provided for this purpose. The audio system is comprised of a 6BH6 speech amplifier, 6BH6 driver and pp AB_1 807 modulator. Audio gain control is located on the front panel. Three circuit microphone connector for "push to talk" operation.

While a 600 volt power supply is required for 60 watts PA input, 30 watts input can be attained with 300 volts. A 6BH6 used in an RF type fixed bias supply improves overall efficiency by conserving plate supply voltage (eliminates cathode bias) and by keeping modulator idling current low.

An illuminated meter, switched from front panel, measures oscillator, buffer, PA, modulator cathode, and PA grid currents. Front panel control of excitation to grid of the 807 PA. A three position function switch ("Tune", "Transmit", and "Receive") can be used to provide receiver muting, "Non-Swish" VFO tuning, and to make use of the receiver power supply as a source of plate voltage for the exciter and speech amplifier. Push to talk operation is optional.

The Viking Mobile is supplied as a kit with detailed assembly instructions. Punched chassis, cabinet, small hardware items, and all necessary parts are included. Housed in heavy steel case 6 7/16" high, 7" wide, 10 3/8" deep, weight approximately 16 pounds. Less tubes, crystals, microphone. Literature and power supply prices available on request.

Cat. No.		Amateur Net
240-141	Mobile Transmitter Kit	**$99.50**

VIKING MOBILE TRANSMITTER KIT

octal male, thus making it a candidate for disastrous cable connections since the power connector is also an 8 pin octal male. Other changes include the addition of an antenna relay under the chassis and a rear panel mounted toggle switch whose intended purpose will remain indeterminate due to incomplete wiring.

That VFO

Because 'scarce as hen's teeth' is a phrase applicable to the Mobile VFO, I feel fortunate to have two. One of them is in great condition. The other has been grossly violated by the mounting of a vernier knob dead center in its dial. Someone was either not too pleased with its tuning rate or they had trouble (re)stringing the dial cord. Adding insult to injury, flat black paint was sprayed over the silkscreening on the back of the plexiglas dial, no doubt to prevent the pilot lamp from backlighting the lettering that has been rendered useless by the vernier's addition. Perhaps, using my good dial to make a silkscreen, I'll create a replacement dial for this poor VFO. Should I do so, I will have to manufacture a new dial pointer as the original is long gone.

continued next page

Small by design, the Mobile VFO measures 4" X 4.5" X 5" and looks much like a Johnson 6N2 VFO. Too bad they are not as plentiful. Unlike the 6N2 VFO, whose cabinet protects part of its plexiglas dial, the plastic dial of the Mobile VFO is entirely exposed because the metal cabinet fits behind it. One end of a double ended dial pointer delineates the scales for 40, 20 and 10 meters while the other end serves 75 and 15 meters. There is no scale for 11 meters. The tuning knob is on the lower left and the band selection knob is on the lower right. Its positions are OFF, 40/20/10, 15 and 75.

Extending from the bottom right of the rear panel are two 3' cables for connecting the VFO to the transmitter. Protruding to the left of the cables are the slotted shafts of two small air variables. Unlike their 6N2 cousins, Mobile VFOs have no rubber feet (at least not yet), as they were intended to mount under a dash, not sit on a table. Oddly enough, neither of my units shows any signs of ever being mounted in a mobile environment.

Having no documentation, I did not know what to expect when I opened the violated VFO. I suspected it might resemble the Johnson Viking VFO but, indeed, it is quite different. Rather than the unbuffered 6AU6 of the Viking VFO, a 6BH6 (no surprise) Colpitts oscillator drives a 6BH6 buffer/multiplier. While the tube sockets and the coil form for the oscillator are high quality ceramic types similar to those used in the transmitter, the buffer/multiplier coil is wound on a phenolic form.

Normally these VFOs are wired for 6V filament operation but it is a simple matter to re-wire the tube filaments in series and replace the 6V pilot lamp with a 12V version to make it compatible with a 12V system. Alternatively, the VFO can be left stock and an 18 ohm 4 Watt series resistor can be installed in the transmitter to appropriately drop the voltage.

In the 75 meter position, the oscillator ranges from 3.75 to 4.0 MHz. In the 40/20/10 and 15 meter positions, the range changes to roughly 3.5 to 3.725 MHz. These ranges are set by the air variables on the rear panel. The second 6BH6 operates as a buffer in the 75 meter position, doubles in the 40/20/10 meter position to provide 7 MHz and triples in the 15 meter position to yield 10 MHz. Although I have not tried it, the Mobile Operating Manual states it's possible to operate on 15 meters with a 3.5 MHz crystal or VFO, assuming the transmitter is aligned well. Likewise, the manual states the Mobile will work on 10 meters with most 3.5 MHz VFOs, so the Mobile VFO is not the only game in town. In support of this statement, one person reported to me that he uses a Viking VFO with his Mobile.

Alignment

Although not strictly a result of alignment, every one of my Mobiles was a bit different, RF-wise. I must admit #2 was unavailable for actual inspection at the time of writing because I couldn't find it, but photographs verified certain details of its construction. As I indicated in Part One, #4 was missing a padding resistor and trimmer in the driver plate circuit on 40 meters. #1 was also missing that same trimmer in spite of having experienced an alignment some time in its life. Additionally, the pigtail coil that is part of the 10 meter final tank contained 2 turns in #1, was nonexistent in #3, had but 1/2 a turn in #4 and a single turn in #5. Understand that adding or removing turns on that particular coil is not part of the alignment procedure. Rather, the pigtail is only supposed to be spread apart or pushed together, according to the rig's 10 meter behavior. To my surprise, only #1 and #5 had the custom made inductor (wound on a resistor) that is required to align the oscillator on 40 meters and none of the rigs had a shorting link that is potentially required in the 75 meter

oscillator alignment. In contrast, coils usually needed in the 75 meter driver circuit were present in all five rigs. These variations suggested three things to me; 1) the circuitry is forgiving, likely from an abundance of drive, 2) certain adjustments are not as critical as others, and 3) some builders simply chose not to follow the construction and/or alignment instructions closely.

That some amateurs had a reluctance to follow the alignment procedure 'by the book' comes as no surprise as 'the book' consists of no less than 10 pages. At least that's what I think. My uncertainty is because at least two versions of the manual exist. I have most of one version, courtesy of Dennis Petrich (KØEOO), and a couple of pages of a second, courtesy of John Brewer (WB5OAU). I pity the individual(s) whose task it was to create this procedure, as it seems to have been derived more by experimentation than theory. Its length and complexity, which rivals procedures required by high end receivers, stems from Johnson's attempt to implement gang tuning with a circuit that has no tuning slugs and only one ceramic trimmer. To give you an idea of its complexity, the procedure calls for the recording of eleven dial readings at no less than eight frequencies, the installation of one, two or three custom wound coils and, possibly, the addition of extra padding capacitors. Naturally, inductances are fine tuned by spreading or squeezing factory coils and capacitances by bending plates. If a Mobile could not be aligned with the standard procedure, an additional page of 'suggestions' was included to help bring it into compliance. No doubt to encourage adherence to this formidable procedure, a note near the beginning assures one that it need be done but once for the transmitter 'to remain tracked indefinitely'.

As you might expect, the alignment procedure begins on 10 meters and goes down in frequency from there. The exception is a jump from 20 to 75 meters and then back to 40 meters. Since #1 was on the bench when the assembly manual arrived I started with it. The net results were that, while some improvement of 10 meter grid drive was obtained, 75 and 20 meter performance remained the same (I didn't bother with 15 meters). I was able to improve the 40 meter output power but not its efficiency. As I was putting the finishing touches on the alignment, the 500V side of my dual regulated bench supply failed, leaving me unable to put #1 on the air just yet.

It was time for #4's alignment, after which I planned to try it with an amplifier. While barely into the alignment Murphy struck again. This happens when I get in a hurry. To make a long story short, the 300V side of my dual supply hiccupped and the supply subsequently blew its AC fuses. Thinking this was related somehow to the 500V side that failed earlier, I grabbed the 300V/1A supply that I intended to power #4 with in the shack. This was a mistake for this supply was not (yet) fused for the application. When I applied power to this replacement supply, the cause for the 300V supply hiccup became quickly apparent. The plate suppressor for the 807 was barely touching the aluminum shield through which it passes. This 'feature' will be corrected with heat shrink tubing and spaghetti on all my Mobiles. Unfortunately, the 1A supply didn't crater like my 150 mA bench supply. Rather, a contact on the Mobile's Tune-Rec-Send switch vaporized, leaving #4 dead in the water. Unfortunately I did not have time to repair the switch nor try the rig with an amplifier before submitting this article. Later, in a letter to the editor, I will summarize #4's alignment and amplifier results and, of course, you will hear me on the air with the combination soon. Similarly, when I fix my bench supply

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Easy R-390 6 kc IF Bandwidth Modification

by Bill Breshears, WC3K
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Bowie, MD 20720

I have reconditioned and used both the Collins R-390 and the R-390A receivers for several years and have high regard for both. However the R-390 (no A) is the one that finally occupies the prime position in my station. I like the way it sounds when receiving AM signals. Whether real or imagined, I perceive a smoother sound as a result of the IF selectivity being developed by six tuned circuit IF stages rather than the mechanical filters as used in the R-390A. During AM contacts I used the 8 kc (the panel is marked kc, not kHz) position when conditions and signals were really good but moved to 4 kc most of the time. 2 kc was for tough going. The 16 kc position was seldom used.

Figure 1, a partial schematic, illustrates how the tuned IF transformers use switched mutual coupled windings to obtain the 2, 4, 8, and 16 kc IF bandwidths. (A preceding crystal filter is used for 0 .1 and 1 kc bandwidths.) A number of other IF bandwidths can be realized by careful selection of combinations and/or number of mutual coupled coils. I decided to try to obtain a much more useful 6 kc bandwidth for the 16 kc switch position. This turned out to be easily done with a fully reversible modification. It works very well and I now use the 6 kc bandwidth most of the time. This capability alone now assures its place as the main station receiver. As part of this activity I measured the actual 6 dB bandwidth of my receiver to be: 2.4, 4.0, 9.8, and 15.6 kHz. The modification provides a measured bandwidth of 6.2 kHz.

