Another Bulletin FIRST which will be of interest to most of the gang is the complete circuit diagram of the Gonset Communicator which, with the kind permission of the Gonset Company, is reprinted in the centerfold of this issue. Some of the TT'ers have been using this set with excellent results on the two meter channel.

Next month we have scheduled the circuit diagram and full description of the Northern Radio Frequency Shift Tone Keyer Type 153. This will be another invaluable addition to your RTTY notes and never has been previously available, even on request.

One thing that everyone seems to need is paper for their machines. The Society has been fortunate in being able to uncover a supply of the large boxes of fanfold paper at a considerable saving to members. Normally this paper costs about $7 a box, however we have 25 boxes available at only $5 a box. Only one to a customer please.

W2MYL, Graham Claytor, recently bought two kilowatt rigs for his Virginia home on Claytor Lake some 60 miles west of Roanoke. Graham expects to retire next year and is getting a first class ham shack set up down there, teletype and all.

W9PTK, Ralph Schultz, Chicago, has a Model 12 typing unit, table, polar relay, and motor generator available. Ralph would like to sell this to some local ham and save freight.

W2RTW, John Mulligan, Elmira, "Still alive up here...I have several wastebaskets filled with copy from the 21A but still no transmitting equipment. Right after the band opened I had several 'contacts,' but it took too long to punch tape for an answer so I ordered a complete Model 12. I hope to use the 21A for portable work and demonstrations."
W9OSJ, 2629 Remount Circle, Charlotte, N.C., has some gear he wants to trade. Complete Model 12 with keyboard, cover, and motor generator, in excellent condition; #12 typing unit in good condition; #12 typing unit with some parts missing, good for spares or repair if you have a spare. He wants to trade for a 400-750 watt rig, 613's or something, or what have you to offer?

W6LLP, Walter Chamberlin, went and got married. Guess that will be the end of Walt for a while. Dirty shame too, he was a good man.

W2NSD burnt out his modulation transformer, which is very bad for a phone man. Anyone got a kW modulation transformer that they might be willing to part with reasonable like? I have a table here for a $15, make an offer.

W8HVB, Rod Buszard, Detroit, now has 450 watts on 80 FSK and is taking a typing course to speed up his QSO's.

W7JRG, Ken Erickson, Billings, (VHF & SSB) has a 215H he is willing to part with.

W8RRB, Rod Buszard, Detroit, now has 450 watts on 80 FSK and is taking a typing course to speed up his QSO's.

Detroit. As most of you know, Model 26's were available in Detroit at an extremely reasonable price for a while. The report has reached me that this is a thing of the past, that no more machines are available. What happened was that someone gave out the word about the machines being available at a local club meeting and the word got back... that's all.

W9LNI: "I saw a TT at the Starved Rock hamfest June 7 for the first time. Nothing in ham radio ever was so interesting to me as that TT. I don't know if I'll ever be able to get on the air with TT. If it so happens that I can not, I don't know if I'll even try hamming. Really, that's how RTTY has got a hold on me. I have some equipment here that might help defray the cost of a receiving printer if you know of anyone who would take it in trade for part payment. I can figure a Hallicrafters Shy Chief receiver; two SW-3's one late model, one early model (with a Velvet power pack); a Gibson Girl transmitter; and MD-7 modulator; a BC-459 transmitter; and a Mac Bug. I hope and pray that someone can help me on this score.

W9ERU: "I have been receiving your TT bulletin with interest for something over a year now and have never taken the time to send you any dope. So here goes. W9ERU has been on the air for some 25 years now, an old c.w. man, with a few accomplishments. I won the first Sweepstakes contest in Illinois and the latest, with another win three years ago. Have done a bit of DXing too (Illinois high score in 1947) and have DXCC #80. Used to run a kW before TVI. Now operate a bit with a 32V and am awaiting local TV stations so I can run high power again. Won a code contest (Chicago, 1936) at 52.2 wpm. I am an Army reserve officer and put my latest duty in Washington (1951-52), returning home a year ago. Had a bit of interest in RTTY during my tour of duty so it was natural I should carry the idea back home with me.

I have a model 26 which I traded for with some chap in Cleveland. It seems to be in good shape, but has the usual on-spacer which I hope to take out when I can figure out what to do. It had figured keyboard on it when I got it, but I sent in an order to the Teletype Corporation for reproduction of parts and keytops. I got them without much delay and have installed them in the machine. Very reasonable in price too. Of course I have the advantage of my company letterhead. I run H & H Electronic Supply, Inc., a radio parts wholesale business, and Teletype Corporation honored our purchase order without question. I have built a couple of converters, both of which work, but not too well. The first was the one described in Bulletin #12 by some W6; uses an FL8 filter, for mark signals only. The next was a cobbled up version of my own which has produced some pretty good copy when the signals don't fade too much. I have built some filters from FL8 parts and the specs on performance are below.

