

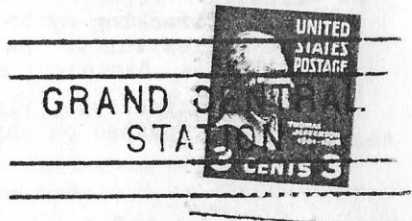
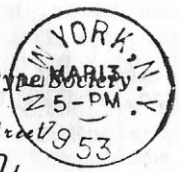
Every now and then one of the radio stores downtown come up with something special for RTTY. Several of us picked up some band-pass filters with torroid coils in them. They are tuned a bit higher than the TT tones, but conversion isn't difficult. W2VDM and W2BFD have been playing around with them and say that the coils are perfect for TT, they have just the right inductance and Q. I've got a couple extra if you want one for an input filter or something. Send \$5 and 50¢ postage and its yours. They are worth about 10 times that.

If any of you are interested in hi-fi I now have some reprints of the article in Audio Engineering on the Karlson enclosure. I recently sent out a letter to all those that answered our ad in AE offering them the Karlson enclosure on a money-back guarantee trial. Sent out 250 letters, got nine orders, and only one was returned. Two friends of the fellow who returned the enclosure have since sent in orders! We really have something in this unit. Radio News will have a feature article on it in a couple of months.

W3FLG, Clay Weller, has made up copies of the original W2BFD article in November 1946 CQ showing the construction of the filters from 50L6 output transformers. If you don't have a copy of this early RTTY data I suggest you drop Clay a line and ask for a copy. Write: Clay Weller, Technical Publications Department, Bendix Radio Division, Bendix Aviation Corp., Timonium, Maryland.

RETURN POSTAGE GUARANTEED

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1379 East 15th Street  
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# Teletype Bulletin No. 20 21

## AMATEUR RADIO TELETYPE SOCIETY

- W1BGW
- W2BDI
- W2JAV
- W2NSD
- W2PAT
- W2PAU
- W2PXR
- W2RTW
- K2WAN
- W3ERS
- W3LMC
- W3ODF
- W3PKF
- W3PYW
- W4FJ
- W4MOP
- W4OLL
- W4SCF
- W4VMS
- W9BCY/4
- W6AEE
- W6CAP
- W6CMQ
- W6FLW
- W6ITH
- W6TZJ
- W6MSG
- W6NSS
- W6OWP
- W6RZL
- W6SCQ
- W7LU
- W7VS
- W8DLT
- W8RMH
- W9TCJ
- W9THE
- W9UAU
- W9ZBK
- W0BP
- W0HKF
- W0LHS
- W0UVL
- W0UYJ
- VE2AKT
- VE3AXX
- W200G
- W3LCW
- W3RUA
- W4ACV
- W60QB
- W8BYB

As this is written we have been on the air, on the low frequencies at any rate, for only two weeks. There has hardly been time for anything like complete reports to come in as to activity. Even so, here is a list of 46 stations that are active. More are coming on every day and there may soon be too many to list.

With this new adventure in ham teletype has arisen a new set of problems and techniques. The calling frequencies are controversial. So far I have had no suggestions for improvements or changes. Some write in that the frequencies are OK with them, others say they are awful. If any two stations can find a good channel lets hear about it and all use it.

Bob, W9TCJ, suggests that due to the small number of stations active that calling times be established in addition to calling frequencies. Bob says he will be on 3620 kc at 8 PM CST and will run a short test and listen for calls on Tuesdays and Thursdays. If nothing doing he will repeat this on 7140 kc at 8:30 PM CST.

"I guess that will fix them," said one of the CW men on our channel who had been sending "V's" for about a half hour. This is a problem that may be with us for some while. Even so, it is now quite apparent that CW QRM has been highly over-rated. I have seldom lost copy due to CW, even though it seems much stronger than the TT.



"Lets see that damned teletype work through this."

W8PTF, "Rube," will discuss "The practical Solution To Amateur Radio Teletype" and demonstrate his station equipment at the Dayton Hamvention, March 21, 1953, in the Dayton Biltmore.

KL7BK, Jack Walden, has been having difficulty keeping his ham gear set up since he started building a new home and has been living with his wife, two kids, large dog, and cat in a 30 foot trailer. Jack has been working a bit with KL7OA, Buddy Travis, on getting a converter designed and has been slaving over a hot torroid coil. We may see Buddy on with a 14 one of these days.

W4TLA, Warren, has his converter close to completion and has high hopes of getting a model 15 to use with it.