Modification Details

Remove the IF subassembly from the R-390, and place it upside-down on the work area with the controls to your left. The switch and the contacts needing modification will be easily accessed across the bottom near you. The switch wafers S501 through S507 will be from left to right. Locate R508 (5.6K) on S502 and cut its lead neatly and as close as you can to the switch terminal, this will aid re-connection if you ever elect to return it to original. Gently push the cut lead a quarter inch away so it won't short anything. Tack solder a jumper wire from the freed switch terminal to the second terminal away as shown in the schematic. I used a 1 inch piece of number 26 wire with bright orange insulation to aid in location for future removal, if needed.

Repeat that operation for switch wafers S503 and S505 (the identifying resistors value are now 4.7K). Then do wafers S506 and S507 but note that their jumpers are tacked to adjacent terminals. S504 selects cathode resistors to equalize the IF gain for each bandwidth. Again snip R518 (220) at its switch terminal and tack a 3.9K resistor from the freed terminal to ground. That's it. Reinstall the IF chassis and enjoy. I also used a toothpick to put a small bit of gray paint (Krylon primer #1318) into the "1" of the "16" on the engraved front panel. It looks like it was designed for 6 kc. ER

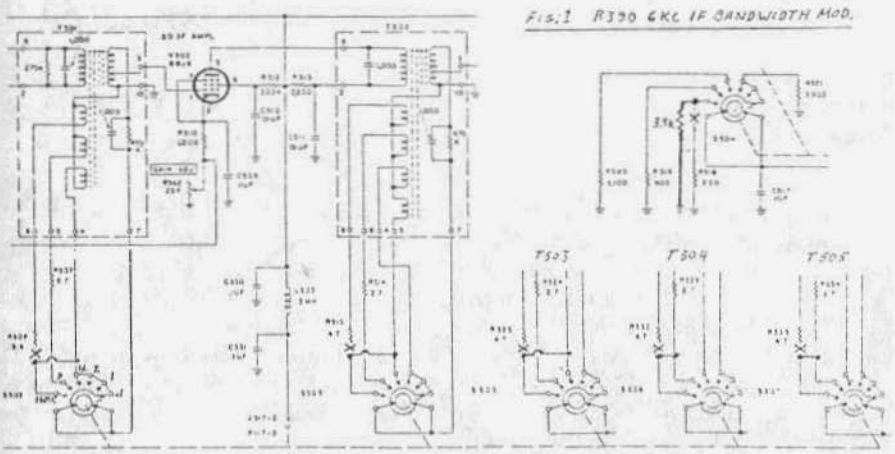

Figure 1. R-390 6 kc IF bandwidth mod

The author in his hamshack

The Hallicrafters HT-6 Transmitter

by Chuck Teeters, W4MEW
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Augusta, GA 30909

It was hard to believe it was Lawrenceville, it wasn't cold and raining. The November hamfest near Atlanta is noted for bad weather. With the bone yard relocated on a mud free parking lot and the warm day it was great. Even the pickings were excellent, an SCR-522 (picked up by Bob, W4QBE) and RME-84 ($40 but unsold) were among the rare items in the bone yard. The good weather also brought out most of the AM gang from North and South Carolina, Alabama, and, Georgia, which made the hamfest better.

A cruise inside the main pavilion with Tom, W4UOC, who had already filled the back of his new SUV with bone yard goodies, produced even more old stuff. I saw my first Hallicrafters HT-6 transmitter other than in advertisements. The inside of the 1939 25 watt transmitter looked like the exciter of the HT-4 Hallicrafters transmitter we had at Fort Monmouth, NJ. Nine plug-in coils spread over half the chassis, most of which looked like large IF cans with a knob on the top, were just like the insides of our HT-4. The Monmouth HT-4 was the first of what became the BC-610. When I left Monmouth I kept the HT-4 order/receipt from the Tydings Co. in Pittsburgh for old times sake. My best friend W2KQJ (SK) had signed it. The Army paid $672 FOB with a 10% government discount, no tax. Government paper work sure was simple before the days of the DD-250 form.

Nobody was showing more than a passing interest in the HT-6. It was a bit pricey and the owner had no idea of its condition. It had obvious electrical and mechanical modifications. After wandering about and finding nothing else that caught my fancy, I walked back to the HT-6 and made a low ball offer. The owner said come back later, and I could have it if there were no better offers, he wasn't going to carry it home. Two hours later I owned the HT-6. The first thing I found out about the HT-6 was it weighed over 3 pounds per watt. I borrowed a dolly to get it to the car. A lot of weight to tote home for a look into my past experiences with the HT-4 at Fort Monmouth. On the other hand, in the August 1939 QST Hallicrafters ad, the HT-6 was mated up with the SX-24 receiver. Since I use an SX-24 for AM the HT-6 would let me operate 1939 style in style. Back in 1939 I could only afford a used 1936 Hallicrafters, S-14 Sky Chief.

At home I found a previous owner of my HT-6 had attempted to TVI proof it. Screen covered all the cabinet openings, and there was a filter in the AC power lead, but none in the key, mic, or relay leads. The final tuning dial was screened but the meter was not. I wonder how successful the TVI proofing was. The entire top of the cabinet opens and has got to leave a big slot for stuff to leak out. I removed all the screening and modifications I could find. A previous owner had replaced both power transformers and oil caps had replaced the original filters in the HV supply. All were good. The filters in the modulator power supply were bad, along with the speech amp audio coupling caps so I replaced them.

The final tank had been changed from band switched 4 pin plug-in coils to a single B&W baby coil. I removed the mod and rewired the final to the origi-

The author's 1939 station: Hallicrafters HT-6 on the left; SX-24 on the right.

nal configuration. This required making duplicates of the original Hallicrafters coils. I had some Hammarlund CF-4 forms so I wound my own. The 80 meter coil uses a 47 pFd cap across the winding to help the LC ratio. The final tank cap is only 100 pFd, a little short for 80 and 160. The originals had a coupling link over the outside of the tank winding, so I duplicated it except I made it adjustable. The original was glued in place and had solder taps for the coupling adjustment. By using number 12 insulated wire and winding the links slightly smaller than the forms, they held themselves in place like a cheap radiator hose clamp but could still be moved up and down for adjustment of the coupling.

The most interesting thing was the way the HT-6 was built. The chassis was welded to the front and sides of the cabinet like the S-19R receiver of the same vintage. Unlike the S-19R however the top was also spot-welded in place. A one-piece back and bottom was the only removable part of the cabinet. To wire the transmitter at the factory two subchassis were used. The RF section, 6L6 oscillator, and 807 PA along with the band switch and 9 coil sockets were assembled and wired on a flat plate and this was bolted to the underside of the main chassis. The main chassis had been punched out to allow the coil and tube sockets to project through. The 6L6 modulators and 6SQ7-6SL7-speech amp had been done the same way on a separate plate. The two power transformers, filter choke, filter caps and modulation transformer were mounted directly on the main chassis along with 2 5Z3 rectifiers. A wiring harness connected terminal strips on the modulator and RF assemblies into the power and switching on the main chassis.

One 500 volt transformer runs the RF section and supplies one 5Z3 and the 6L6 and 807 filaments. A second 500

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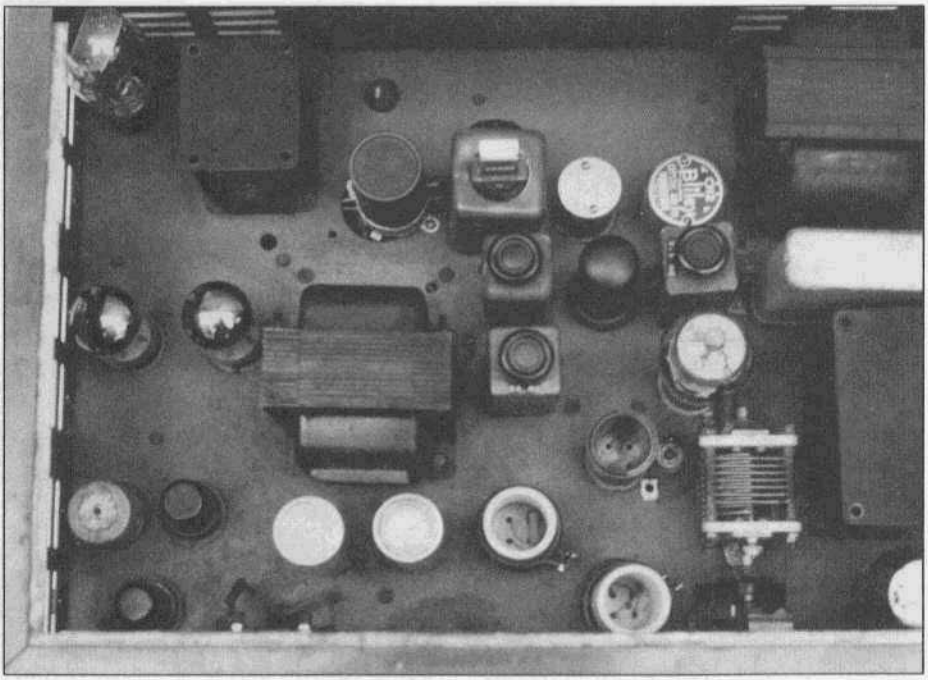
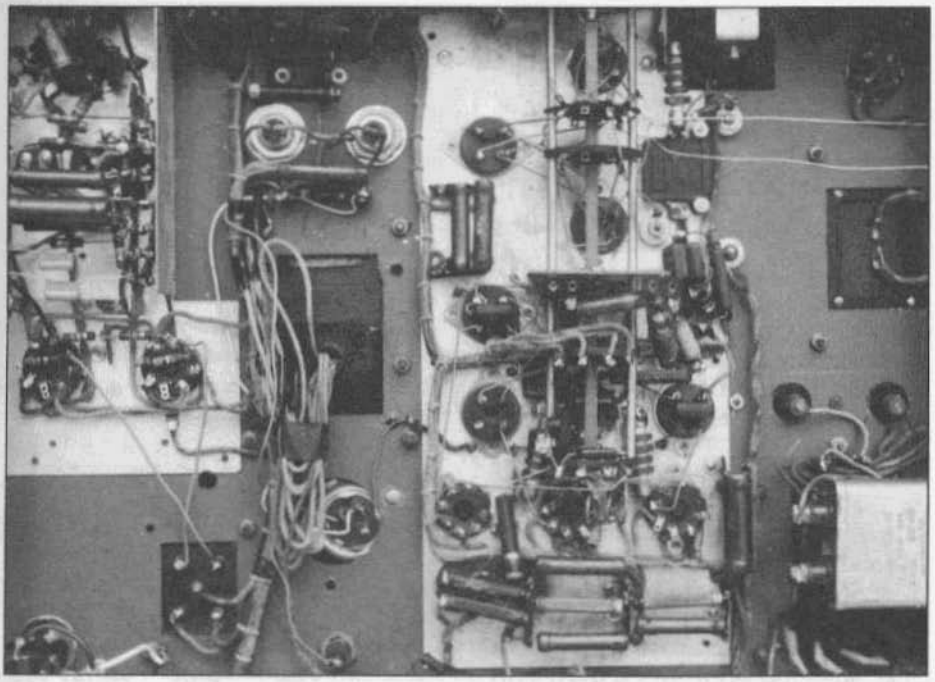


Looking down on the topside of the HT-6 chassis.

volt supply takes care of the modulator-speech amp B plus and filaments. A switch on the audio gain control switches the AC power to the second supply separate from the RF supply. A front panel switch routes HV to the 807 through the modulation transformer for phone, bypasses it for CW, or disconnects it for oscillator tuning. It does not short the modulation transformer in the CW position, so if the modulator AC power switch is on and you woof into the mic while operating CW the modulation transformer arcs. Poor engineering, unless you are selling transformers. Also with no interlocks and the lid open to get at the tuning knobs it could be real interesting. Only the final tuning is on the front panel.