**Converted FL8 Filters**

- **2125 cps Pass**
  - Down 6 db @ 1680 cps
  - 6 " @ 2540 "
  - 20 " @ 1340 "
  - 20 " @ 2975 "

W92BK, Ben Kruśniak, "Been off the air due to converter difficulties and the arrival of a new Jr. op. last month."

W5BCO, Ralph Hicks, "Have a Model 12 page printer for sale for $30 uncrated. Would like to get a model 21 tape printer."

W4SBK, John Hockman, "I will be on two meter TT in about a month. I have a model 12 printer..."
I now have two SX28 receivers to feed my converter, and as soon as I get around to hook up the AVC leads and the BFO for common injection, I think I will have diversity, polarized diversity that is, because my location will not allow space diversity. I have already arranged the two receivers to take a common HF injection signal, requiring a volt or more at the input jack. The SX28's have one valuable quality, they are about the only receivers which will operate with both AVC and BFO on without the BFO signal feeding through the I.F. channel and killing the gain. That is a little trick I learned during the last war during a short stay with the FCC monitoring station near Washington, D.C.

"Do Lewis (W9UAU) and I discuss RTTY difficulties occasionally, but we have not yet gotten together to compare items. Now, I have seen any other RTTY hams, except W9THE, who had a new Kleinschmidt printer running down at the Starved Rock Hamfest.

"Have heard you (W2NSD) on occasionally, also WTCJ, W3PW, and some W6.........."

"An FL8 has six chokes in it, all different, but apparently all FL8's have the same items in them. After cutting and melting them up the condensers are of little value, but the chokes come through in good shape. The three filters shown require three FL8's. The band-pass unit has two type 3M chokes coupled in transformer style; that is, the I laminations are removed and the two sets of E laminations are faced open ends together to form a complete magnetic path. The two chokes in the center leg of the 2975 cycle filter, 3M and 3M, are not coupled in any way. You will note that the 2125 and 2975 filters are high impedance, while the bandpass is low impedance in and high out. I potted mine in some other filter cans."

W2PAU, Brownie, "I am strongly in favor of our signing our calls on c.w., preferably make/break c.w. This is the only characteristic which distinguishes a legal amateur signal from some commercial or ????? stations' signals in our bands. Proper use of the c.w. signature labels us as bona fide hams. Anyone hearing an RTTY signal which doesn't sign on c.w. should be loudly and publicly taught that this is not a ham signal."

**TELETYPE RADIO RECEIVING CONVERTERS MAY BE DIVIDED UP AS FOLLOWS:-**

(A) SYSTEMS, SIMILAR TO F.M. RADIO, WHERE AN F.M. DISCRIMINATOR SUCH AS THE FORSTER-SEELEY VARIETY DELIVERS A POLAR D.C. OUTPUT WITH AN I.F. (FREQUENCY-SHIFTED) INPUT.

(B) SYSTEMS, SUCH AS THE W2BFD, WOLL AND W6AEE UNITS, UTILIZING THE FREQUENCY-SHIFTED OUTPUT OF THE RADIO RECEIVER, PERFORMING LIMITING AND DISCRIMINATING OPERATIONS AT AUDIO FREQUENCY.

(C) SYSTEMS, SUCH AS THE NORTHERN RADIO TERMINAL, USING PULSE TECHNIQUES TO DISCRIMINATE BETWEEN THE MARKING AND SPACING (AUDIO) TONES.

**EQUIPMENT IN THE SECOND CATEGORY CAN BE FURTHER CLASSIFIED AS FOLLOWS:-**

(A) CONVERTERS (W2BFD, WOLL) PROVIDING SEPARATE AUDIO CHANNELS FOR MARKING PITCH AND SPACING PITCH.

(B) CONVERTERS (WJ, TYPE 20) AMPLIFYING AND LIMITING IN A COMMON AUDIO CHANNEL, FOLLOWED BY A DISCRIMINATOR, GENERALLY OF THE FORSTER-SEELEY TYPE, OPERATING AT AUDIO FREQUENCIES.

