Teletype Bulletin No. 16

OCTOBER
1952

Time and the legislative processes of the FCC drag on. No gentlemen, no rules yet. I called the FCC the other day to find out what on earth was going on down there and had an interesting discussion with the guy who is writing up our pet project. We discussed (on a purely hypothetical basis, of course) the problem of c.w. identification and hit a sort of compromise which may find its way into the final rules. I agreed that it would not be quite so odious a requirement if the c.w. identification had only to be sent at the beginning and end of a QSO, and not every 30 seconds during CQ and every ten minutes during a transmission. This would not interfere with our present system of auto-call either since we can go on the air and send the space-tone frequency on c.w. and then send the start signal and continue on with a QSO. When the contact is all completed and you have stopped the other fellows printer you can again send your call letters on c.w. by keying the space frequency. No doubt many stations will make a small code wheel to do the c.w. for them thus they will not have to re-learn the code. I have one here and it works fine. There is some question in my mind as to how the FCC would react to a code wheel that sent the call letters at, say, 80 wpm just once. Technically this would meet the rules. Ethically it doesn't. My code wheel lazies along at about ten wpm, my speed. Well, about the FCC rules, it seems that this fellow has not yet finished writing them up. When he does finish they will be handed to the Commission and either approved or sent back for more work. It looks like we will get them some time this fall, but it is pretty sure to be another month at least.

A few weeks ago I took my two meter gear and teletype and installed it in the pent-house atop the Museum of Non-Objective Painting where I am working part time on the development of the color mobile projector. This is a good location and resulted in my working W2JAV first crack out of the box (100 miles), which is pretty good for a 522. I leave the contraption on short-start all day and have a light downstairs which tells me when someone has turned it on and is sending a message to me. When I get time I take the elevator up and answer it. The trouble with this arrangement is that I am seldom there evenings and thus miss most of the gang. Of course this is still a lot better than having the equipment in Brooklyn where I couldn't hear anyone at all. This keeps me a bit more informed on the DX'ing news and I can report that John, W2BFD recently worked W4JCV and W1EVZ, both good hauls. W1EVZ heard JAV working me, 200 miles away. I will probably be up there looking for contacts on Tuesday nights, probably around 8:30.

This political race has brought something into my awareness which I had given only passing thought to before. This is the extreme bias of many of the newspapers. Several of the papers here in New York are completely unable to present a news story straight and factually. If it is a murder they dwell on the grisly aspects. Most people that they write about are either villains or heros, and they put in the full gamut of innuendo, sarcasm, and loaded words, telling only one side of the story. This is our "free press." Zenger should see it now. The papers throw ethics to the winds and try to say as much as they can wihtout being sued. This same idea applies to ham radio. If, when we get our rules from the FCC, we go on the air and observe them and also show consideration for other hams we will have done well. If, on the other hand, we ignore the c.w. stations and brute force or out-persistence them and make them move for us all up and down the bands then we have wasted a lot of time getting the new regulations. I suppose that it is inevitable that some of the RTTY gang will demonstrate a lack of consideration for others and reduce the ethics of our group just as the newspapers have demonstrated. It will only take a few such individuals to really throw a monkey wrench in the works for us, therefore every one of us has a personal moral obligation to represent the entire group whenever he is on the air. The FCChas been known to propose new rules (and possibly get them put through) just because one single amateur made it necessary! Which'll it be, ethics or more and more FCCregulations?

W9TQ recently worked W8WJC (300 miles) on two meters. W9DDG copied both ends but missed out since Vic thought he had gone to bed. Jerry sure has been working out well from up near Cleveland; he has to due to the poor activity in that area.