The band switch connects three different sets of coil sockets into the 6L6 grid, 6L6 plate/807 grid, and 807 plate circuits. A crystal or MO coil can be plugged into the 6L6 grid position. Coils were available for 160, 80, 40, 20, 10, and 5 meters. I have the 80, 40, 20, and 10 meter coils. I did not get any of the master oscillator/VFO coils so I made my own from BC-610 tuning unit parts. 80 meters is usable but on 40 and 20 the drift is so bad I hesitate to use them, and CW keying on MO chirps. Most of the time I use crystals. The crystal current is high for the small post war rocks and they heat up quite a bit. The H-6 runs 500 volts on the 6L6 oscillator plate and 250 on the screen. I have some old Bliley LD-2s for 80 and 40 that work great, but have to use FT-243s for 10 and 20. To avoid crystal problems I plug a 6AG7 xtal oscillator adapter I made into the grid coil socket of the 6L6. Hallicrafters did the same with the 5 meter coil set except they used a 6J5.

I mostly use the 10, 40 and 80 meter coil sets and operate crystal control. Tune up is simple. The front panel meter reads 6L6 oscillator plate current on a 200 mA scale, 807 grid current on a 10 mA scale, and 807 plate current on a 200



Underchassis view.

mA scale. It can also be switched to read modulator plate current on the 200 mA scale, but since the 6L6s run class AB1 nothing much changes in the modulator position. The oscillator tank is tuned watching for max 807 grid current and decent keying with the phone/CW switch in the plate off position. Peaking the tuning doesn't allow for easy crystal starting. Then the plate OFF switch is moved to the CW position and the final is dipped. Loading is adjusted for 90 to I 00 mA and the HT-6 will show 35 watts out on 80 and 40 and 20 watts on 10.

CW operation requires an external filter to soften the keying, but it's nice after you get it cleaned up. Phone operation gets great reports, as there is no limiting of response in the audio other than provided by the modulation transformer. Seems to be good from 100 to 7000 hertz. The pin control is cranked up until the 807 plate current swings up just a little with modulation. I haven't found any parasites or spurious when you keep the final loaded. The front panel transmit/standby switch has connections to a rear terminal strip to disable the receiver and operate an antenna relay so it is a one switch T-R operation.

There were two different production runs of the HT-6. The first runs had a 6F5 driving a 6J5-speech amplifier transformer coupled to the 6L6 modulators. My late production uses a 6SQ7 driving a 6SC7 speech amplifier with half of the 6SC7 used as a phase inverter eliminating the driver transformer. The early run had screw terminals on the chassis for the microphone connection. The late production had an Amphenol single pressure contact mic connector on the left outside of the cabinet. With the two RF output feed through insulators on the right side of the cabinet you didn't put anything close on either side of the transmitter. Maybe this was a way to make sure you left adequate space for

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Memories of Swan Island

by Doran S. "Jeep" Platt III, K3HVG
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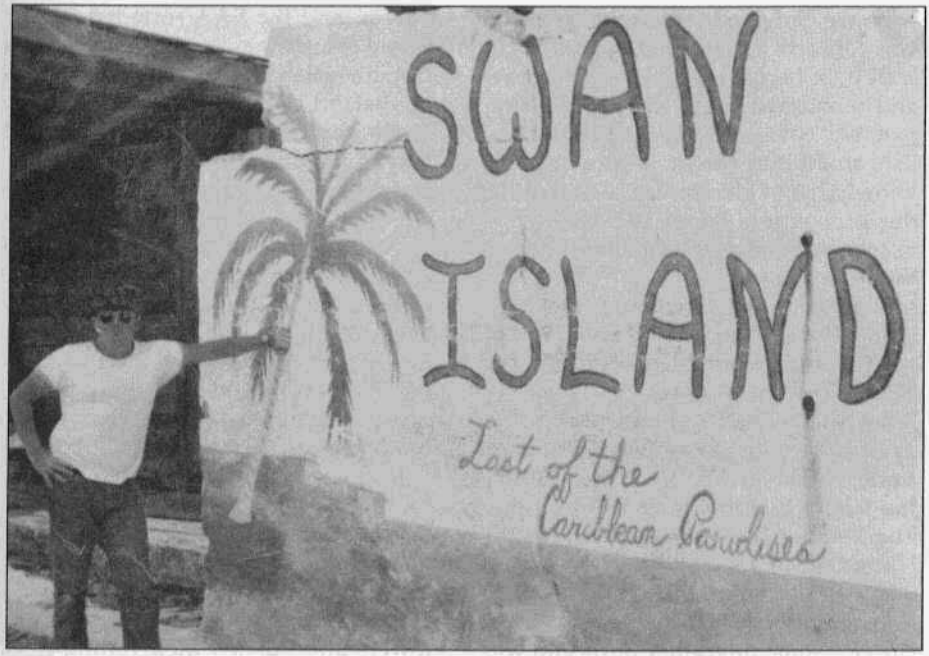
In July of 1972, while vacationing in the Cayman Islands with some National Oceanic and Atmospheric Administration (NOAA) coworkers from the National Environmental Satellite Service, I made the offhand comment that wouldn't it be great to get a job on a Caribbean island. Two days after New Year's Day 1975, I was on final approach to the Owen Roberts Airport, Grand Cayman Island, en route to the National Weather Service (NWS) Office, Swan Island, West Indies to report in as the station's new Technician-in-Charge. The vacancy announcement indicated that, among other features, the incumbent would be directly responsible for the installation and maintenance of all National Weather Service (NWS) and Federal Aviation Administration (FAA) weather and electronic equipment at the island station. It also indicated that Swan Island was "two miles long, one-half mile wide, with Booby Key awash in high seas", a point reiterated to me by my colleagues on several occasions prior to my departure. I recalled my earlier observation and wondered if I'd made a good decision. Weather-wise, the transition from Washington's mid-teens to a balmy 84 degrees seemed a step in the right direction. The reality was, of course, it was all a done deal.

After a few days acclimating on Cayman, awaiting the twice-monthly flight over to Swan, and getting the "poop" on the operation on Swan, Dan Chadwick, the NWS electronics technician from Cayman and I boarded a Government chartered DC-3 and departed for Swan. Chadwick had been asked to stay on Swan for two weeks and give me some OJT. As a longtime employee of the NWS, Dan was well versed on the various weather systems, but he hastened to inform me that the FAA and other equipment installed there were totally unknown to him. Being a ham and having some experience with both tubes and the then-emerging solid-state technologies, I figured that the older equipment might not be as intimidating as it could have been. On the other hand, I hadn't a clue regarding the upper-air sounding system, wind sensor systems (and all this time I thought an F-420 was a Fairchild aircraft!), solar radiation counters, hydrogen generators for the balloons, and a myriad of other weather equipment new and/or destined for a Museum of History and Technology.

As an erstwhile commercial pilot, with logbook entries all of about 12 hours in DC-3/C-47's, I asked to come forward to the flight deck and have a look. The pilot and copilot, whom I became very good friends with over the next 2 years, allowed me to come up front and have a seat. The old radio operator's compartment was still there but no BC-348 nor ART-13. The control box for the trailing wire antenna was still there, just where it was supposed to be! The pilot was doing the flying and the copilot was perusing the latest issue of a popular gentlemen's magazine. About 20 minutes out of Cayman, cruising at 5,500 feet, Dave, the copilot, doffed his headset and asked me to have a listen as he pointed to one of the needles on the dual ARN-6 ADF (direction finder) indicator. What I heard was a raspy signal, the S-W-A morse identi-



The author posing beside a concrete sign that greeted visitors at the dock.

fication sounding like raw AC. The #2 needle on the indicator was wandering all over the dial, trying to resolve what it thought was a valid signal. Good way to start the day! After an hour-and-a-half flight downrange to Swan Island, we hove to on an extended downwind leg and I got my first real look at my home-to-be for the next year.

We landed at Swan and were met, as custom dictated, by all 25 or so of the then-current island residents; to include the four-man US Government weather station staff and the local Honduran or Caymanian maintenance personnel and their families. The beer, mail, beer, spare parts, beer, my personal belongings and a KWM-2, and perishable foodstuffs, etc. were quickly off-loaded. While the aircrew and staff went to have lunch, I was escorted to the HH beacon building by an old Arctic/Antarctic hand and met-tech, Bob Melrose (now KC7QCO), who was to became my right hand for the following year. The HH (FAA term for high/low-altitude, high power, low-frequency, non-directional beacon) was an old, but immaculate, dual-transmitter system manufactured by Aerocom of Miami, Florida. The data plate indicated the date of manufacture was 1956. The rig ran an 807/813 to a single 4-1000A, modulated by, as I now recall, a pair of 4-400A's (?), into a 210' insulated, base loaded tower. The power supply had 8-4B32's, with several of them glowing a decidedly improper color. I elected to shut down the transmitter and send the required outage NOTAM (an advisory Notice to Airmen) out to the FAA in Miami. Bob observed while I replaced the suspect tubes and, with great trepidation, fired the supply back up. With the proper color evident, I listened on an old receiver resembling a National NC-101X. As an aside, this receiver was an FAA "RCK". Unlike the NC-101, though, it has no S-meter but it had a carrier-controlled switch to set off an alarm if the beacon went off the air and covered the 200-400 kHz LF beacon band. Any-

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way, we had good tone from the HH! I was concerned, though, that this might well be a harbinger of things to come and wondered what else would happen. Well, at least I'd been able to establish credibility for at least a passing knowledge of electronics. At any rate, the aircrew was happy to have a good beacon to navigate outbound back to their home base.