**MOST AMATEUR EQUIPMENT HAS FOLLOWED THE SECOND CATEGORY BECAUSE OF THE CONVENIENCE OF SWITCHING FROM AFSK TO FSK AND THE IMPORTANT FACT THAT NO CHANGES NEED BE MADE TO THE ASSOCIATED RADIO RECEIVER. (WORKS FROM EARPHONE JACK OR LOUDSPEAKER TERMINALS).**

LIKELY, AMATEURS HAVE TENDED TO FOLLOW THE "A" SUBDIVISION FOR CONSTRUCTIONAL REASONS. WITH THIS METHOD COMPLICATED WAVE FILTERS MAY BE DISPENSED WITH HAVE YOU EVER PRIZED A REALLY GOOD COMMERCIAL FILTER, WHICH SEPARATELY ANNEXED TO THE RADIO RECEIVER, TO BE USED AT AUDIO FREQUENCIES IN THE SAME MANNER AS IN CONVENTIONAL I.F. AMPLIFIERS. (BY SLIGHTLY OVERCOUPLED COILS PRODUCING STEEP "SKIRTS" WITH A FLATTENED TOP TO THE RESPONSE)

THE "B" METHOD HAS THE DISADVANTAGE OF REQUIRING A SPECIAL DISCRIMINATOR COIL (AT AUDIO FREQUENCIES) WHICH IS DIFFICULT OF HOME-CONSTRUCTION WHEN FREQUENCY-SHIFTS OF THE ORDER OF 850 CYCLES ARE TO BE HANDLED.

AN EXTREMELY COMMON MISTAKE IN THE CONSTRUCTION OF THE W2BFD TELETYPEx PANELS IS THE PLACEMENT OF A GROUND ON THE ROTOR OF THE DIODE POTENTIOMETER. FRANKLY THE CIRCUIT LOOKS AS THOUGH IT WOULD NEED A GROUND BUT IT IS IMPORTANT THAT THIS POINT (THE "APEX" POINT) BE LEFT "FLOATING" FOR THIS REASON:-

WITH SIGNAL COMING THROUGH THE MARKING CHANNEL, ACCOMPANYED BY NOISE, THIS IS REDUCED AND PRODUCES A D.C. OUTPUT ACROSS THE POTENTIOMETER (MARKING SIDE) WHICH TENDS TO MAKE ONE 6V6 GRID POSITIVE AND THE OTHER ONE NEGATIVE. ONE 6V6 PLATE CURRENT GOES UP TO SATURATION AT ABOUT 80 MA AND THE OTHER GOES TO ZERO. NOISE IN THE SPACE CHANNEL WHICH IS NOT AT THIS MOMENT CARRYING A SIGNAL IS REDUCED AND INTRODUCED IN SERIES WITH THE MARKING D.C. VOLTAGE IN THE DIRECTION TO CANCEL, WITH SIGNALS EVEN SLIGHTLY ABOVE THE BACKGROUND NOISE THE RESISTANT VOLTAGE ON THE 6V6 grids will always make one positive and one negative. VOILA! THE POLAR RELAY WORKS.

ON THE OTHER HAND, WITH A GROUND ON THE "APEX" POINT, BOTH 6V6 TUBES WILL BE MADE POSITIVE AT THE SAME TIME, ONE FROM RECTIFIED SIGNAL-PLUS-NOISE AND THE OTHER FROM RECTIFIED NOISE. IF BOTH GRIDS ARE ABOUT 16 VOLTS POSITIVE BOTH TUBES WILL DRAW SATURATION PLATE CURRENT OF THE SAME VALUE AND THE RESULT WILL BE ZERO CURRENT THROUGH THE POLAR RELAY WINDING. (RESULTS IN ERRORS IN COPY UNDER NOISE CONDITIONS).

THE ABOVE IS PARTICULARLY APPLICABLE TO THOSE PANELS OBTAINING THEIR LIMITING AND SELECTIVITY IN THE MARK AND SPACE AUDIO AMPLIFIERS. IN THOSE SYSTEMS PRECEDING THE DISCRIMINATING AMPLIFIERS WITH A LIMITER IN THE INPUT, COMMON TO BOTH MARK AND SPACE FREQUENCIES, THIS IS SOMEWHAT LESS IMPORTANT.

Continued on Page 6
Components such as T1, T2 and others not listed below are special and should be ordered by symbol designation. All resistor values are 1% tolerance. Intermediate frequency is 6 MC. Fuses are 2 amp "Slow-blow" for 117 volt operation (located in line plug) and 2 amp "Slow-blow" operation (in heat lead). Volvo should be bridged with a diode type voltmeter having an input resistance exceeding 10 megohms and an isolating resistor in the probe (such as RCA voltmeters). On some units, sections 4-F and 4-R on switch SW5 have been transposed.
Reprinted from QST, February 1965

Some Notes On Converting the Model 25 Printer

ON THE MODEL 25-A PRINTERS, WHICH ARE PRESENTLY BEING SECURED BRAND-NEW BY V.H.T.S., DIFFICULTY IS ENCOUNTERED IN CONVERTING THE MECHANISM TO FUNCTION LIKE THE MODEL 21-A, WHICH IT GREATLY RESEMBLES.


