Modification on -- SENDING CW With A TD.

Hal Brown, K3SQY
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King of Prussia, Pa. 19406

I was very interested in the article by K1PLP in the April RTTY JOURNAL describing a method of sending CW with a TD. It occurred to me that Jerrys idea might be implemented in a much simpler manner with the use of a polar relay. This worked so well I thought others might be interested. Not only is this a very simple method but makes use of the polar relay that many have relegated to the junk box after changing to electronic keying.

Referring to Fig. 1 in the K1PLP article the K2 and K3 coils in the circuit can be directly replaced with the two coils of a WE215A or 255A polar relay. Example - with the 255A, terminals 2 and 7 are the ends of one coil which can be substituted for K2, and terminals 3 and 6 can be substituted for K3. Relay K1 and the circuitry associated with it in Jerrys circuit are not needed since the polar relay automatically latches in either of its two positions. The CW output will appear across either terminals 1 and 4 or 1 and 5 depending on the polarity of the coil connections to one of the two coils.

The beauty of the use of a WE polar relay is that they are designed to carry and operate on TTY loop currents. Their coils can be inserted directly into the circuit without shunt resistors. The performance of this concept is everything Jerrys claims for it in his article and I heartily recommend it.

***

BROAD MINDED USE NARROW SHIFT

First Class Mail --

RTTY JOURNAL

November 1968

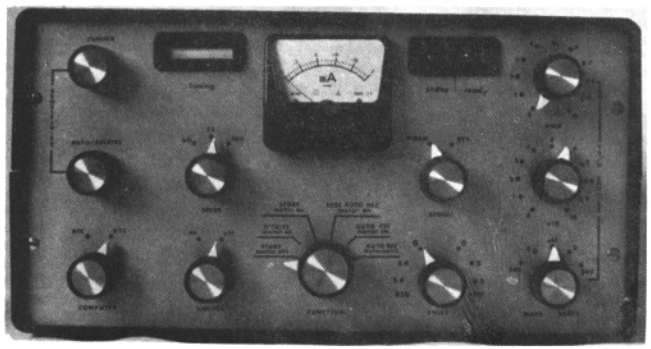
EXCLUSIVELY AMATEUR RADIO TELETYPE

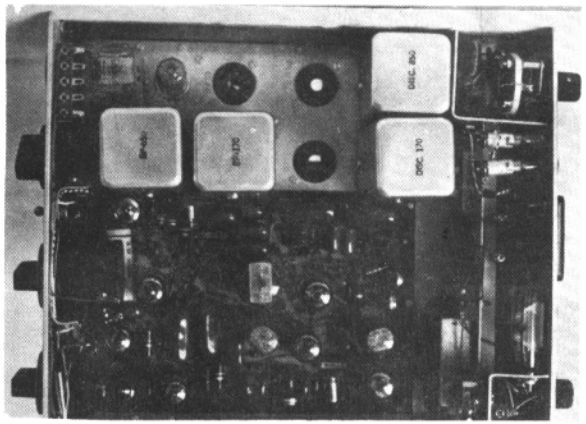
Vol. 16 No. 10 30 Cents

Like A Swiss Watch **

TT/L-2 from HB9EZX -

These pictures are from color photos of a beautifully built TT/L-2 demodulator built by Jean-Claude Gerber, HB9EZX of Switzerland. We hope the color reproduces well enough to show the expert workmanship.





Upper - front of TU which includes a TT/O and a KOX device.

Right - Top view - Empty sockets are for filters, the tube and relay at lower right are for the KOX.

Unfortunately lack of space prevents showing an equally well built timing device.

CARTG RTTY " TROPHY WEEK END " BIG SUCCESS—

The RTTY Trophy Week End is just over. Without a doubt it was again the biggest and best ever held. Conditions were good and all the DX bands had activity around the clock for the most part. John has comments on the action in his DX column. The job of checking logs will be a tremendous one but we are sure that Sid, VE3GK and his CARTG group will do their usual fine job. If you haven't sent yours in yet remember the deadline is November 30, 1968.

This year marked the innovation of several divisions during the contest to make the contest of more interest to those not working DX entirely. Personally we spent most of our operating time trying to work different states or Canadian Providences, and stations on the 40 and 80 meter bands.

Frankly we were a little disappointed at the activity on the two lower frequencies although there was definitely more than in other contests. During the day however the bands were almost empty, at this time we went to the higher frequencies and looked for different states. We have no idea what scores or results of these extra divisions will be at this time. As a comparison to others we worked 33 states and all Canadian providences except New Brunswick. In the 40-80 meter division we had about 80 contacts, including 5 different countries and four continents for a score of about 9000 points. We mention this for comparison reasons and will be very interested in the activity of other stations as these two divisions were the ones we were particularly interested in for future planning of contests. Send in your log regardless of your score as this and any comments are the only way of planning events in the future that would be of interest to many of you.

