The SIGNAL

Collins Collectors Association

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Collins Legacies: The 30W Transmitter

A new regular column by J.B. Jenkins, W5EU and Gary Halverson, WA9MZU

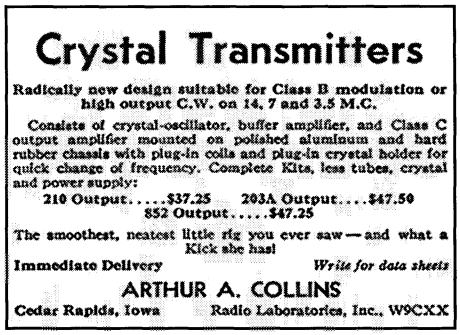
Today, many folks don't know that over a dozen amateur transmitter models were produced in the first ten years of Collins Radio, beginning in 1932. While few of these transmitters have survived today, it was these products that established the Collins reputation for quality, performance, and reliability.

This column will introduce you to a "new" pre-war Collins transmitter with each upcoming issue of The Signal.

"The smoothest, neatest little rig you ever saw"

Before getting into the first transmitter, it's interesting to see how it all started. Arthur Collins' first ad in QST magazine appeared in January of 1932. The ad offered "a radically new design" crystal-controlled transmitter kit less tubes, crystal and power supply. When you consider that the average ham then was hay-wiring transmitters on breadboards from QST articles, a polished aluminum chassis with hard rubber panel transmitter kit was indeed "radical".

Note the name as Radio Laboratories, Inc., W9CXX. The use of "Inc." is curious as it wasn't until the following year the company incorporated under Delaware law.



Crystal Transmitters

Radically new design suitable for Class B modulation or high output C.W. on 14, 7 and 3.5 M.C.

Consists of crystal-oscillator, buffer amplifier, and Class C output amplifier mounted on polished aluminum and hard rubber chassis with plug-in coils and plug-in crystal holder for quick change of frequency. Complete Kits, less tubes, crystal and power supply:

210 Output.....$37.25 203A Output....$47.50
852 Output.....$47.25

The smoothest, neatest little rig you ever saw—and what a Kick she has!

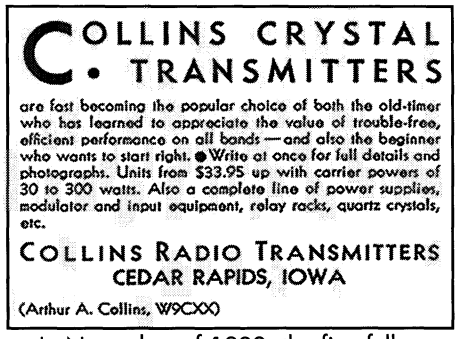
Immediate Delivery *Write for data sheets*

ARTHUR A. COLLINS

Cedar Rapids, Iowa Radio Laboratories, Inc., W9CXX

Arthur Collins' second ad in QST magazine appeared three months later in March of 1932. It too promoted Collins Crystal Transmitters (with carrier powers from 30 to 300 watts), but also mentioned "a complete line of power supplies, modulator and input equipment, relay racks, quartz crystals, etc." And the company name is now Collins Radio Transmitters.

Collins Radio Transmitters ads continued through April, May, June, July, September, and October of 1932. The ads quickly grew more sophisticated with the model 150 appearing in the first ad containing a photograph.



COLLINS CRYSTAL TRANSMITTERS

are fast becoming the popular choice of both the old-timer who has learned to appreciate the value of trouble-free, efficient performance on all bands—and also the beginner who wants to start right. ● Write at once for full details and photographs. Units from $33.95 up with carrier powers of 30 to 300 watts. Also a complete line of power supplies, modulator and input equipment, relay racks, quartz crystals, etc.