W1EVZ operates on 145.3 mcs and W1KJB is on 144.1 mcs. This rates a mention since most RTTY stations are on 147.96. Say, come to think of it, I think John sent EVZ a crystal for the channel. I thought I heard him on there the other evening, but weak. His mark tone was way too low, sort of an identification mark you might say. (Sorry)

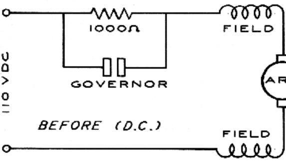
How about a few more pictures for CQ? Certainly there must be more of you that are interested in photography and can take a reasonable picture. Equipment pictures are easy too. Be sure to use the smallest stop on the camera and then you can wave a bright light back and fourth to "paint" in the dark areas with light. This is how the shadowless pictures are made.

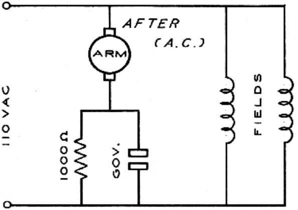
Read a wonderful book recently; "Selected Papers of Bertrand Russell" put out by Modern Library for $1.25. His observations on education and civilizations should be read by everyone. Wonder how many of you sent for "Living With Children" which I touted last month? I wish everyone had. The same outfit has a new book out called "Secrets of Tiredness" which a fine self help book for anyone who wishes to improve himself or is tired of being tired. Nothing else of earth-shaking importance this month literarywise.

The September issue of Audio Engineering had a feature article on the Karlson high fidelity loudspeaker enclosure and triggered off a new deluge of letters wanting information and (fortunately) some orders too. Most of the New York audio stores now have samples and several of the exhibits at the Audio Fair (NYC) will demonstrate them. If you will be able to get up there stop in at room 608 and say hello, I'll probably be there most of the time.

W6NHM notes with interest the argument pro and con for input limiting the signal before feeding it into the AFSK converter. "About the only thing possible for the non-limited input such as W4OLL's design is that should either the mark or space tone be weaker than the other there might be 'telegraph distortion' on the output of the polar relay. Another word for it is 'bias.'" There have been several comments on this topic and I agree that there is much to be said on both sides. I feel that the W2BFD system is the best in that it applies limiting to each of the audio stages. John tried several methods of applying limiting and found that this gave the best results.

At the risk of hurting the sales of the model 21A printer I would like to tell a little more about this device and explain both the bad and good features of it. On the good side we find that the unit is quite small and portable; it is very quiet in operation, being perfect for bedrooms and livingrooms, apartments, etc.; it is relatively inexpensive; it is immediately available (W1AFN, Box 19, Boston 1). To understand the function of this unit you can perhaps get the idea by substituting it for the typing unit in your model 12 setup. The 21A is a typing unit only and requires all six of the pulses to come into it on different wires. Thus on the bad side we have the necessity of buying or building a distributor for it so as to separate the six pulses which come over the line in time sequential order into pulses on six wires. The 21A can be operated from the receiving distributor that is on the model 12 keyboard, the model 12 receiving only distributor, the reperf half of the tape distributor, or by a home-made distributor. This sort of thing, though it is not difficult to an experienced teletype ham, might cause some trouble to a neophyte. In this light I would suggest that the model 21A be used as an auxilliary typing unit rather than counting on it for the main printer. One other factor, in case you are inclined to put off getting one or two of these units, there are just so many of them available and when they are all gone that is that. You will be wanting one of these handy units sooner or later so I recommend that you get them while they are still around. John and I feel that it is a good idea to buy as much as you can for when our supply sources dry up (which they will) there will be equipment available for new hams to buy and get on teletype.





MODEL 12 KEYBOARD CONVERSION - D.C. MOTOR TO A.C.

As you can see from this diagram the conversion of a d.c. printer to a.c. operation is fairly simple.

Care must be taken to make sure that the two field coils are properly poled so as to aid each other.

To get at the field leads it is necessary to take off one end plate. Watch out for the ball bearings next to the pinion gear as they will fall out.