Digressing for a moment, Swan Island is located about 185 miles southwest of the Cayman Islands and is about 125 miles off the coast of Honduras. After alleged use by pirates and other neer'-do-wells plying the Caribbean trade, in the early teens of this century the island had a nice coconut crop, a guano mine, a wireless station for the United Fruit Company, and later, a weather station and livestock quarantine operation. The island is also a rest stop for some migratory birds and was home to the near-extinct small mammal, the Hutia. During WW II, the U.S. Weather Bureau and the Navy had personnel stationed on the island and resupplied by bomber, PBY, and an occasional submarine. Their logbooks make fascinating reading! They also had hurricanes that periodically played havoc with the place. How these guys survived is a miracle in itself. In the late 50's, and with the rise to power of Fidel Castro, an agency of the US Government set up a broadcast station ,"Radio Americas", or "RA" for short (among other names), on Swan Island. The station, owned and operated by the Gibraltar Steamship Company (hi) was landed on the island by LST (a WW II-era large landing ship). The station components were mounted in semitrailers. A very good article by Tom Kneitel on the operation appears in the July 1968 issue of "Electronics Illustrated". On the wall of my current ham station, I have one of the station's old clocks, legally acquired via local surplus action,.... I assure the reader! The Weather Bureau and the FAA rounded out the island complement at the time. Pictures from the island's scrapbook show various island diversions for the period. There was the Iggy Bar, the Swan Island Playboy Club (all I saw was a 10'x10' concrete pad!), and the initiation for the newly arrived. It appears that each new arrival was met at the airport by the island "doctor". On a small table were some surgical trays and some really evil-looking veterinary syringes. The newly arrived were each informed that inoculations would be required. I understand that not a few re-boarded the plane and refused to get off until the old hats "fessed up"! In the late 60's, the "Agency" shut down their broadcast operation, packed up, and went home. It appeared to me that they took the transmitters and studio equipment back to the U.S. and then simply felled their towers and pushed their rolling stock into the sea. There's still a jeep and a deuce-and-a half truck submerged off the island.. The Agency's portable dock can still be seen submerged off one of the beaches, and is now teeming with tropical fish. The amount of antenna hardware abandoned on site by the FAA and the Agency was astounding! I guess the cost to transport it back to the US just wasn't worth it. A lot of antennas have been put aloft because of this priceless treasure trove. A few years later, the FAA also decided to pull out and left all their equipment to the, now-named, National Weather Service to operate and maintain. I still have a box or two of clamps and insulators I liberated.

After the repair of the HH beacon, I went for lunch and got my familiarization tour of the island. Its rather a very nice place... really. The fishing and lobstering is world-class, with Wahoo and Snapper being just a hook and line away. The FAA had installed 8 full size MF-HF doublets on 60' telephone poles, counter weighted with half-ton concrete

A view of the Swan Island facility from the dock area.

blocks, and fed with parallel conductors. The transmitters were fed directly with the open-wire feeders, but the receivers required TMC baluns to match the 50 ohm input. I learned all about the wire trolley VSWR meter used on that type of feedlines! Communications-wise, the weather station itself had Scientific Radio SR-206 and SR-210 HF-SSB transceivers, both with KW linears. These were connected to delta-loops, cut to each NWS frequency, that I and my visiting boss Bruce, KP4BCL (now N5IE) installed during my residence there. The station had a collection of Collins 51J-4's for the office and one in the "living room" for listening to AN and Paul Harvey, during lunch. I got to be a pretty good at repairing and restoring those receivers. The HF teletype transmitter system employed Federal Electric model THE transmitters. The data plates indicated either a 1953 overhaul or original contract date. These operated in the 3, 5, and 9 MHz bands and provided good path reliability to Miami and the FAA MF-HF station, WAR-70, throughout the seasons. The THV system was about 6 feet tall and 12 feet wide, in 6 individual cabinets. The transmitters each used a pair of 250TH's driven by 813's. The modulator racks had a pair of 100th's, as I recall, but were not used. The single power supply provided 3-4KV at about 4 amps. The individual cabinets were installed on floor rails, so one could pull them forward for service. The THV's were excited by TMC model XFK RTTY units. We also had 4 racks of Robert Dollar (anyone heard on them?) RTTY receivers and demod but, by the time I got there, had been decommissioned. Our primary RTTY receivers and demod were 1200-series Frederick Electronics units and the teletype machines were Model 28's. Rounding out the HF, there was an RCA AM transmitter (ET-1106?), running an 813 in final. This was used for our local MF weather broadcasts in the 2 MHz maritime band, directed at the commercial fishing community and

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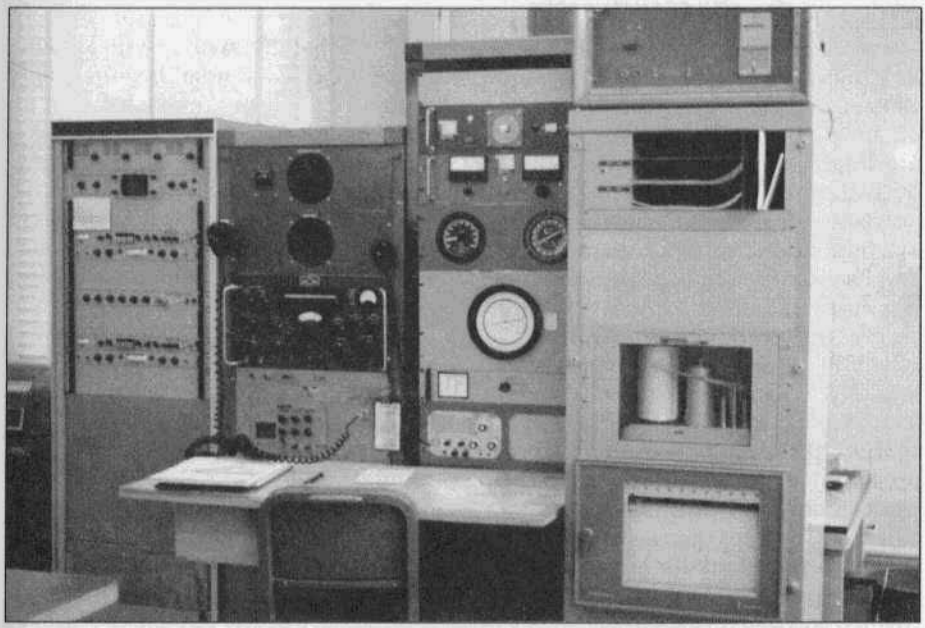
adjacent coastal interests in Honduras and Nicaragua. I sure wish I had that RCA to put on 3885! To provide aeronautical en route services and for our local 5000' grass strip, we had an FAA TUQ VHF-AM transmitter. It's a huge beast that ran a single 829B in the final and all of one crystal controlled channel. In reality, it was very reliable and quite easy to tune. It appeared me to be originally a Navy shipboard transmitter. The VHF receivers were FAA RV4's, again, single-channel and crystal controlled. I was able, later, to obtain a Narco COM-10, 360-channel VHF radio so we could have something besides the 121.5 MHz guard channel available. We also had a large tunable HF loop antenna installed outside the weather office. It was originally procured to provide an all-frequency HF antenna for the site. Its performance proved quite poor in comparison to almost any wire antenna, but we used it on several occasions to provide guidance to lost fishing boats, utilizing standard lost-vessel orientation procedures and the loop's excellent direction finding capabilities. The ham station, located in an old concrete seismographic bunker/hurricane shelter/storage area, appropriately called the "Seismo", consisted of a Drake TR-4/RV4C and an L4B. Antennas were a Hy-Gain TH6DXX and some slopers for the low bands. I installed my KWM-2 and 312B-5, later adding a Heath SB-200 and a 75S-3B. For RTTY, I installed an old Model 19 teletype that was sitting around and my QSL manager mailed me a HAL ST-6 RTTY converter.

A few days after my mentor left for Cayman, I had my second casualty. Sunday morning, while making some waffles for our 5-person weather staff, one of the met-tech, Felix, WB4DLY told me there was a huge bang and the weather office went dark. I set aside the meal preparation and went over to investigate. I reset the main circuit breaker with no problem and did a walk-through to see what else was inoperative. All looked well until I got to the back room where the THV's were installed. The system was dark and some of the fuses and breakers were blown. I turned off the manual switches and brought the power supply back up first. All appeared well, so I brought up each transmitter, one at a time. About that time, one of the met-tech brought me a message from WBR-70, telling us that we were not heard on any HF frequency in Miami. I asked the fellow to reply that we were back on the air... I hoped. While I'd had the power supply out, I'd noticed that there was a tremendous buildup dirt. A few days later, I decided to bring the whole system down and do a clean-up. After it was all done, I had filled up 2 or 3 vacuum cleaner canisters with the dirt. I don't think that anyone had done any cleaning in 20 years! It turned out the original problem was an electrocuted mouse across the 5KV line. There wasn't much left of the critter and it must have been quick! At least the equipment was clean, for a change.