COLLINS RADIO TRANSMITTERS
CEDAR RAPIDS, IOWA

(Arthur A. Collins, W9CXX)

In November of 1932, the first full-page ad appeared on page 73 of QST and featured Collins audio and power transformers. At the bottom of the page appears Collins Radio Company with an explanation that "Collins Radio Transmitters is now known as Collins Radio Co., in order to include its widened field of activity".

Reading between the lines, it's apparent that Collins Radio was growing rapidly, and not only had designs in hand for a number of complete phone and cw transmitters, but also had established relationships with key component suppliers.

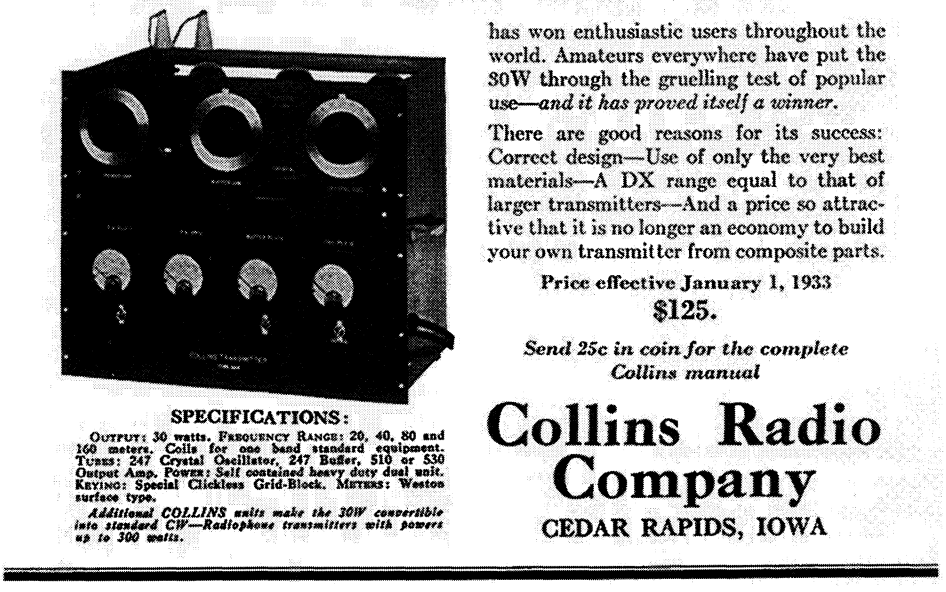
(continues on page 4)

In this issue...

Dayton Hamvention

CCA Banquet Friday May 19th

The Dayton 2000 Hamvention is May 19th-21st and the CCA Banquet is Friday Night at the Downtown Marriott. Please use the reservation form inserted into this issue of the Signal to make your reservations now.



The Collins 30W

has won enthusiastic users throughout the world. Amateurs everywhere have put the 30W through the gruelling test of popular use—*and it has proved itself a winner.*

There are good reasons for its success: Correct design—Use of only the very best materials—A DX range equal to that of larger transmitters—And a price so attractive that it is no longer an economy to build your own transmitter from composite parts.

Price effective January 1, 1933

$125.

Send 25c in coin for the complete Collins manual

SPECIFICATIONS:

OUTPUT: 30 watts. FREQUENCY RANGE: 20, 40, 80 and 160 meters. Coils for one band standard equipment. TUBES: 247 Crystal Oscillator, 247 Buffer, 510 or 530 Output Amp. POWER: Self contained heavy duty dual unit. KEYING: Special Clickless Grid-Block. METERS: Weston surface type.

Additional COLLINS units make the 30W convertible into standard CW—Radiophone transmitters with powers up to 300 watts.

Collins Radio Company

CEDAR RAPIDS, IOWA

Basic Trouble Shooting

A guest article by Dennis Stinnett KA9AWF

I hope all of you had a very pleasant holiday season and this new year brings you and your family good health and prosperity.

When I first started writing this section of the Signal, the purpose was to help some of you fix your own rigs. It is only through the doing, that you can truly enjoy the full pleasure and satisfaction of the hobby.