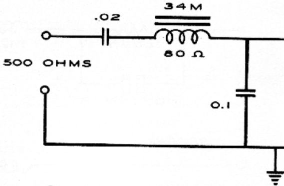
The motor on the typing unit is a little more difficult to convert since an a.c. voltage somewhere about 220 to 300 volts should be needed. With this motor the armature stays in parallel with the line while the field coils, which were in series across the line, must be connected in parallel aiding (beginning of one to the beginning of the other) across the line. Apply the a.c. voltage and see how hot the motor gets. It should run at normal temperature. (I don't believe that this conversion has been tried yet, but it should work.)

ARTT 4039
W2BFD

W8WXM, Bob Slemmer, figures to wind up his EE degree at Ohio State by next June and may be with us in more than spirit when released from his studies. Bob was released from the Navy this summer and spent the rest of the vacation counseling at a YMCA boy's camp.

W2DXD is all excited about getting on the air and is busy building his BFD panel. Bill is Director of the Trans-Conintental Phone Net (7-8pm) on 3790. He caught me on my numbering system of the diagrams and pointed out that I had two ARTT 4037's. Oh wecel, there had to be one mistake in the blasted diagram didn't there? I had forgotten that I had assigned nembers to the distributor face plates.

W4INU: "Mobile Alabema is trying to get on the teletype map and I thought you might like to know how this came to be. Several months ago a local ham gave me a copy of your bulletin #10 which told of Bill Kelly, W5MXJ, finding some equipment. A phone call to Bill put me in line for four sets for the local gang, so you see the bulletin is spreading the word."



BAND-PASS FILTER

REVAMPED FL8A

One quite important device for improving the ability of the receiving converter to pull the mark and space pulses from out of the QRM and noise is a good input filter. Here is just such a filter made from the still inexpensive surplus FL-8A filter unit.

W2JAV writes, "remove the reactors marked 31M, 34M, and 35M. Tape the "I" laminations back after removing."

Phil passes along one other very good idea for those of you with tape equipment: any tape that you will be using quite a lot you can spray with plastic (such as Krylon) to toughen it up.

Getting back to the band pass filters for a moment, the idea of them is to pass the teletype tones of 2125 and 2975 cycles and reject as much above and below these limits as possible. I wonder if any others have built similar units using easy-to-get parts? This is an item that will be of more and more interest as we get on the lower frequencies and have to fight the QRM.

Letters come in every now and then asking about the proposed book on teletype fundamentals. Waaal now, it is like this. To get it printed by the offset process I would have to have orders for at least 250 copies. There doesn't seem to be that much demand. The several mentions of it in the bulletin in the past have resulted in less than 50 actual requests. This small demand also rules out the professional printing job that I had considered. One of our members agreed some time ago to do the typesetting and printing free if I could pay for the paper and have the diagrams linecut. The cuts alone would cost over a hundred dollars. Hoot mon. Perhaps after we get going on the lower frequency bands there will be a greater demand for such a work. Perhaps I will have some time then too. Between feeding CQ a column, writing this bulletin, answering your letters, putting the Karlson enclosure on the market, and experimental work for the Guggenheim Foundation there is rather a limited time available for book writing.

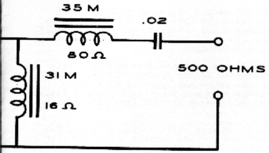
Viewing the above array of activities you may be able to understand why I am a bit impatient with those who write me and say they just dont have time for teletype. Ha! Nonsense. How much time do you waste every day? Probably at least half a day, frequently a whole day. It is truly said: If you want something done, give it to a busy man to do.

Another problem should now be brought to a head: officers for the Amateur Radio Teletype Society. Shall we make a formal outfit out of it or continue on the present informal plane? Shall we elect a president?

W5PRE offers to sell his model 26 machine for $150, complete with the blueprints and set of filters from BFD. The set includes the table, printer, and typing unit. You pay the freight. This is a bargain. Doug is leaving Dallas and going to school in California for four years under the G.I. Bill. He has been working for WFAA-TV, which I helped put on the air back in 1949. Dallas was a nice place to live.