Another crisis occurred in the latter part of the year. During a NOAA geological survey in our part of the Caribbean some years earlier, a scaled-down version of an LCVP was abandoned at Swan. Recall that the LCVP is the landing craft that the Marines used to storm ashore in. This boat had been sitting on skids on the island for about 5 years and no one wanted it. A fellow visiting the island had taken notice and later inquired as to how he might buy it, inasmuch as he had obtained a contract for some harbor work over on Cayman. The boat was advertized for surplus by GSA and, the single bidder, Paul, got his boat. One of the small, interisland ships was contracted to tow the craft the 185 miles to Grand Cayman. Paul, an accomplished commercial diver, elected to ride on his new boat to ensure



The weather observer desk. Note the 51J4 in the rack; there were 7 of these at the facility.

that the towing bridle and gear remained intact. During the overnight part of the transit, half of the balanced bridle snapped and the craft turned turtle. Nobody on the tow ship noticed what had happened. The agreed upon lookout was not on the job. Some time before dawn, the ship's crew noticed that the barge was gone and called for assistance, albeit a little late. A search and rescue (SAR) effort was launched with the USAF dispatching a C-130 out of Howard AFB in Panama and the U.S. Government issuing an emergency contract to Cayman Airlines to fly the DC-3 out of Grand Cayman. Swan was the comms coordinator for the effort. I had my KWM-2 up on the USAF frequencies and between that and our AM HF and VHF, did a pretty good job until the old FAA audio and control panel went up in flame... literally. Our air-ground VHF and the AM HF was out and only the KWM-2 was operational. After some tap dancing and other gyrations, I found I was able to task two of our troops to use an insulated screwdriver and, on command, depress the change-over relay on the HF AM or the VHF. In this way we were able to regain comms with the search assets. In the end, Paul was lost. The AF located the overturned LCVP but there was no sign of Paul. It's a heck of a note to buy and pay for your own demise! I rebuilt the control console and don't believe any of my successors had to suffer that problem again. At least my prior SAR experience had been of some help.

There was a contraption installed on Swan (as well as many other remote NWS sites, worldwide) that provided the lifting gas for the twice-daily weather balloon and radiosonde ascents. In the Continental USA, the NWS normally uses commercial bottled gasses. At remote sites, where regular and reliable delivery of the heavy tanks of helium or hydrogen is not feasible, local generation is the best option. The original infernal machine involved the combination of small pieces of com-

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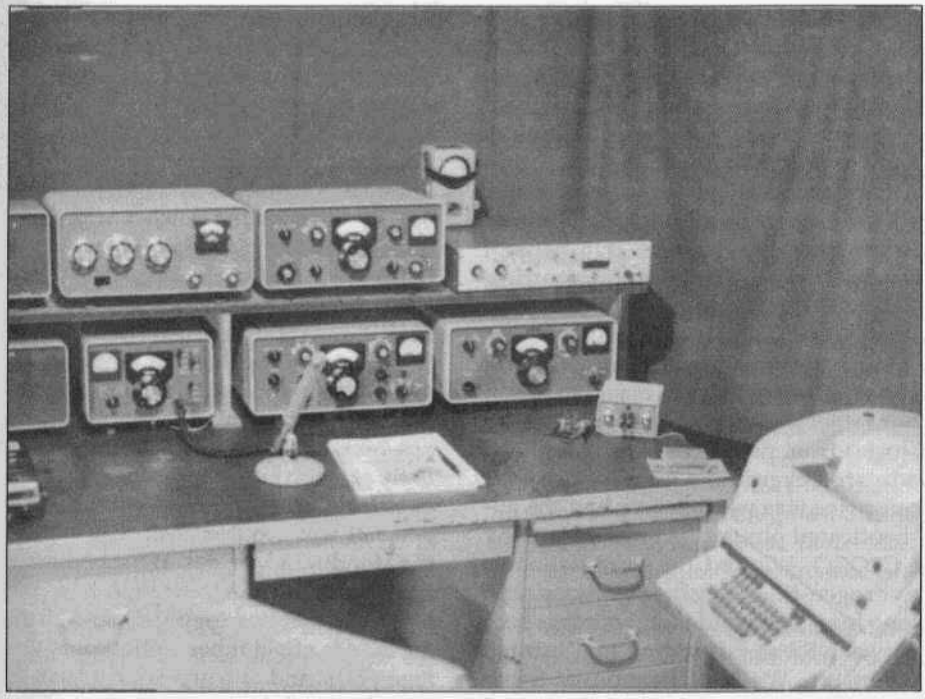
mercial aluminum scrap, a caustic, and water mixed in a huge, 10' tall boiler-looking device. The combustion (or chemical reaction) results in the release of, among other things, hydrogen gas. The liquid and solid by-products of this operation are horrendous. On Swan, however, we had an Electrolyser. This machine is, in reality, a giant battery and charger system using a caustic solution instead of an acid. A very large current charges a series of equally large cells, the poles of the cells being separated by a liquid permeable bag. During charging (in reality, these cells don't charge up), the oxygen and hydrogen precipitated by the appropriate electrode is isolated by the non-gas permeable bag. The hydrogen is then pumped into a pressure tank for later use. Routinely, each cell would need to be cleaned and rejuvenated and one had to be very careful as the caustic solution would take your hide off in a instant. Cleaning and rejuvenation required the mixing and adding of the new electrolyte. Doing it by the book required the wearing of something like the current military suits used for chemical warfare. It was hot as hell inside your protective garb and head gear! One of my contemporaries refused to wear any protective gear (except for some goggles), preferring instead shorts and shower clogs. He would mix the stuff near a shower head, believing that if there were a mishap, he wouldn't have to worry about getting his clothes off before he jumped in the shower. It's a plan, I guess.

Another of the interesting pieces of equipment was the AN/GMD-1A upper air sounding system. This unit receives and tracks data from balloon-borne radiosondes. The GMD is a military unit, adapted for civil use, and was mounted atop a small tower and installed inside a walk-in radome. It receives on a nominal frequency of 1687 MHz and utilizes two crossed dipoles, mounted in front of a 8 foot parabolic dish. A large metal disk, with an offset 1/4-wave circular hole, is spun in front of the dipole array, exposing each dipole leg individually, as it spins. A left-right and up-down (relative) error signal is thus formed and is amplified and used to drive the antenna tracking servo system. The system works quite well except that to track "over the shoulder" (that is, the antenna rises to the absolute vertical, spins 180 degrees, then tracks back down) requires that everything be in perfect alignment. The varying frequency, pulsed audio output, corresponding to height ordinates, a calibration level, humidity, and temperature is converted to an equivalent voltage amplitude and displayed on a continuously running chart recorder. After a while, one can listen to the audio and get a pretty good idea of what's going on. During my tenure at Swan, we only lost one "run" and that was due to a slipping clutch in the primary data chart recorder.

I left the island in the Spring of 1976 and returned to the NWS Headquarters, in Washington. Within a week, a group of us from Overseas Operations went down to Enterprise, Alabama to attend a factory school for an X-band wind-finder radar system to be deployed in several countries in South America. One night there came a knock at my Daleville Inn door. It was my bosses... both of them. Omen? They informed me that a) they had been, thus far, unsuccessful in recruiting a replacement for me at Swan and, b) there was trouble down at River City and would I mind going back, only until they could find a replacement? I said, yeah... sure... no problem. My second arrival at Swan was different from the first. It was like old home week. In fact, I was informed by one of the elderly island women that did our laundry that, owing to the fact that I had left a few things behind with her, it was destined that I return. Can't



The author's ham station at Swan Island, K3HVG/HR6.

argue that! Anyway, I spent not quite an additional year down there and, in truth, didn't mind a bit.

Before my I left Alabama and DC to return to Swan, Bill Tynan (of AMSAT) asked me to try and get on the amateur satellites. Bill put me on to a fellow selling a 62S-1 that, with the KWM-2 and 75S-3B, allowed me access to the satellites. My first time on was the "wrong" day! I was told that it was an education-only day for the satellite and that I wasn't supposed to be there. BUT... as long as I was and because I was a new country... well, maybe it would be OK. Using a printout provided me for antenna pointing, I'd run out and manually point the antenna, then return and try to sort out the Doppler shift and make a contact or two. Then back outside to rotate the single Cushcraft 10 element yagi, again. What fun!! On HF, I did manage a first place phone (Honduras) in one of the ARRL DX contests. Propagation during those times was excellent, especially on 20 meters. I was able to work many stations that had, thus far, eluded me as a lowly K3 in Maryland. Working HZ1 and 9N1MM were two of the highlights. One of the little problems I had was that of the Swan Island Radio Club, HR6SWA. The treaty with Honduras allowed the station to operate whenever there was a licensed operator, in residence...but not necessarily in attendance. I couldn't be around all the time to... let's just say... monitor the operation. A few of the guys that came and went got their licenses during my stay on Swan, but some of the others there were not that interested and only wanted a social outlet. Although Swan was no longer the KS4 "rare" DX, we nevertheless were quite popular. Some of the antics displayed by the few were noteworthy. One of the fellows would pour his guts out over the air to anyone who would

continued next page

listen. I would get reports of the evening soap opera a few days later. Another of the fellows had real difficulty differentiating from the real and the imagined. This would get very interesting when hams would ask about the old Radio Americas operation. A remote existence sort of brings out things in folks, for better or worse, I guess. But, better I reserve these observations for an article destined for "Modern Psychology", or the like!

I did enjoy my term on Swan. As I tell people, Swan was not a place, so much, but rather a state-of-mind. I get similar stories from people I've met who have wintered over in the Arctic. Of course, our place was warmer. We had the authenticated pirate rum bottle, found by KC7QCO. We had the Pyro-Balloons; hydrogen-filled weather balloons with long fuses that would ignite somewhere between Swan Island and the Yucatan Peninsula. We had the Annual Swan Crab Races, and the Study of Intertidal Vertebrates by Al "Mr. Lizard" Wilson. A team from the USAF Cambridge Research Labs were in residence for several months doing a fascinating Amazon Basin lightning propagation study. They would piggyback our radiosondes with an LF receiver and downlink their data. Let me also say that comet West (I think that was the one) really did look like a burning aircraft on a long final to the Swan Island airstrip, the first time we noticed it!!! Then there was Stan, WA3GAJ, the Facilities Chief for Overseas Operations. Each summer, Stan would bring a contingent of six or seven college science students down to the island to do odd construction jobs. In 1976, Stan's wife had given him a Popeel Pocket Fisherman set. You've all seen them. Stan decided to try it out one night at the dock by casting for tarpon. I'm told that tarpon are quite difficult to catch, but one actually hit the Popeel. There was a giant snap and all that remained were a few shards of the plastic in Stan's clutch. Somewhere out there is one of Ron Popeel's finest! There are a hundred other stories, too!