This month we are featuring one of our members' results and successes in doing it himselve. As more of you contribute to this section, the less I have to do. Keep sending this good stuff to Michael. 73 John, WA5VVT

32S1- Fix It "101"

In July of '99, I acquired an "S1" line, which is my first Collins station. I could hardly wait to get it unpacked and cabled together to try it out. Since then I have experienced several problems that I would like to share with you, and hope that you might benefit from some of my mistakes and misunderstandings.

Patching everything together, 32s1, 75s1 and 312B4 seemed to go well as I used all shielded patch cords and a very good grade of cables for the oscillator connections which are located on the top of the chassis of the transmitter and receiver. I was now ready to patch into the dummy load and begin the initial tune up. Oh no! Why is the transmitter keying off and on like a repeating rifle? Being unfamiliar with the vox set up, I soon discovered that all the receive audio was cycling the transmitter on and off through the microphone and vox circuit. Lets get this thing calmed down now, back down on the VOX gain and try it again! Great, everything is beginning to look much better...now increase the mic gain and peak the excitation. . .ok. . .looks good so far. Now hold your breath and LOCK KEY. Everything was fine until I dipped right at the 250 ma. Point and the plate current ran up like a raging bull. . .400 mA. Plus, the transformer in the supply is groaning and there is fire flying in the 6146 tube envelopes. Quick! Shut this thing off. Man, what did I do wrong? The SWR to the dummy load is zero, LOAD control is near 50 ohms..what could possibly be wrong. Lets try it again. I then increased the load and dipped at just over 200 mA. Hey it works! OK, don't go past 220 mA and everything works fine. Must be a quirk in the 32S. I assumed that this was all normal and that I had merely reached the saturation point of the finals.

Now in the middle of all of this comes a message on the reflector written by John Bess which in detail describes the use of 6146B finals and their ill effect on the neutralizing capacitor due to the difference in the inner electrode capacitance in the 6146B tubes. Clue number one missed!

Well I continued to use the rig, and just ran the plate current low to prevent my so called saturation problem. Seems to work. Good signal reports. Until last Sunday while trying to get on the 14.263 net the transmitter began keying itself. Now what? Not only would it key itself, at times there was no grid drive or plate current flowing. I also have a loud hum coming through the receiver! This thing is going to hell in a hand basket faster than ever and I am beginning to get my first taste of real troubleshooting. Up to this point it had worked pretty good. Surely a tube would not be bad. Clue number two missed. OK...pull it out of the case CAREFULLY and get the rig on its side. John had previously mentioned to check the two parallel 68K resistors in the cathode circuit of the 6U8 vox control tube. I carefully opened one end and found a total resistance of 34 K - right on if Ohms law is correct. Solder it back up. Tubes - you know maybe I have overlooked the obvious. The 6U8 could be bad unknown to me. I called my Dad KA9GYU up in Illinois and asked him to send down our old Sencore tube tester. It arrived yesterday and I began to run through all of the tubes in the transmitter. Bingo - one 6U8A shorted (the vox control tube). Another 6U8A weak and also a weak 6AU6 Oscillator in the PTO. OK. Now we are making some headway. Hmmmm. . .lets steal the same tubes out of the receiver and put the transmitter back into the dummy load just to make sure that we are on the right path before ordering up any tubes. WOW! Now nothing works...guys..I'm telling you with the receiver disabled (minus three tubes and no power on it) the XMTR ain't gonna cook with no drive oscillator!) OK. . .unplug the receiver cord in the transmitter and plug the transmitter patch cord back in. . .yeah that little gray one. All Right!! Now I have some grid drive..the relays are quiet when they are suppose to be and things are really beginning to look up. OK - load it up. No DRIVE! I don't believe there is no drive. Lucky for me I wiggled the band switch and there comes the drive. Just a dirty band switch. Good drive - now - LOCK KEY. Oh no there goes the plate current again sky high and the power supply sounds like a utility pole transformer on a hot summer day! Blast it! The finals are arcing internally at 200ma. Man, here we go again.