W2DXD, Bill Auld, finally got on two meters and worked W2AXC and W2BFD. I imagine we will be seeing a lot of Bill on the low frequencies too for I have had a couple of 75 meter phone contacts with him.

W4BQW, Bob Cain, has started construction on a converter, has a printer lined up, and is raring to go.

W5AIE, John Lewis, needs a keyboard, as do a couple others in his neck of the woods. Anyone got an extra keyboard for 'em?

W6ZQY, John O'Keefe: "I have been in the Army and am now at Fort Bliss, Texas, going to Guided Missile School. I am in Electronics Guidance.....there is no teletype that I know of around here. I have been on the air and think that some of the local talent are interested. The problem now is getting some machines. I believe there is a chance that I can get hold of some 15's here in the Signal Dump. Time only will tell..... I have my HRO and my transmitter here also."

WLBGW, Jack Berman, "Built that 'modified Collins' described in October '52 issue of "CQ" but it didn't work the way I expected it to. For one thing, I didn't get enough shift using those trimmer condensers, so I took them both out and in place of the space adjustment I put a 150 mmf variable. Left out the mark adjustment entirely. With this arrangement could get enough shift when doubling on most crystals, but find that some just won't shift enough. Anybody else have any such problems? I will be on 3522 and 3565 kc at the start as those xtals have what it takes, see you there."

OILING: The teletypewriter is not a typewriter, it is a machine. Even if it is used only occasionally (or not at all) it needs to be oiled and greased. Use a good grade machine oil, not auto oil or sewing machine oil. NO 3 in 1!



When did you  
last oil?

W2ZEW has started construction on his converter and has high hopes of getting a machine to go with it soon.

W2NSD, me, has been wanting and needing a reperf for several years now. A model 14 reperf turned up in Hawaii a few days ago so I went hog wild and bought it.(gulp) The strip printer can be handy for l.f. operation where the line-feeds and carriage-returns sometimes don't get all the way through to the printer. We shall see.

W6ITH, Reg Tibbetts: "From a really practical standpoint that Collins PTO Shifter (ARTT 4007) is considered only makeshift. It shifts only a limited amount and not as clean as the 709D1 FSK shifter. The PTO shifter was whipped up when the hams had only 10 & 11 meters for F-1 emission. Considerable phase discontinuity exists in trying to shift more than 16 times, which is the shift from the PTO on 2 mcs to 30 mc. For anything other than the 10 or 11 meter bands the Xtal 709D-1 circuit had better be used."

VE2AGF, Tommie Lott, writes that he is building a frequency standard to give 2125, 2975, and 850 cps for calibration purposes so that he can give checks to any of the boys that need them. Tommie was recently elected president of the Montreal Amateur Radio Club.

JOHN tells me that the plea for immediate funds for the saving of model 21A printers from untimely destruction was successful and that he got more orders than he really needed. Hooray, the spirit is there!

The 1953 ARRL NATIONAL CONVENTION will be in Houston July 9-12 and they are anxious to have an RTTY exhibit, complete with lectures if possible. We need some volunteers, who is interested? Please write to me and see if we can get something worked out.

VE2AKT, Ben Halickman, seems to have been the first VE to get on the air with FSK RTTY, but we will have to check with VE3AKO to be sure. Ben has just acquired a tape perforator.

VE2GL, Gordon Lynn, should be all set on the l.f. by now.

VE2AGF, Tommy Lott, has a printer, an almost completed converter, but is without keyboard.

VE2HY, Dick Bromwich, has a model 26 and will be active as soon as he can get his converter together. Dick has an HRO-50T1 and a Viking, we'll be hearing him.

John reports that he now has kits of information ready for anyone who wants to build the teletype keyboard out of an old typewriter. Full data, circuits, blueprints, 8 X 10 photographs of every angle, and yards and yards of instructions are available for \$5: W2BFD, 3806 61st, Woodside, NY.



W2RWV, Len (Windy) Rawles, "It seems to me that the old idea of the mechanical RD is the best idea for the model 21A because I had more success with the slip-shod fan motor driven RD that I made which had a split 6th pulse (two segments instead of one) than what I have now arrived at. There is nothing wrong with these 21A's, they are very rugged units, I have to admit that..... For information purposes I wrote the Teletype Corporation in Chicago and requested a quotation on a model 14 send and receive typing reperforator and they graciously sent one (a quotation, not a 14).

