Yassir, what we need is a little more esprit de corps. The ranks of teletype are swelling day by day. The columns in CQ, the ads in Swap and Shop, and the word of mouth all work to get more and more thinking hams interested in our new and fascinating branch of the hobby. A few of the gang have been some extracurricular spreading of "the word," a practice that should be encouraged. One tried and proven method of getting members is to give talks and demonstrations to local ham clubs. W2BFD, W6LS, W6RL, W7LUK, W2JAV, and W6JCV have done this frequently, others may have too, but I haven't heard about it. An almost sure way of getting an interested ham to build the necessary panel is to lend him a set of equipment for a few weeks and let him get to know the gang that is working on TT. This does it, when the gear is taken away he has to get busy and build his own right away. This system works very well, I know, it happened to me. Among those that have perpetrated such foul methods are: W2CGR, W2JAV, W2VYL, W2PAU, W3CZE, W3PYW, W3OBF, W4JAV, and W61TH. Come to think of it I lent my gear to W2VYL while he was building his. In any city where there are two TT stations working each other a demonstration could be set up for the local ham club that would raise quite a bit of interest. At the very least you will have indoctrinated the club in the basics of TT and they will be more receptive when they read CQ. If you let me know ahead of time about such demonstrations I will have extra copies of this bulletin printed for distribution at these meetings.

DISTRIBUTORS: Quite a bit of thought and paper work have gone into various methods of making TT distributors (D's). John has come up with a block diagram and a few particulars on an all electronic D (transmitting). He has also suggested (with a simpler answer to the problem might be in our learning how to make our own mechanical jobs). We could make them fairly easily if we modeled them after the Nordmorken type such as is used in most tape setups. The TD would require a motor geared to rotate 360.1 RPM, while the RD would have to rotate 1/7th faster, 420 RPM. Both RD and TD would have to have a clutch latch to be operated by the "start" pulse. The segmented plate for the brushes to wipe over could be made from a small sheet of copper by clamping it to a piece of bakelite, scribbling the concentric circles on it, bothing each separate segment to the bakelite, cutting the copper with a circle cutter, leaving a ring of copper, then with a hack-saw cutting between the segments. Another method would be to have the segments put on a ceramic disc by the silk-screen process. This would probably have to be done in quantity though to get a low price. The disc would only have to be an inch in diameter to work.

ONE MAN CAMPAIGN: A letter from out westward was appreciative of my "...one man campaign for teletype." I, naturally, puff up almost imperceptibly and summon the family and friends for a formal reading over the paragraph. Actually that isn't true, not a bit. Without constant phone discussion with John and W2MYL, without regular letters from such fellows as E.M. Doane (South Bend) and W6NRM/9, and without the letters from everyone else from time to time I would have nothing to write. Teletype would move a lot faster if there were more active participants though. There are so many problems facing us, so much to be done, and so few helping. Bob (NRM) tackled the Collins 709D-1 circuit for frequency shifting and has, as a result, a nice article coming out in the April CQ on the subject. He was the first one to mention to me the possibility of using such a resistance modulator for remotely tuning the receiver local oscillator so that the receiver could be fine-tuned from any remote location (such as the printer). In the Teletype column in the same issue is Bob's VT keyer data. Why only one man doing all of our work? Here are some of the other projects that need investigation: (1) Build the distributor discussed above using a Cramer clock motor. (2) An all electronic distributor. (3) Comparison and report on the efficacy of various FSK systems. (4) A simple AFC circuit for FSK reception. (5) A workable R/C filter selective amplifier. (6) A method of convincing the W6's that they are missing half the fun by not using auto-start circuits and clocks. (7) Method of converting junk typewriter keyboards to teletype. Etc. (8) Connections and data on using the 21A printer. How about having a crack at one of these? If you are interested I will be glad to pass along all of the information and thoughts I have on the dem.
MAIL DEPT: Among the many answers to my ad in "Swap and Shop" was one from Fred Clausen (Alton, Ill) who is a Bell System tele-type repairman and is looking for a model 14 or 15 machine. Fred is studying for his ham ticket.

W5EJK expects to have his own machine in a month or so. He is using one borrowed from W4JCO at present. Mark up another "sale" of tele-type to Johnnie.

W5HRK, by means of a letter and a couple 11 meter messages, joins our TT Society. He and W4ETF/5 (also in Fort Worth) have model 26 printers and are building for 10 and 11 meter FSK and APSK op. W7NXY, our first TT'er in Nevada, writes that he is a wire chief there and has a line on getting a couple 11's. Maybe Nevada won't be as hard to work on tele-type as Maine. Not a nibble from Maine yet but must be too cold up there for typing.

W5MKK has let other things interfere with TT. True, the noise from his un-VETed printer was bad, but that was only part of it. He has been fattening six steers, working in emergency nets, etc. W4IVH has a model 15, but is missing the distributor, can anyone help him? He has copied press with his home designed converter.

W6OWP, Belmont, has a model 15, a beat frequency FSK exciter, and a ratio detection FSK converter. He suggests work be done on reducing the 650 cycle shift to more economical proportions. He also opposes the idea of more than restricted bands of frequencies on the lower bands for FSK-TT.

W5SDE elaborated a bit about his 81' tower, the all steel (welded) transmitter cabinet: quite a set-up. Most of us think about those things, but then we sober up the next day and use the old dipole.

W6HRK/5 has been delving into the murky depths of Yerkes library: "Bell system Technical Journal, April 1940: 'Frequency Shift Telegraphy-Radio and Wire Applications' by Davey and Matte. This article is very good and describes the various methods of receiving FSK, different deviations, and usage of limiters before the frequency discriminating filters...etc. Seems very solid and meaty.