Now in the middle of all of this excitement I had noticed that there was 6146B's in the PA. Didn't John Bess say that this could be a problem on the 32S1 and others?? Well folks he did! I pulled out the Chinese 6146B's, installed a set of 6146A's that I happened to have on hand and BINGO no saturation - loads up to the 250 beautifully. But now lets make it clear that the XMTR was not going into saturation..it was going into oscillation due to the inner electrode capacitance of the 6146B tubes. So now all is cool. No hum, no relay popping like a rifle, no oscillation and out of control plate current. This rig is starting to act like a fine Collins transmitter should act. But lets review all of the problems from the beginning. Three bad tubes, one dirty band switch and a pair of 6146 "B" tubes that WILL NOT function properly in these rigs. That's all for now guys. This was a valuable lesson for me and I owe a great deal to John for helping me to steer through the nightmare. We hope that this will help others to look at the obvious, and be sure to read and retain all correspondence on the reflector and the signal. Its not rocket science and you might be surprised of how rewarding it can be to actually bring one back to operating condition. Last but not least HAVE FUN!!!

Editor's Operating Desk

by Michael Crestohl, W1RC

Hope everybody had a nice safe Holiday Season. Happy Y2K to ALL!

The FCC gave us a nice present to close off the century. They released the REPORT AND ORDER of the 1998 Biennial Regulatory Review - Amendment of Part 97 Rules for the Amateur Service, also known as "restructuring". The full R&O text is available on the CCA Web site in .pdf format and may be downloaded but the essential changes that are coming effective April 15th (also known for another government tradition) are as follows.

There are no changes being made to the present sub-bands or any operating privileges. No license class will benefit from a "free" upgrade. The changes are primarily in the classes of license and testing requirements for same.

As of April 15th 2000 there will be three amateur radio license classes instead of five. These are Technician, General and Amateur Extra. Present Novices, Technicians and Advanced Class amateurs will keep their present privileges and sub-bands and will be able to renew their licenses "indefinitely". Both Technician and Technician Plus licensees will be merged into one database.

There will be only three written examination elements and one code element at 5 WPM. Medical waivers for the code test will no longer be accepted. Written tests for the Technician license will consist of 35 questions, General also 35 questions and Amateur Extra 50 questions. The Radio Amateur Civil Emergency Service (RACES) station licenses will be eliminated. A "Club Station Call Sign Administrator" is mentioned in the Amendments to Part 97 but the R & O does not elaborate on this. I expect that this will oversee the issuance of club call signs and prevent the abuse that has existed in the past.

Since the R&O was released on December 20th 1999 I have heard a lot of comment both on the air and the Internet decrying the "loss of amateur radio" and the doom and gloom of yet another "dumbing down" of the Hobby. It is true that the 13 and 20 WPM Morse Code tests were difficult hurdles for most of us yet we overcame them with perserverance and plenty of practice. I have even heard such things as the Extra Class license is going to be "worthless" and we have been "stabbed in the back" by the ARRL and the FCC"!

However I do not look on these changes as negative for the future of the Hobby. In fact I see it as a new opportunity to rejuvenate the Service. The very same evening as the R&O was released there was a feature story on NBC News about amateur radio. It was mentioned that the average age of the Ham radio operator in the United States is in the mid 50s. Anyone who attends hamfests and flea markets will surely agree with this statement. It is difficult enough to attract young people to our Hobby now as we must compete with other activities vying for their free time, primarily the Internet where you can do the same kind of communicating with e-mail, Internet phone and chat but minus the testing and licensing requirement, antennas, Morse Code and so forth.

Let's face it - if we fail to attract some young blood pretty soon the hobby's going to wither and wane as we all get older and crap out. It will just be a matter of time before commercial interests start eyeing our spectrum allocations again and with fewer hams using them we are surely going to lose them. Finally with fewer hams operating who will be interested in these wonderful Collins radios we all treasure so much? What will they be worth to future generations when we are no longer able to use them?