W9QBH: "One thing on the interference problem (Docket 10073) - at the Tippicanoe Radio Club in Lafayette Indiana where the ARRL proposal was brought up, many appeared to have the idea that all teletype was this raspy sounding low frequency noise which Press Wireless (I believe) generates with their system. I can easily see why they wouldn't want this on the band, but FSK isn't so bad. It's just plain stubborness that causes people to say QRM QRM, etc."

W6LS writes to say that he, W6GFI, and W6LSG all have the AN/PGC1 set up in their shacks. Wow! Frequency 146.72 mcs.



W1BGW would like to swap a 21A printer for a model 12 keyboard. Jack and W1WB and W1KNW have regular RTTY contacts on six meters nightly at 7:30 pm. They do not use any specific frequency though.

W1KNW has been laid up since the first of the year and has just gotten back on the air. Elby mentions 50.675 mcs for their nightly schedules. He uses 15 watts, WB uses 9 watts, and Jack has 100 watts. W1OSX and W1HRY may get on the sked soon. Elby has been having the usual trouble with hash from the printer and has found that a 75 watt bulb across the governor helps out quite a bit.

W6AEE really pulled out all the stops on playing a dirty trick on me. He sent me a roll of teletype paper about two hundred feet long with all of the RTTY contacts on it that he had had for a long time. What could I do? My curiosity got the better of me and I sat around reading this endless mixture of letters, numbers, hieroglyphs, and QSO's. Someone on the subway asked me if I was reading the torah.' Truthfully I must admit that I am still only part way through it. If I run into anything startling it will be in the next bulletin. If it continues as it has it will be about the same as our QSO's here in the east and I shall have little to report.

W9WZE has joined the ranks of the teletypers. There is still some doubt in my mind whether he intends to actually put his newly acquired model 12s on the air or whether they will be used to try to prove the new Hallicrafter receivers are able to receive FSK signals. If they drift anything like my poor old SX-28A the engineers are going to have a hard time. But then, with the new low quality National receivers I guess I shouldn't say anything about Hallicrafters.

ZL1PL writes to say that he has been busy during the last few months installing the N.Z. end of an RTTY link for overseas aircraft. John says that he was able to do the job with confidence due to his amateur activities. When it came to aligning FSK circuits he had no trouble whatever. He further points out that dollars are pretty hard to come by down there, but is eager to send stamps up in lieu of $. Here is a source of N.Z. stamps if any of you are interested. He would like to buy one of the 21A printers for stamps if there are any takers.

W6KYV: "In the August issue of CQ you called the turn on teletype for traffic work. As a traffic man, naturally, teletype will be both a time and labor saver. For me this is the main reason for the teletype installation. Of course, it is a pleasure to see and hear the transmitter purr out the mark and space signals or to watch the printer write out line after line of copy, be it traffic or rag-chewing. But, traffic is a very definite asset to amateur radio and teletype can be extremely important in its continued success." Dave also points out that the increased standards of selectivity and stability that teletype imposes will be good for the entire art of ham radio. Developments are badly needed for the phone and c.w. men which will allow them greater efficiency in the use of the frequencies allocated and such improvements in equipment would help them.

W3RJA reports in saying that he is taking EE at Johns Hopkins and wants to get on the air. More activity for the Baltimore area.

W5MXJ sent a telegram saying that six more model 12 machines had been delivered to him and that they are available right now for anyone in the vicinity that is interested. The vicinity of New Orleans.

Those pictures in the last bulletin were a bit embarassing in that they turned out so miserably. I tried a new system and it didn't work. It looks like I will have to give in and buy a half-tone screen and make my own half-tones for the bulletin. It won't be too difficult now that I have a dark room and an Elwood 5 x 7 enlarger.

Say, I had better hear more compliments on those diagrams or I will go back to the quick hand diagram instead of the drafted affairs of the last two bulletins. Those things take hours and hours to do. Since almost half of the present subscribers have not received the early issues of the bulletin I shall in the next few issues reprint some of the circuits that were in them.