I finally left for the last time in late 1976 to return for a short time to DC, then back to Central and South America. There were three TIC's who followed me. For a year or so I'd get phone patches with questions about the old gear. It was nice to hold on a bit longer. In the early 80's, the NWS decided to bug out. The two CAT 125KW generators we had went to Egypt for a project there. Most of the radio and met equipment was transferred over to Belize for their emerging Met Service to use. I was presented with the last US flag to fly at Swan and a few souvenir coffee cups from our world-class kitchen. What was left was scoured over, I'm told, by the Honduran Marines. What became of the THV's, the TUQ, the RCA transmitter, not to mention the 51J-4's and all the thousands of old tubes, antique and vintage parts, and antenna stuff, I have no idea. The U.S. had some interests there during the conflicts in El Salvador and Nicaragua and I also understand that there was a commercial attempt to make the place a resort. I think the total lack of infrastructure, no ground water, and long logistics trains made that a bad investment. One of the oldest families in the area still has a nice cattle herd there, despite the hurricane that did all the damage in Honduras and Swan last year. I suspect that the island will prevail, as always, but can only hope that whoever has stewardship for the place has the sense to take care of it. I wish I had more photos of the equipment but over the last 20 years, they've become lost. These were the best that KC7QCO and I could come up with. If anyone has questions or comments, please contact me. ER

Military Radio Collectors Group 2000 Meeting

The fifth annual meeting of the Military Radio Collectors Group (MRCG) will be held at Camp San Luis Obispo (CA) on Friday and Saturday, 5/6 May 2000.

Friday will be devoted to equipment setup, operating events and informal get-togethers at the NCO club and the adjacent RV area. Those wishing to set up and operate at the event may do so under their own calls. Suggested frequencies are 3885, 3970 and 7293 kHz for AM, 3996 and 7296 kHz for USB and 29.6 and 51.0 mHz for FM.

Among other vintage setups, a T-368/R390A portable station is expected to be in operation on 75, 40 and 20 meters. W6DJX's 1942 GPW Jeep with operating GRC-9 and RT-70 sets will be back again this year and many other examples of military equipment are expected to be present and operating on all bands 80 through 6 meters. Organized operating events on Friday include another try at a TBY/BC611 "DX" shootout, a CW interchange between the BC-148 trench radios restored by W6DJX and SM5UR/6, and a hidden transmitter hunt.

Pizza, salad and soft drinks will be available Friday evening this year at the club for the convenience of the attendees.

The swap meet starts Saturday at sunup in the parking area adjacent to the NCO club. Listings already received from prospective sellers include: Navy RBC, RAS and RBL receivers; ARC-5 receivers, transmitters, racks, modulators and connectors; ART-13 and other transmitters; dynamotors; and large numbers of manuals.

The formal program will begin at 0900 Saturday in the NCO club. Speakers this year include Ludwell Sibley, KB2EVN, who will discuss WW-2 Japanese and German equipment and Cam Ogan, WB6VVC, with a talk on the newer military radios now becoming available through surplus channels. Bjorn Forsberg, SM5UR/W6, will be back again this year with a presentation on the WW-2 German Enigma machines and Bart Lee will discuss radio intercept for military and intelligence purposes before WW-2.

A BBQ lunch will be served at midday Saturday (as in previous years). Activities will conclude Saturday afternoon following the last speaker with an open discussion period and a business meeting to prepare for next year's event.

Throughout the meet BC-148 (2), RU-18, TG-7, ARN-30D, TBX, TBY, TBW, PRC-6, PRC-25, BC611, RBM and many other equipments will be on display in the club and adjacent parking areas.

For additional information contact Dennis DuVall, W7QHO, (818)240-7907, w7qho@aol.com, or Hank Brown, W6DJX, (661)943-2027. As the meeting date approaches, announcements of general interest will be made on the West Coast military nets, (Sat., 1000 PST, 7296 USB and 2100 PST, 3980 AM) and in subsequent issues of ER.

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 Viking Mobile from page 23
or build a suitable 500V supply, I will have #1 on the air, barefoot!
IMHO

Now that I have a bit of Mobile experience under my belt I will try to summarize what I feel are the strengths and weaknesses of Johnson's creation. Since most amateurs today, even those whose interests lie primarily in tube gear, do not operate AM mobile, I won't bother to compare the Mobile to similar rigs. That said, other than lacking a VFO, the Mobile leaves little to be desired when compared to other AM mobile transmitters in my collection (AF-54, G-77A, Mars Thunderbird).

When considering the Mobile for a desk top transmitter I elected to compare it to a Ranger. In that respect, its negatives are that it; 1) has no CW provision, 2) does not cover 160 meters, 3) needs a separate power supply, 4) lacks a built-in VFO and 5) may need a complex alignment procedure. On the other hand, its positives are that it; 1) takes up less desk space, 2) has a wider usable power range, 3) costs much, much less, 4) is quicker and easier to tune up, 6) has cheaper tubes, and, perhaps most important, 7) is not sought after by almost every AM enthusiast!

After giving this much thought, I believe I know why we don't hear Mobiles as often as we hear so many other rigs. It's not because anythings wrong with them, after all they work well. It's just that there are so many others rigs available that either have a matching receiver or that have the built-in power supplies and VFOs that make assembling a station easier. It's that simple!

Without a doubt, the Johnson Mobile is not for everyone. Amateurs that don't have room in their shacks or budgets for more than one AM rig will be better off with one that has higher power. Amateurs that are not inclined to build or modify a power supply should look elsewhere too. However, if you like the challenge of trying to squeeze just one more rig into your already crowded shack and you're not afraid to cobble together a suitable power supply, I know that a lot of fun and enjoyment can be had by bringing a Mobile back to life.

By The Way

On January 23, 2000 I was listening to 10 meter SSB with a solid state rig. When I tuned up into the AM window I heard some carriers so I quickly switched the TH6 to my Ranger/Warrior/NC-300 combination. Much to my surprise, the first station I tuned in was KØEOO, who was calling CQ from San Jose, CA. I would have given one of my Mobiles to have seen Dennis' face when he heard me answer his CQ, considering he had just visited me in Texas three days earlier. What was important about our contact is that Dennis was (finally) running his Johnson Mobile so I can no longer say I haven't heard one of the air. Heck, I worked one! I must confess that I gave him a lousy audio report that I later retracted when I realized the tone control on my NC-300 was set quite bassy. Actually, his audio was great! ER

HT-6 from page 29
ventilation. With the 20" by 15" cabinet you use up a bit of table space with the HT-6.

The only operating drawback I have found is leaving the modulator AC power on when operating CW. The arcing reminds you fast to turn it off. Also you have to be careful when plugging in coils, as there is no rhyme or reason for their placement. If you are not careful you will have the oscillator grid on 40, the oscillator plate on 80 and the final on 10. The Monmouth HT-4 was the same way and it is easy to see why W2VQR put the coils for each frequency range into one plug-in case in the BC-610.

Operating on spot frequencies in the AM windows is almost like the old days

of crystal control when you called CQ and tuned the band. The HT-6 is ideally suited for this type of fixed frequency operation. Just turn the band switch to the band you want, dip the final and off you go. In the days of plug-in coils the HT-6 must have been super convenient. It is easy to see why it sold well. At $99 it was not much more than its contemporaries, most of which were kits and didn't have a band switching capability. Sure is fun to operate with a complete matched Hallicrafters 1939 station. My first 40 meter contact with this setup was with Woody, K4CR, which was great, as I've known Woody since 1947 when he was W8TMP and I was W8JWK. All I need now is for W2CE, George, to come back to one of my CQs. He was my first DX contact in 1941 (400 miles). ER

R648/ARR41 from page 7

dio if you should need them.

Is the R648/ARR41 as good as the R-390A, no way! But it's light years ahead of the BC-348. It's much more selective and quite usable on the ham bands. Sensitivity is outstanding with two RF stages ala the 390, WW II RXs and the HROs and in the sharp position, it is selective enough for QRM free QSOs. It sounds really good on AM and will tune SSB with the usual caveats. The AVC works without distortion and powerful SW stations sound very good. Both RF/AF gain are controlled from the same control but that didn't seem to be a problem. There's no way to mute it so you can bring the B+ out somewhere convenient and run that to your relay. The audio will power a small speaker (300 ohm impedance).

I really would like to obtain more information. I understand there was an article in 73 by McClellan describing a power supply. Are there more manuals out there? I would be happy to pay for copies or buy the manuals. Please contact me if you have information. ER

CD-144A 2M Transceiver from page 12

ting it because I wanted to learn more about who the Deltronic folks were, and what became of them. For much of 1999, Barry has been running a request for Deltronic information in the classified section of Electric Radio. To date, not one reply. Does anybody have information on this company? If so I'd like hear from you.

In the grand scheme of things, Faust Gonset has been correctly credited with revolutionizing VHF hamming by introducing his Gonset Communicators, which rapidly became the most popular the rigs for six and two meters in the 50's and early 60's. In looking at the Deltronic design, it appears that Gonset was not the first to introduce such a concept, but clearly did a better job of it. One has to wonder if there was any connection between these two, as they were both located in the Los Angeles area. Were they just competitors? Did someone leave Deltronic and go to work for Gonset? Did Gonset copy this idea, and commercialize it? Perhaps some or all these answers will emerge someday, but for now it makes for a good mystery.

Dedicated to my old friend W1JJE, and all of the six & two meter hams that I knew from those early days, especially W1BEY, my Elmer, who recently went SK, and his brother W1IFB who is still with us at 89. ER

References:

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2. "A pictorial History of Collins Radio Equipment" by Jay Miller, KK5IM
3. "The Central Electronics 100-R" by Joel Thurtell, K8PSV, ER, October 1997
4. "Heathkits That Weren't" parts 1 through 4, Randy Kaeding, K8TMK, ER, May, June, July, August 1996

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FOR SALE: Meters for WW II military radios, have some connectors. Henry Engstrom, KD6KWH, CA, (707) 544-5179. pacifica@sonic.net

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FOR SALE: Popular Electronics Magazines, 1972-1982 - $10/year, $70/all+S&H. Bruce Hering, 41120 State Highway 13, Waseca, MN 56093. (507) 835-5619; bhering@efjohnson.com

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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

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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.