Therefore I urge everyone to reflect on the above and re-examine their feelings on the coming changes and accept them positively and willingly We should gladly welcome any newcomers to the Hobby and in particular, encourage them to develop an interest in our subset of the Hobby - vintage radio communications equipment. Otherwise all these really neat radios will be virtually worthless in 25 years! If no one is interested in tube-type equipment down the road who will want this stuff in the future? Just think about that in light of what then stuff is worth today!!!

In fact I'd love to see the FCC have a special class of licence for vintage radio enthusiasts with an electronics theory test that reflects the special nature of our particular version of the hobby. In other words I'd like to see a special class of license that specifically authorizes someone to operate tube-type equipment if for no other reason than their own personal safety as well as the interference factor. People should be required to demonstrate that they have sufficient knowledge to operate this stuff safely - after all, we are dealing with equipment that uses some pretty high B+ voltage whereas the "appliances" of today really are much safer because their primary requirements are usually only 12 Volts DC at about 20 Amps.

On another note I received word just before the Holidays that the DEMIL Project is progressing along nicely and that I expect that soon there will be another nice list of more Collins equipment that will no longer be destroyed by the government agency responsible for disposing of surplus materiel. Last month Jay Miller's new book A PICTORIAL HISTORY OF COLLINS AMATEUR RADIO EQUIPMENT was published. It is, in a word, outstanding. This new book by KK5IM should be of great interest to every Collins Radio enthusiast.

I have an envelope with several back issues of THE SIGNAL and TECH DATA SHEETS that I would like to offer up as an incentive for members to write a short article entitled WHY I LIKE COLLINS RADIOS. Also I'd love to receive articles on Collins history, lore, technical and even personal experiences for future editions of THE SIGNAL. Next issue will be out mid-April in time for Dayton. Hope to see many of you there.

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Collins Legacies: The 30W Transmitter

(continued from page 1)

The 30W

While the model 150 was the first product photograph to appear in a Collins ad, its exciter offered a far greater sales potential.

The 30W was the very first assembled and tested Collins transmitter offered to the general amateur community, and was introduced in mid 1932. Based on modular building blocks, the 30W consisted of a 500AX power supply and a 10A RF chassis (the Crystal Transmitter kit originally offered) mounted in a sheet metal frame. An optional tuner unit was also offered. Each unit had a bakelite front panel attaching to a polished aluminum or steel chassis. Although primitive in comparison to later Collins products, the hallmarks of Collins transmitter philosophy were established in its design. The 30W's black bakelite panels were crisp and clean with a layout emphasizing convenience. Controls were clearly identified with engraved captions. Its most impressive feature was the row of four Weston model 310 "bug-eye" surface mounted meters adorning the power supply front panel. Above it, a plug-in crystal socket was located on the 10A front panel.

The 10A Crystal Control unit used a 247 crystal oscillator, a 247 buffer amp, and a 210 output. Three plug-in coils wound on bakelite coil forms were used in the oscillator, buffer, and output circuits. A fixed-turn magnetic coupling winding on the output coil was terminated to either the optional antenna coupling unit, or to two white porcelain cone insulators mounted on the rear brace that spanned the top of the frame.

The 30W was also one of the basic building blocks of the 40A/B, and the 150A/B transmitters. According to the 30W bulletin, it could be converted into one of these larger transmitters merely by adding other units and it was not necessary to discard any of the original equipment.

In July of 1932, the 30W was introduced at a price of $95.60, however, by January of 1933 the price had risen to $125.00.

The 30W was a big success as mentioned one year later in the April - August 1933 Signal.