Complete unit, less table & rectifier....	\$824.79
Typing unit.....	\$560.20
Keyboard base.....	208.30
Cover.....	31.70
Tape container (empty can on side).....	17.33
Copyholder.....	6.60
Felt pad.....	.66

Delivery: 7-8 months. I think that all most of us can afford is the copyholder and felt pad....If more hams could see these figures they might find it very desirable to purchase a 21A and see what they could do with it."

W4OLL, Jack Brown, "I have been surprised at the interest from completely unsuspected corners in low frequency RTTY. A couple friends of mine have been pumping the life out of me lately on 75 and I have referred them to "CQ" and your bulletins, and to John for machines. I think the ball is rolling.....I think the RTTY gang had best consider some of the techniques worked out in SSB reception for use on low frequency RTTY FSK work. You can do wonders in eliminating completely the signals on the other side of zero beat from the FSK signal you are interested in. I have been employing my 20 kc filter type SSB receiving adapter on FSK for some weeks now and the improvement over straight b.f.o. reception is tremendous. While W4SQF and W4FJ complain about ham band QRM on the high frequency side of the MARS 3497.5 kc frequency I can nicely forget about it because of the 50 db attenuation I get on everything on the other side of the carrier I supply.....The phasing receiver that W9DYV sells these days is also very good for RTTY reception. This unit will give about 35 or 40 db sideband discrimination. Personally I like the filter unit because of its better rejection and also the fact that it restricts the maximum high frequency that it will pass too."

JOE DOANE (Souze Bend) is hard at work on a distributor and there are a lot of us waiting for all the dope on how he does it. Fragmentary reports from him indicate that it should soon be done and will be all that we could ask in simplicity and effectiveness.

VE3AKO reported that the Canadian D.C.T. authorized FSK-RTTY from 7150 to 7200 kc as of January 12th, and after February 20th on all of the frequencies so allotted in the U.S. of A. One major great big difference in the Canadian regs is that they do not have to send the c.w. Morse identification that we are saddled with.

W0UYJ, Gregory Ferrey, says: "A model 12 has been gathering dust in one corner of the shack for close to three years after a flurry of converting and testing when first purchased from W2BFD. But activity is on the upgrade with the opening of the lower frequencies and another amateur, W0HKF, here in St. Paul, is also ready with his model 12. So, with two of us and our next door neighbors, W0HZR and W0BP, in Minneapolis, we should make a fair start out here in the sticks."

W1FGL got a printer from WIAFN, built up one of the W2PAT converters, and should be with us on 80 soon..

W2PAU, E. Miles Brown, writes: "Just a few lines to comment on the letter by Frank Ford which you reprinted in your bulletin #19. I would like to take issue with some of Ford's "facts."

Consider the bandwidths required for RTTY FSK and hand-keyed make-break CW. At a typical ham speed of 30 w.p.m. the CW signal can be confined to a spectrum less than 125 c/s wide. (This is based on transmitting at least 5 harmonics of the fundamental dot-repetition rate, and allows for "double sideband" requirements for make-break transmission). An RTTY signal at 60 w.p.m. using 850 c/s shift will fully occupy a spectrum 1000 c/s wide. (This is also based on so shaping the square-wave pulses as to transmit only 5 harmonics). Is 1000 c/s "only slightly" greater than the 125 c/s required for ham CW?

Neither can I agree with Ford's assumptions on signal-to-noise ratios required for solid copy on the various modes of transmission. I recently supervised some subjective listening tests on hand-keyed CW signals. We determined that typical ham operators can copy signals which are actually 15 db below the noise level. Both impulse-type and "white" noise were considered in these tests. The noise ratios quoted here were measured with meters having an effective bandwidth of about 30 kc/s at the input of the audio channel used in the tests. The objective of the tests was to determine the optimum selectivity characteristics for said audio channel. It is quite interesting to note the difference between the optimum filter tested and no filter at all - very small, on the order of 1 to 3 db! Apparently the filter which Mother Nature designed into the human ear was pretty near optimum! Also, the machine has no memory or imagination, whereas the trained operator copying straight text can insert missing bits of information (our language being as redundant as it is!) and turn out clean copy under poorer than "100% copy" conditions.

I'm willing to admit that a good CW operator of the old school can dig deeper into the noise and QRM than my channeling equipment. How about yours? After Feb. 20th we'll have a good chance to demonstrate whether our rigs will be able to do a better job on RTTY than they have been doing for years on straight CW. My own opinion is that QRM, QRN, QSB and generally punk conditions prevalent of late will make the guys like Ford go back to their text-books to see what is wrong!