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FOR SALE: Globe King 500C - $800. Pick up only, Larry, K6LXT, Cerritos, CA, (562) 924-7282, 110242.1646@compuserve.com

FOR SALE: Four unused VT-4Cs (211s) in orig boxes. Ted Bracco, POB 730, Teutopolis, IL 62467. bracco@hotmail.com

FOR SALE: Interference Measuring Set NM-20B by Stoddart Electro Systems, w/90780-2 pwr sply & pwr cables, no antennas or manual, exc condx - $130 + shpg; similar set by Singer as made for Air Force, w/manual, pwr cord & extra tuning unit but w/out antennas - $150 + shpg; BC-376 Army Signal Corps test oscillator, (about the size of BC-221), battery-powered, covers 37-75 MHz, has piston-type attenuator for testing VHF rcvrs in the field. No manual or battery info - $35 + shpg. Bob Simpson, NØNTC, 9570 Haney Dr., Houston, MO 65483. nøntc@train.missouri.org

FOR SALE: National SM-57 S-meter, rare - $33 shpd USA. Tom Berry, 1617 W. Highland, chicago, IL 60660. (773) 262-5360 or 262-0016

FOR SALE: Electronic Engineering Co, SS-75 single band xmtr exciter w/manual, PU. Louis D'Antuono, 8802 Ridge Blvd., Brooklyn, NY 11209. (718) 748-9612

FOR SALE: NC-183D & spkr - $335; NC-46 & spkr - $225; SB-303 - $150; Scott RBO - $200. Free list. Richard Prester, 131 Ridge Rd., W. Milford, NJ 07480. (973) 728-2454

FOR SALE: Transformers for Collins 32V3, Hallicrafters HT9, BC610 & RF xfmrs for Hammarlund SP600. Roland V. Matson, POB 956, Lake Panasoffkee, FL 33538

FOR SALE: LM-13 signal generator, w/call book, no pwr sply. Fred Clinger, OH, (419) 468-6117, after 6 PM.

FOR SALE: Heath SA2040, SA2060 w/manuals, very good condx. **WANTED:** Swan 750 CW w/SS-16B. Cliff, WA9SUE, WI, (608) 625-4527 after 6 PM.

FOR SALE: Gonset GSB-100 xmtr in exc physical & operating condx, w/manual - $250. Ben Deovlet, W6FDU, 933 Robin Ln, Campbell, CA 95008. w6fdu@aol.com

FOR SALE: Heath grid dipper; Western Electric headphone; 11-tube socket testers; pair amplified antennas; Radio Shack remote control center; Collins S-line tube shields. Bill Coolahan, 1450 Miami Dr. NE, Cedar Rapids, IA 52402. (319) 393-8075

FOR SALE: New model galena xtal detector, w/station finder & vibration resistant - $15 ea. L. Gardner, 458 Two Mile Creek Rd., Tonawanda, NY 14150.

FOR SALE: Amplifier sweep tubes, all tested 6KD6s x 6 - $30 ea/all for $150. R. Cohen, 11802 Willow Point Way, Tampa, FL 33624. (813) 962-2460

FOR SALE: Multitester model KR-13 for RCA photophone theater sound systems. W7SC, 3932 S. Mesa View Ln., Boise, ID 83706.

FOR SALE: Large collection of electronic & radio books. Harry Weber, 4845 W. 107th, Oak Lawn, IL 60453-5252

FOR SALE: Hallicrafters Sky Buddy S19R - $50. Delivered to your door. Cliff, W3LVC, MD, (410) 796-1070.

FOR SALE: My collection of WW II military radios & stuff. Send SASE for list. Robert Martin, 111 Bancroft, Rochester, NY 14616. (716) 663-4182

FOR SALE: BC669A, good mod & pwr sply, RF deck rough. Can ship. Pete Anderson, 601 N. Turner St., Hobbs, NM 88240. (505) 392-8866

FOR SALE: DX60 & VFO - $150; HW-101 & pwr sply - $175; all + shpg. W7RBF, AZ, (602) 864-9987.

FOR SALE: All WWII mil mic T-17-E complete, exc - $20 ppd; Range Filter FL-8-A complete, good - $10 ppd; headphone ext. cord, 4 ft, PL-55 & JK-26, good rubber - $4 ppd. Bob Wheaten, W5XW, 16015 White Fawn, San Antonio, TX 78255. (210) 695-8430

FOR SALE: NOS & used tubes from 0B2 to 9003 including 24A, 45, 807, 811A, 5932, 6146. Plus shpg. SASE for list. EF Hayes, WØJFN, 3109 N. Douglas Ave., Loveland CO 80538

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: Globe King 500 B/C; Viking Valiant I/II; Viking 500; Heathkit Mohawk. Frank, (916) 635-4994, frankdellechaie@sprintmail.com

WANTED: Globe King 500 B or C for California PU. Bob, CA, (562) 928-8820. rrjlife@earthlink.net

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: Gonset G-63, G-43, and calibrators, spkrs for same. Also re-painting info. Brian VE7BCU, (604) 240-6513, besel@earthlink.net

WANTED: Military radios: British A-13, A-14, & Soviet R(P)-129. Leroy Sparks, W6SYC, 924 W. Mc Fadden Ave., Santa Ana, CA 92707. (714) 540-8123. leroysparks@earthlink.net

WANTED: Hallicrafters HT-20 AM xmstr. Butch Schartau, KØBS, MN, (507) 282-2141 kØbs@ibm.net

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: HeathGear, 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: 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: 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: Hammarlund PRO-310 dead or alive. Spencer Cromwell, K6VRS, 7607 Stvenson Way, San Diego, CA 92120. (619) 582-8280. 3232009764@pagenetmessage.net

WANTED: Hammarlund noise immunizer (silencer) for HQ170/180 rcvr. Ed, N5BFW, (817) 222-5355 days, ecuevas@juno.com

WANTED: Lowfer radio scrapbooks by W2IMB; 85 kcs BFO coils. Dennis, KEØQM, (913) 782-9092 wbfim@kcinter.net

WANTED: Contact w/Bendix fans, especially those working on the TA-12 xmtr & the RA-10 or similar rcvrs. Sam Kelly, W6JTT, CA, (714) 893-2092 or skellycp@aol.com

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: Junk NC-300 for parts. Need IF coils. Reasonable. wb9eck@tds.net or stout@wpr.org

WANTED: Old Navy direction finders! 1930s models DB, DG, DQ, DP, DT, oscillator LN. William Donzelli, 15 Gen. MacArthur Dr., Carmel, NY 10512. (914) 225-2547, aw2886@osfn.org

WANTED: PreWW-II Iowa QSL cards; materials of 1920s Iowa Radio Relay League. Will trade or purchase. Bill Smith, W5USM, w5usm@aol.com

WANTED: National Company emblems, escutcheons; National S-101 Impedance Coupler; NC-2-40D knobs. Don Barsema, 1458 Byron SE, Grand Rapids, MI 49506. (616) 451-9874, DBARSEMA@prodigy.net

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

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

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

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

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

FOR SALE: Swan Cygnet 260 xcvr, mint condx - $225 shpd; MFJ 941D ant tuner - $35 + shpg; Dynamotor 14V in 425V .163A out, Bendix, new - $10 + shpg; Books FM Radio Communications series by August Hund 1942, good condx (HB) - $15 shpd; Handbook for Telephone Managers & Eng VOL 2, BC Burden 48/52 - $12 shpd; Laboratory Physics 1912 (HB), Millikan, Gale, Bishop - $25 shpd; (2) J38 keys, good condx - $10 ea + shpg. Randy, K4RHH, 1019 Woodhaven Dr., Lynchburg, VA 24502. (804) 239-6127

FOR SALE: SW3 w/some coils, no pwr sply - $400 + shpg. L. Schimmel, POB 1234, Spanaway, WA 98387.

FOR SALE: Johnson Invader 200, very clean unit - $250. **WANTED:** Drake T-4X & R-4C. Robert Braza, W1RMB, MA, (508) 222-5553.

FOR SALE: Mackay Radio Marine rcvr, typy 138-B - $75; HP 200AB audio oscillator - $75. **WANTED:** BC-779 rcvr. Al Jenkins, WA1RWB, MA, (508) 325-7122.

FOR SALE: Antenna Tuner, Nye Viking #MB-V-A; Kenwood Automatic Tuner, model AT-250; station monitor Kenwood Model SM-220; desk mic, Kenwood Model MC-85. Units in like new condx. Will accept highest offer. Fred W. Hill, KF6TA, 1204 Fox Trail, Prescott, AZ 86303. (520) 541-7565

FOR SALE: Mallory Vibrapack, 12V-275V-1-6V Vitrapack; 24V signal corps 200V 50 mA - $30. Joe, W6CAS, CA, (916) 731-8261

FOR SALE: I repair all tube type amplifiers. Licensed in 1955. Steve Gross, N4PZ-W9OJI, IL, (815) 734-4255.

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: 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

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.

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.

FOR SALE/TRADE: Manuals for Johnson, Elmac, Gonset, RME, Harvey-Wells, Morrow, Drake, Clegg, Swan. NI4Q, POB 690098, Orlando, FL 32869-0098. (407) 351-5536, ni4q@juno.com

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

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

FOR SALE: Complete hardware set to connect Collins PM2 to KWM2 - $19.95 ppd. Warren Hall, KØZQD, POB 282, Ash Grove, MO 65604.

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

FOR SALE: RBL-3 rcvr - $75; RDO Navy - $65; low freq xmtr SRT-3A - $150. Steve Bartkowski, 4923 W. 28 St., Cicero, IL 60804. (708) 863-3090

FOR SALE: RME MC53 10/6/2M converter - $30; Heath mic mixer - $25. **WANTED:** SX111 parts. Bill, ND, (701) 772-6531 ke7kk@gfherald.infi.net

FOR SALE: Henry 3K-A linear, mint - $1500; Swan 150 w/ps & spkr, mint - $450. Sid, W4EGE, CA, (949) 498-4988.

FOR SALE/TRADE: Excellent manuals for Johnson Viking Mobile, Navigator, Valiant, Valiant II, Ranger, Ranger II, Challenger, Adventurer, Thunderbolt, 122 VFO, Courier, 6N2, 6N2 VFO, Messenger 10M. NI4Q, POB 690098, Orlando, FL 32869. (407) 351-5536

FOR SALE: Stancor mod xfmr 3892, 30 watt multi-tap - $30; Glob King 500 series ceramic plate switch, new - $35; Millen 43012-43022 10 & 20 mtr, coils NIB - $25 both. Boyd, KØLGG, NE, (402) 551-3085.