"A few people have gained the impression that the 30W transmitter was discontinued with the announcement of the 32A and 32B transmitters. This is most decidedly not the case. There are more 30W transmitters in operation than any other COLLINS type and the sales of the 30W are continuing to keep pace with sales of the 32A and the 32B. The 30W has slightly greater output than the 32A and is ideal for the amateur who is primarily interested in cw work or who plans to convert his 30W to a 150A or 150B at a later date."

Also mentioned in the Signal:

"Mr. M.R. Cooper, W7FO, reports that the first three stations worked with his 30W were W9FJQ, VK5HG, and ZL3CC in the order named. Australia and New Zealand reported QSA5R5."

"Mr. Benton White, W4PL, reports that he is working K6's (Hawaii) regularly on both 40 and 80 meters with his 30W and that he is beginning to make contacts with VK stations."

"K6AJA is putting consistent signals into the states" with his 30W."

So what happened to the Crystal Transmitter kits? Our guess is that since labor was cheap in 1932, by assembling completed and tested units Collins could assure the quality of its products. No so with kits. This may have been the reason the kits were only advertised a few months. (No kits have ever surfaced since then.)

For a great story about one of the first sales of a 30W (to Benton White, W4PL), see "A tale of an early sale" by Ed Marriner in August 1965 CQ, (reprinted with permission on page 12 in "The First 50 Years").

Next issue: *The Model 150 Transmitter*

In the Shack

CCA Member Bob Leveratto, I1BAW - ITALY

Send us a picture of your shack, your callsign, and any shack information and we may use it in a future issue of the *Signal*. Just mail it to the CCA address.

At the Mic with KW6KW

Sandy Meltzer
President, CCA

Wow...not much room for me this issue. Just enough to thank Gary Halverson WA9MZU for his wonderful contributions to our CCA on-line Collins archive. Gary helped me by spenting 60 hours to create over 40 new pages for the archive section of our CCA web site including a new "Pre-War" Collins gear section. Check the CCA web site for new updates. _ _ ... ... _ _ 73 Sandy, KW6KW

The Collins Radio Co. Engineering Experience

By: Phineas J. Icenbice, Jr. -W6BF

One fine fall day in 1938, just weeks before my first license arrived, the, "Icenbice family" was shopping in Cedar Rapids, Iowa., and my goal was to find some affordable radio parts. In 1938, commercially built transmitters for Amateurs were almost "unheard-of" and "unaffordable", except for the fact that I happened to look in a special Radio Service Shop window. The shop, I soon found out, was owned and operated by Leo Arthurs, and Leo had a beautiful gray Collins Amateur Radio Transmitter displayed in his store window. This was one of the most beautiful sites imaginable, to a young student. I later met Leo, W0DZV, at the Collins Radio Plant. Later the same day my father and I drove about 28 blocks out NE on First Avenue to the Collins Radio Plant. We inquired if we could visit the facilities and a fine gentleman came out to greet us. It was Arthur A. Collins W9CXX, himself. He talked to us for several minutes and notified us that one of his engineers would show us around the plant and tell us about the new Raytheon tube they were experimenting with, in their laboratory. The engineer that Arthur sent out to give us a tour of the plant was William F. Stewart, (now K6HV) and a very good friend of mine for more than 55 years. The tube Arthur Collins was excited about was an RK-20, and was being tested for use in a new Collins transmitter. RCA at that time was requiring an expensive license to use their tubes and circuits. In fact at this time Collins engineers were working on a patent for a crystal oscillator circuit employing a grid-screen mounted on the outside of the glass envelope. This tube was labeled "C-100A", and I have one in my private collection of Collins memorabilia. One of the early (about 1933) special order Collins built transmitters was exhibited as an example of Collins craftsmanship capable of functioning in the Antarctic for Admiral Byrd on one of his early trips to the South Pole region. The main frame construction was solid oak soaked in paraffin. I was impressed with the fact that this transmitter satisfied the communications requirements of the Byrd expedition.

CCA Hot Line
507-282-2141
Sorry, no call-backs available!

The CCA web site can be viewed at:
www.collinsradio.org