Bell System Technical Journal, Oct. 1931: 'Application of Printing Telegraph to long wave radio circuits' by Bailey and McCann. This is the earliest mention of FSK work for RTTY. At least, it was employed over transatlantic paths before 1931. Interesting, huh?

Bell System Tech Journal, July 1941: 'Effect of Telegraph Distortions on the Margins of Operation of Start-Stop Receivers' by Nea. This is strictly a technical account of characteristics of signal for operating a printer. Bell System Tech Journal, Oct. 1938: 'Fundamentals of Teletypewriters as Used in the Bell System' by Watson. This is just a descriptive article on the various late model equipment used on the TWX. Journal of Franklin Institute, Jan. 1922, by Heising. This is an article on an RTTY circuit on 450 meters using make-break. Interesting from a historical view.

Bob also plumbs for some work on 200 cycle shift for amateur work. Another letter from Bob the other day was all excited, he had just received a message from the AIR network. Seems he had sent them some copy he had made of them a few weeks ago and they answered him on the air, WOW! He almost sent me a telegram about it he was so tickled. Wonder how many of you have tuned in the net so far?

John (WBD) worried needlessly last week about a bunch of printers that became available in Kansas. Some of them had keyboards, some did not. He was wondering where he was going to get the money to hold them and what to do about them when W5MKJ called on the phone (long distance) and offered to buy one for himself, four for other local hams, and hold the rest of the machines and parts until they are needed by hams in the area (New Orleans).

W6CXX, Art Collins, writes that he is off teletype until the 40M opening. The only band he could possibly use to talk to the outside world, eleven meters, is dead most of the time.

KL7EK has two model 11's on lend and a #12 (minus keyboard) of his very own. He has had a receiving setup of his own design in operation for a year now and is looking forward to the opening of 40M.

Letter from out Ohio way offers a model 26 for trade for ham parts. Make your offers through me men. Supposed to be in brand new shape.
WCHZR: "Your circuit ARRT 4020, from W30DF, interested me because I have used it, or rather a very similar one, but with little success. It shares the rather common fault of most R/C circuits in that noise pulses can cause lots of trouble if not properly filtered. If you are interested in RC circuits, here is an easy one that some of the fellows might find useful:

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- **Parallel T Network**

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**Eout**

- **Peak Operation**

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**Eout**

- **Null Operation**

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**ARTT 4023: WCHZR**

The data on the RC filter network is available from many handbooks. Terman has fine dope on it. Improved performance may be had by using the "Bridged T" L/C network in place of the RC shown above. Terman's Handbook also has the story on the Bridged T as follows:

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**ARTT 4024: WCHZR**

If any of the gang cares to incorporate Automatic Frequency Control in his AFSK receiving panel, here is an audio frequency discriminator which will work well. I have tested all these schemes and know for sure that they work. W2OLL sent in the following variable crystal oscillator circuit:

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**ARTT 4026: W4OLL**

L1-80 turns #30 on XR-50 slug

Alignment: (a) Set C1 for min capacity, adj. C2 for osc. at xtal frequency. (b) Set C1 for max capacity, adj. slug in L1 so that output freq. is pulled downward a maximum of 5 kc at 3.5 mc or 10 kc at 7 mc. Fine adj. is then possible with C1. WARNING: If the xtal frequency is pulled further than the limits stated above the xtal will lose control and the circuit will oscillate as a low grade Clapp osc. with the xtal holder capacity as one element." (This should make a fine FSK osc. with the 709D-1 method of keying the grid circuit. Someone try it for us, eh? ----)

W2BFD built what I call a "Miser's Panel" from some old junk-box parts. Here is the sketch of this tubeless AFSK receiving converter:

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The power for operating the polar relay comes from the receiver audio system, is filtered by the mark and space filters, rectified by the copper oxide rectifiers, and then is fed to the polar relay.
More on Miser: L1 has "E" laminations only and resonates at 2125 with C1. It had about 2000 ohms D.C. resistance. L2: The "E" and "I" laminations are spaced to get the approx. frequency, then C2 is adj. to get the exact resonance. L3 (1000 ohms, D.C.) is resonated to 2975 by adj. the air gap between the "E" and "I" bars. L4: adj. "E" and "I" laminations for resonance at 2975. A two winding relay must be used with this setup. The copper-oxide rectifier can be overloaded. This converter works well on stronger signals.

It is about time for everybody to read all the back issues of the bulletin for I find that many of the questions coming in to me are answered there. Read them. The other day I was calculating what it costs me in time, postage, etc., to put out this bulletin every month. The result was surprising to me: it averages to about 25c per month per person! It will be higher this month since this issue will be printed professionally. If a few more of you fellows come through with some money I will be able to continue to have this offset printed. If the present proportion of the members continue to take a free ride I'll have to figure some sort of method of extracting lumps of finance. Here is about how the donations are going: 30% of the W1's have donated 3c or over, 37% - W2's; 26% - W3's; 23% - W4's; 25% - W5's; 50% - W7's; 24% - W9's; 26% - W0's; and a total of 46c from all of the stations outside the U.S., 18 of 'em. I like to be altruistic, but don't make it so darned expensive for me. Say, just put the April column in C3 to bed a couple days ago. Perry says it smells. He is just bitter because I have so many pictures and diagrams in it. Pix and diagram of tape xmtr, distributor, and interconnections. Diagram of VT keyer and picture of Bob's version of it. I had it set in teeny weeny type so that I could get all possible material in the issue. Got the W5RL mobile teletype setup all ready for the May issue too. Anybody else ever mobilized with TT gear? Send me some dope & pix if you got 'em. Well, that's it for this month. Send in the info sheets, send $$$.

Wayne

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