Many of you are interested in getting some extra equipment and a lot of the letters that I have to answer ask for the various QTH's involved. I will try to give you all of the addresses involved and what the fellows have to offer:

VHF Teletype Society John Williams, W2BFD 38-06 61st Street Woodside, L.I.N.Y.	Diagrams, instructions, and template for W2BFD teletype converter & control panel: $3.50. Model 12 printers: $55. A long list of equipment presently available is available.
Teleprinter Society Leo Shepard, W6LS 460 Oliveta Place La Canada, California	Possible source of printers and information. Has provided most of the west coast stations with their equipment.
Arrow Appliance Tom Howard, W1AFN P.O. Box 19 Boston 1, Mass.	Model 21A printers and keyboard perforators. Information and parts for distributors.
Howard Snyder, W3LMC 4330 Glenmore Avenue Baltimore, Maryland	Ten and twenty element two meter beams. $20 and $50 respectively.
Ed Kephart, W2SPV 4309 Willis Avenue Merchantville, N.J.	Small call letter plates for 25¢, 5 for $1.

Here is some history for the newer members about the VHF Teletype Society. It was formed in 1945 by a handful of radio teletype amateurs in order to formulate standards of operation so that we could all intercommunicate with one another and, in case of emergency, with commercial, military, Red Cross, and (later) Civil Defense stations. Amateur teletype might have started years earlier but for the dearth of machines which were almost impossible to procure. The telegraph companies were adamant in their refusal to sell their superceeded machines and the prices of the new machines were out of the reach of most of us ($1200 to $3000). After several years of effort a few printers were secured and finally a contract was signed with one of the wire companies guaranteeing us all of their superceeded equipment at wonderfully low prices. The ice broken, most of the other companies followed suit, resulting in the present situation where the VHF Teletype Society obtains practically all of the released teletype equipment in the country for the amateurs (with the exception of the Bell System equipment which still is being destroyed).

This removed equipment is by no means junked, it merely is obsolete and has been replaced by new printers. So far I have heard of no case where an amateur received a printer not in good working condition, nor have I heard of one breaking down under the slight use given it by the amateur compared to the 24 hour-a-day commercial use that the machine was designed for. These printers should last a lifetime. This is a darned good record when you consider that over 800 printers have been distributed through the Society so far.

Most of the new faces in the RTTY gang are recruited from the ranks of CQ readers. Now and then I hear of a new RTTY'er from one of the active members of ARTS, but most of the time it is the CQ readers. One interesting thing is the number of new members we have over in Japan. Apparently CQ has quite a circulation over there.

In addition to the many hams that we have interested in teletype there are quite a few teletype men that have gotten interested in ham radio. Quite a switch, eh? Many of these are members of the Society and, on the average, they contribute more than most hams in the way of information and discussion. Most of these fellows are studying for their ticket just about as hard as you did for yours (loafing).

W1EVZ (Holyoke) has been hearing RTTY signals coming through from the gang down NYC and NJ way recently. He sent me some copy he got of W2JAV talking to me. He reports that W1HOD is still rebuilding his r.f. section. He says, "Heard John (W2BFD) making some lables for some packages he was going to send out. Couldn't make out what he was doing until he hooked up with W2CFT who asked him what he was doing. That is how I found out he was printing lables!"

W9TVK (Madison, Wisc) is about to build up his equipment so that when he moves to Boston in a couple months he will be able to get on RTTY in an active area.

W6PTV (San Leandro) wonders who might be TT'ing near him besides W6DOU as he is interested in getting on the air and wants information.