IT IS DESIRABLE TO DRIVE THE 6V6 TUBE GRIDS WITH AS LARGE A DC SWING AS POSSIBLE TO PRODUCE RELAY CURRENTS APPROACHING A SQUARE WAVE IN SHAPE. THIS WILL INTRODUCE ADDITIONAL LIMITING ON ALL SIGNALS WHICH EXCEED 16 VOLTS.

COMMON VALUES OF RECTIFIED DIODE VOLTAGE ARE IN THE VICINITY OF 200 VOLTS (MARK OR SPACE POLARITY). 73 DE W2BD

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W4XK, Phil Kennedy, "Just released to inactive duty from the Navy, I am going to work in the RTTY service and hope to continue my experience in that work. How come QST never published more than an article or two on this subject?"

W5CIIH, Paul Leslie, Superior, Nebraska, "I am now regularly on 7140 kc, having vacated 3620 kc after a very short occupancy because of static. Activity on 7140 seems to be in a slow-development trend. I worked W9TCJ, WPBP, and W9UVL, and W6AEF. Merrill and I have been saying hello almost every evening lately. Bob, W9TCJ, is on a western trip at the present time and his vacation makes a considerable hole in the teletype activity. As far as I know there are no other TT stations on the low frequencies in Nebraska. I have heard that there are a handful of stations active on two meters in the vicinity of Omaha, but they are beyond my range. W5CIIH in western Nebraska has borrowed my extra Model 12 and at last report was nearing completion of his terminal equipment a la W2BFD plans. I have a new Collins 75A2 receiver which is a God-send here where I have been plagued by a rapidly fluctuating line voltage for some time. A new final with about 100 watts is in operation on the RTTY frequencies. The Model 12 uses the W2BFD panel, complete with auto-start, and has a new keyer and a new oscillator. I have a 21A that is not yet connected up and am looking around for some tape equipment."

W5NXJ, Bill Kelly, New Orleans, "I have six model 12 printers with tables, receiving distributors, etc., motors, and covers which are available for those that want to get started in TT. I am working to pick up a printer to complete the Model 12. Bill has been unable to get keyboards for the printers, but they are complete for receiving purposes and require only the conversion of a typewriter a la W2BFD and a simple transmitting distributor for two-way work. If you want to get on the air and are stewing about the months of waiting for regular delivery here is your opportunity. Write Bill at 100 Bellaire Drive, N.O."

There has been quite a bit of discussion about the W2PAT converter circuit which appeared in the January QST. A lot of the fellows have, because of its simplicity, tried the circuit. Some have had troubles with it, some have had little or no trouble. Marvin points out in a letter that he did not intend to imply that this was the ultimate in converters and that obviously the use of filters costing more than $6 would result in improved performance. Thus it is natural that those who have compared it with the W2BFD converter are not well satisfied. It would be helpful though if every one of these converters would make their opinions available to us. Also, I would like to furnish any improvements that may have been found for any of the converters so far printed up.

W4SCP, Fran Sherwood, Fairport, NY, "In addition to my outside projects, which keep me off the air too much, I work for a BC station. I have a converter finished and it works well on the station's AP news printer. Some day we'll miss a hot news bulletin and that'll put the kibosh on my fun."

W9DDP, Bill Stange, got hold of a model 26 with the fiber gears stripped and hopes that someone will be able to help him out of this difficulty. The sync motor overheated in the process and he also needs that.

W5B, Blackie, just back from Europe, "Got invited to spend two days in the TT department of Olivetti Company at Ivrea, but couldn't due to a dose of appendicitis. Did try their version of the model 12 and it stinks, but I hear that their new ones are very good: their new typewriters are the world's best."

Mark Wayman of Fontana, California, mentions an interest in a would-be hobby of mine: the Aqua Lung. I have a set of fins and mask with which I have plumbed some of the depths of the Brooklyn, Virginia, and Florida coastal waters, but even though I can hold my breath for quite a long time it is nothing like using a lung. W5LFL, Walt Chamberlin, is another diver and I'll bet we have a good time if I can figure some way to get out to California. Say, if you have a chance to get down to Florida, don't miss a swim in Silver Springs.

W6BYF, Rod Buszard, "I have been able to secure another #26 machine complete with keyboard. I would like to trade it off for a reperforator if possible. This is the only way I will part with it so no cash offers please."

W8QQ, Lee Blodgett, "I am a physics student and work at the S.U.I. Cosmic Ray Radiotelemeter Rocket and Balloon Electronic Research project for the Office of Naval Research."

VE8AV, Berube, Whitehorse, "Extensive listening on the 40 meter band here has failed to reveal any amateur RTTY stations so far. We were quite sure that the W9's would be coming in and we are ready to copy them on an experimental setup if they ever come through."