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

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

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: 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: GP-7 Range A; TCE 6200-9050 tuning units; Wireless Set No. 19 w/dm; misc dynamotors. Keith, W5WBA, (505) 831-2646, keith@baltz.org

FOR SALE: T-60, VG w/manual copy - $60; HW-16, VG, w/manualcopy - $75. Plus shpg. Chuck, NZ5M, (806) 698-8767

FOR SALE: R-392 w/LS-166, power supply, nice - $400 shpd; Hallicrafters S-20 Sky Champ, immaculate; National NC-98, exc - BO. Ron, MI, (517) 374-1107.

FOR SALE: T-60 VG + manual copy - $60; HW-16 VG + manual copy - $75. Plus ship. Chuck, NZ5M, (806) 698-8767

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

WANTED: RME 4350 tuning knob ball bearing ring (72428) & plate (72429). Art, WA5OES, 428 Francis St., Longmont, CO 80501

WANTED: CQ 1945 to 1947; Radio Craft 1938 to 1948; Radio Electronics 1948 to 1965; Radio News 1938 to 1948; Radio-TV News 1948 to 1958. Richard, KØCAB, IA, (319) 377-9126.

WANTED: Drawing for re-stringing the National NC-100A. Donald Baird, WB7VNC, 4137 E. Eugie Ave, Phoenix, AZ 85032. (602) 953-0279

WANTED: Basketcase for parts SLRM rcvr. C.R. Filer, 1163 Hawksbill Ln., Summerland Key, FL 33042.

WANTED: BC-610E mod xfmr; BC-375/BC-191 xmtr. Pete Hamersma, WB2JWU, POB 467, Holdernesa, NH 03245.

WANTED: Info especially key clicks Viking II CDC & story behind this rig. Walt Treftz, N4GL, boomer1@hitter.net

WANTED: #46 tube; BC223AX info. Greg, WA2ORO, 39 Myson St., W. Islip, NY 11795.

WANTED: Gonset G66B rcvr; G77A xmtr & pwr sply. Eugene Daly, W5RKP, NM, (505) 894-2694.

WANTED: NC-303/spkr; Gonset 3069-12 pwr sply. Rich, W9LDB, CA, (760) 739-1835.

WANTED: Navy ARB rcvr. Need two each ceramic sockets 5-pin (807) & 7-pin (1625). Ross, CO, (970) 523-5874, n0za@gj.net

WANTED: Heath grid dip meter GD-1 & a KL-1 linear amplifier. Pete Cullum, KØWRX, 1332 Harlem Blvd., Rockford, IL 61103. (815) 965-6677

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: Cash for Collins: SM-1, 2, 3; 312A-1, 2; 55G-1; 399C-1; 62S-1; KWM-1; 302C-3; 51S-1; 755-3C; 32S-3A. I buy any Collins equip. Leo, KJ6HI, CA, Ph/Fx (310) 670-6969. radioleo@earthlink.net

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) greg6fzh@aol.com

WANTED: Military rcvs ARB no mods, RAX 1, 2 or 3; MN26 compass rcvr &/or access's: loop, control head, azmuth indicator tuning meter, etc. Joe, W5JDY, 317 White St., Norman, OK 73069. (405) 321-4717

WANTED: Wireless Set No: 19 components: key, antenna ,cables, connectors, control box. Interested in complete No 19 Mk III set. Sam Kelly, W6JTT, (714) 893-2092 or skellycp@aol.com

WANTED: Schematics of simple solid state radio control systems for 6-mtrs, non-commercial. Robert Jenkinson, 10156 12-1/2 Ave., Hanford, CA 93230.

WANTED: Western Electric horns, spkrs, amps, mics, theater equipment. Barry Nadel, POB 29303, San Francisco, CA 94129. bnadel@ccnet.com

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

WANTED: Stancor/Chicago PCC200, PCO/PS0150, RC8150; Triad A-9-J, A-10-J, A-11-J, A-12-J. **FOR SALE:** Books, send SASE. Richard Robinson, POB 1425, Wallingford, CT 06492. (203) 949-0871, richmix@erols.com

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: 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: Military radios: British C-13, PRC-316; Czech RM-31; Soviet R129. Leroy Sparks, W6SYC, 924 W McFadden Ave., Santa Ana, CA 92707-1114. (714) 540-8123, leroysparks@earthlink.net

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

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WANTED: Seeking unbuilt Heathkits, Knightkits. Gene Peroni, POB 7164, St. Davids, PA 19087. (610) 293-2421

WANTED: Viking Ranger II, working, collector quality. John McCollum, W8VBQ, 6015 Scotch Pine Dr., Milford, OH 45150. (513) 575-5561

WANTED: KWS-1. David Kausal, W6OGV, DE, (202) 518-4183. kausald@gte.net

WANTED: Service manual for RCA Radiomarine Direction Finder model AR8712 & service manual for BC-314 rcvr. Al Kaiser, W3LEQ, 713 Marlowe Rd., Cherry Hill, NJ 08003. (856) 424-5387

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

WANTED: Hallicrafters S-39 rcvr Skyranger. Bob, K1YJK, CO, (303) 768-9200, k1yjk@arrl.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: Collins 70K-2 PTOs working or not; IN82A diodes; Bretting 14/14AX manual. Clark, WØBT, KS, (785) 286-2132

WANTED: Looking for quality rcvr for my AM station, ie; 75A3, 75A4, 51J4, R390A. Tom, W3BYM, (301) 871-7463, W3BYM@arrl.net

WANTED: Searching for RME CT-100 or 3R9 xmtrs and info about them. David Edsall, W1TDD, 156 Sunset Ave., Amherst, MA 01002. (413) 549-0349, dedsall@crocker.com

WANTED: Yaesu FT-101-ZD. Joel Thurtell, (734) 454-1890, finder@radiofinder.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: Test equipment & tube audio amplifiers. Mike Nowlen, WB4UKB, 2212 Burgee Ct., Reston, VA 20191. mike@3dnet.com

WANTED: Cash for Collins: SM-1, 2, 3; 55G-1; 62S-1; 399C-1, 51S-1; 75S-3A, C32S-3A; any Collins equip. Leo, KJ6HI, CA, ph/fx (310) 670-6969, radioleo@earthlink.net

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

WANTED: Mohican; SB-200; SB-220; SB-100; SB-101; SB-102; Knightkit Band Spanner II; Heath GW-12A; GW22A; GW42. Debbie, AR, (870) 857-3366.

WANTED: Vibroplex, McElroy, or Speed-X bug; NC-183 rcvr; front panel for EAC R-390A. Brian Roberts, K9VKY. 130 Tara Dr., Fombell, PA 16123. (724) 758-2688, k9vky@stargate.net

WANTED: Manual for NC-300 and VHF converter accessory. Dick, W6SGJ, (626) 339-9852, dgeordan@aol.com

WANTED: Mclaughlin signal splitter; any radios of the OSS; also BC-652/653. Gary, MN, (612) 496-3794

WANTED: BC-610 Parts: coils, tuning units, tubes, cable for speech amp, meters, (anything). George, N1TNQ, (401) 331-1279

WANTED: HRO-500 rcvr and/or matching spkr. Grant, KT6L, 4324 Hermosa Way, SD, CA 92103. (619) 296-4142, mwyborny@sdcoe.k12.ca.us

TUBE COLLECTORS GROUP FORMED: The new tube collectors association 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: Lots of old radio & related books. Eugene Rippen, WB6SZS, www.muchstuff.com

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.

FOR SALE: Military radio TM's, origs & reprints. New list. Send $1 & address label to Robert Downs, WA5CAB, 2027 Mapleton Dr., Houston, TX 77043-2410. (713) 467-5614

FOR SALE: Johnson panel, cabs, refinishing. Done in same finish as new cars. Valiant-1 set - $285. Ranger-1 set - $250, all + shipping. Visa/MC/Am-Xp Dee, W4PNT, Virginia, (540)249-3161 or cel pho:(540)471-7023, http://home.rica.net/soundnmind/ for pics.

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

FOR SALE: Collins KWS1, VGC - $2500 US; DX Eng. speech processor for KWM2 - $250, also one for 3253 - $250. Ken, VE7EHB, 830 Coronado Cres. Kelowna, BC V1W 2K4. Canada, (250) 764-8286

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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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.

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

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)

ER Bookstore, 14643 County Road G, Cortez, CO 81321

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

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: 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: 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: 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: 80 & 40 meter xtals in FT243 holders. Howard Weinstein, K3HW, 4041 Ridge Ave. Apt 4-405, Philadelphia, PA 19129. (215) 843-1180. k3hw@arrl.net

WANTED: Merchant ship radio memorabilia, radios, keys, parts, clocks, documentation. Tom Mackie, W2ILA, 14 Washington St., Jamestown, RI 02835. (401) 846-1200

WANTED: HT-5 speech amp for BC-610; also tubes 250TH & 100TH. Gary Willey, W4ZXS, 8125 Lunenburg Rd., Keysville, VA 23947. (804) 736-9029

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: 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: 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.

NEW RELEASE: Flyer 200. For details send 2-stamp LSASE. Olde Tyme Radio Co., 2445 Lyttonsville Rd. Ste 317, Silver Spring, MD 20910. Ph/FX (301) 587-5280, oldetymeradio@juno.com

WANTED: Hammarlund HQ110 or HQ110A in exc condx or parts rig. Bill Smitherman, KD4AF, 9401 Hwy 67, East Bend, NC 27018. (336) 699-8699

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

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

WANTED: Drake 1A rcvr; 399C1 Collins VFO; JRC 505 twins. K5YY, AR, (501) 756-5010. k5yy@arrl.net

WANTED: An Eimac SK-516 chimney for a 3-1000Z for an old BTI amp. Fran, K1YL, POB 109, Princeton, MA 01541. (978) 464-5500

WANTED: Any info/schematic for Harvey-Wells SM-1 station monitor, all cards answered. Kelley, W8GFG, 9010 Marquette St., St. John, IN 46373. (219) 365-4730

WANTED: Collins 310B3, 70E8A oscillator assembly w/main scale; Chicago 500W CMS-2, high level mod xfmr. Jerry, W8EGD, CO, (303) 979-2323.

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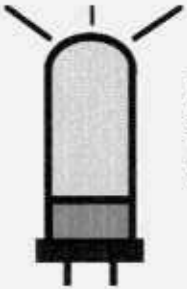

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