W6NRM/W9TCJ is back in Wisconsin again after his visit home for the summer and is hard at work on a new AFSK converter. "It looks like a beaut of a piece of equipment and the preliminary tests on breadboard indicate fine performance. Uses easy-to-get parts, including the stuff for the tuned filters, and no torroid coils! The coils are cheap and easily obtained and result in very sharp filters. The circuit is arranged with input limiting and a band-pass filter ahead, using the same coils. Only one kind of coil is used for all of the tuned elements, and ten of them are required (two in each of the five transformer units)." Bob wonders what the reaction to the column in CQ is from the people who are not interested in teletype. I don't know. I have had a letter from only one fellow who fitted that category and he is now about to order a printer since being snowed under by letters and bulletins from me. Can it be that we are invincible? Bob goes on to say, "I had a letter from a fellow in Australia who had tried out the NBFM circuit I proposed in the April CQ article and he liked it very much. He is using a clipper and filter before the diode modulator working on a Clapp oscillator. Quite a few other hams down-under are using the circuit."

W2FTN/JA: "I was sitting in the library of the post and picked up a CQ magazine (infrequent reader) and read your article on RTTY which was the most info on ham TT that I have read in a year. I am an instructor in the AN/GRC-26 operator's course at the Eta Jima Specialists School and am interested in starting a RTTY station when I get out of the Army and home next February. This AN/GRC-26 uses quite a different means of converting the r.f. signal into a neutral signal to operate the TT machine. This method just takes the i.f. from an ordinary receiver from the unbypassed cathode of the last i.f. amplifier and converts it to about 50 kc, after which it is limited and amplified and then fed into a discriminator circuit. The d.c. signal from the discriminator is amplified with a d.c. amplifier circuit and is fed to the teletype machine. This system is much freer from drift and this drift can be compensated without resorting to AFC circuits..

W4OLL: "This message is being initiated on a weekly scheduled RTTY circuit between this station and the MARS station at Fort Dix, N.J. We operate FSK for one hour from 1700-1800 EST on Saturdays on 3497.5 kc. Some of the boys might be interested in monitoring these transmissions." This came in the other day by phone and via letter from K2WAO.

I wonder how many of you have read the book "Prodigal Genius" by John O'Neill, a story of the life of Nicola Tesla. I have gotten several people to read my copy and every one of them has gone out and bought one for themselves. It is fantastic. This fellow invented most of the basics of alternating current machinery. He discovered the one, two, and three phase a.c. motor and generator as well as many high frequency generators producing up to 10 kc. He set the standard at 60 cycles. He first used oil for high tension transformers. He made the first electric clock, discovered the tuned circuit, the loudspeaker, diathermy, neon and phosphorescent lamps, he first described the electronic tube(which he developed in 1890 and demonstrated in 1892.) Other discoveries and inventions: X-rays, carbon button lamp, cosmic rays, radioactivity, black light, electron microscope, etc. He died in 1943 at 87 years of age.

W0HFU is about ready to get on the air now with a model 12 and 15. There has been periodic rustling in Minneapolis for several years now so I will believe it when I hear about the first QSO. How so many hams could be interested in RTTY so long without actually getting on the air is a head-scratcher. Must be the cold.

W2MKO, my highschool buddy, turned up over in New Jersey and is interested in getting on RTTY. I found an old picture in the cellar of him that was taken 12 years or so ago, miserable picture, worst one I could find, and sent it to him. Charlie wrote back that he had been given frequent injections of RTTY propaganda by W2UIY, one of our active members, and wanted to get the printer. Small world.

W7PGG was in town the other day and paid a visit to John. He called me on the phone and we had a fine chat. Had a talk with KZ5NM when he was up here too via phone. W9SKF caught me at home the other evening and we had a short discussion on teletype subjects. My phone number is DEwey 9-1691 at home. A couple days a week I am at the Guggenheim Museum: EN9-1518 ext 12. John's number is NE9-7275. Watch out for that automatic phone answerer of his, he is hard to find at home. Two rings and then it answers the phone.

W1WB left for Italy a couple days ago and won't be back until Jan. Blackie lent his panel to W1OSX to use with his model 15.

W1PST has a borrowed panel to go with his newly arrived printer.

W1OC, the Concord Brasspounders (NH), now has a printer. It looks like the New England activity, dormant for so long, has flowered.

73 - Wayne

Wayne Green, W2NSD
1379 East 15th St.
Brooklyn 30, N.Y.

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