There is no way yet to know what response the SWL contest will have. Remember there is a trophy for that section also and once again logs and your comments will be appreciated.

The CARTG has put a tremendous amount of work in this contest, the activity proves it a success, but your comments and ideas of future contests will be appreciated.

* * *

T'was The Night Before--

'Twas the night 'fore "RTTY-SS" and all through the houses,
Excited hams stirring, the good guys and grouches.
Their stockings are thrown all over the place,
They seem old and wrinkled when you look in their face.
The few lucky ones, who get in their beds,
See leering megahertz dance 'round in their heads.
With kerchief they're mopping their fevered brow,
Wishing "Batman" would rescue them... ZAP, ZOWIE, POW!
Their eyes how they twinkle from taking "No Doz",
Their cheeks have a pallor not kin to a rose.
Their mouths are screwed up in a tight little knot,
And five o'clock shadow is what they have got.
The butts are piled high, or gnashed in their teeth,
Smoke is too thick to cut with a sheath.
They're haggard and drawn and looking so thin.
They've forgotten to eat 'fore "RTTY-SS" time sets in.
They speak not a word, but are hard at their work,
Just mumbling and jumbling as skip conditions lurk.
And laying their heads aside their desks,
The nightmares they have are purely grotesque.
They spring to their feet, with the first light of dawn,
And away they all fly with a stretch and a yawn.
But I heard them exclaim through the flurry and fuss,
He who works "RTTY-SS" is an ignoramus.

A.D. (AD) Bryant W7ETH
3338 N. 63rd Place
Scottsdale, Arizonia 85251

* *

FILTERS for RTTY

Part 1 - CONSTRUCTION and MEASURING

Jerry Hall, K1PLP
15 Endleigh Ave.
Pinehurst, Mass. 01866

The 88 Millihenry Toriodal inductor has become almost as well known in RTTY and audio filter construction projects as the fixed resistor or a simple capacitor. Indeed, this component sees almost universal use in demodulator channel filters, replaced only occasionally by TV width coils. New surplus toroids are available at a cost comparable to that of a 2-watt resistor. (See the classified ad sector of this issue.)

A close inspection of these units will reveal that they consist of two independent windings, each winding occupying half of the toroidal form. Independently, these windings exhibit an inductance of 22 millihenries. When connected in series, the inductance quadruples to give a value of 88 millihenries. Mutual coupling accounts for the reason the two windings in series give more than just the sum of the single-winding inductances. See figure 1, which shows the physical connections to be made.

A simple L-C filter consisting of an 88 mhy toroid resonated with one or more capacitors at a fixed audio frequency may be used for a variety of purposes. The schematic of such a filter is shown in figure 2, where the numbers indicate a pin basing arrangement commonly used if the parts are mounted on an octal plug. (The single capacitor shown represents the value of perhaps two or more capacitors connected in parallel. High quality capacitors should be used, such as Mallory PVC dipped mylars or Sprague Defilm Orange Drops. A lossy capacitor will contribute to poor filter performance.) Depending on external connections, this filter may be used in either a series-resonant or a parallel-resonant configuration.

Plug-in filters are often used even though one does not expect to change filters frequently. The advantages are that mounting is convenient, only a small amount of chassis space is required for the complete filter, and the filter may be tuned independently on the bench without having to dig down under the chassis. An Amphenol 86-CP8 octal plug, available at about 25 cents each, is ideal for the base. Various methods of mounting may be used. The general idea shown in figure 3 is common. The bakelite center locating pin of the plug must be drilled to clear a number 6 screw. Two washers made of heavy cardboard, phenolic

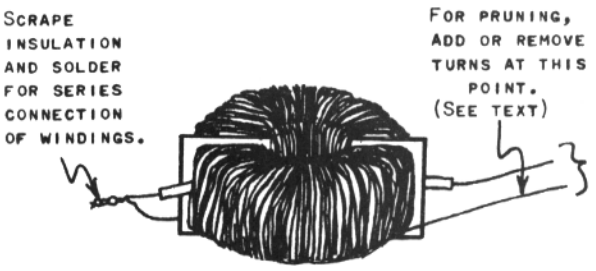


FIGURE 1. THE 88 MILLIHENRY TOROIDAL INDUCTOR.

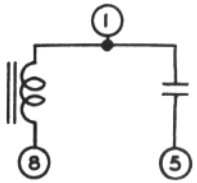


Figure 2. Schematic and pin basing arrangement, octal plug-mounted units.

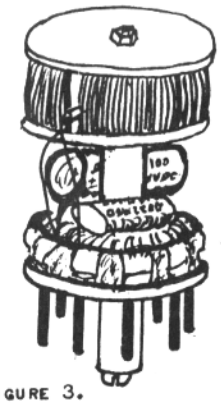


FIGURE 3.

OCTAL PLUG MOUNTED FILTER.

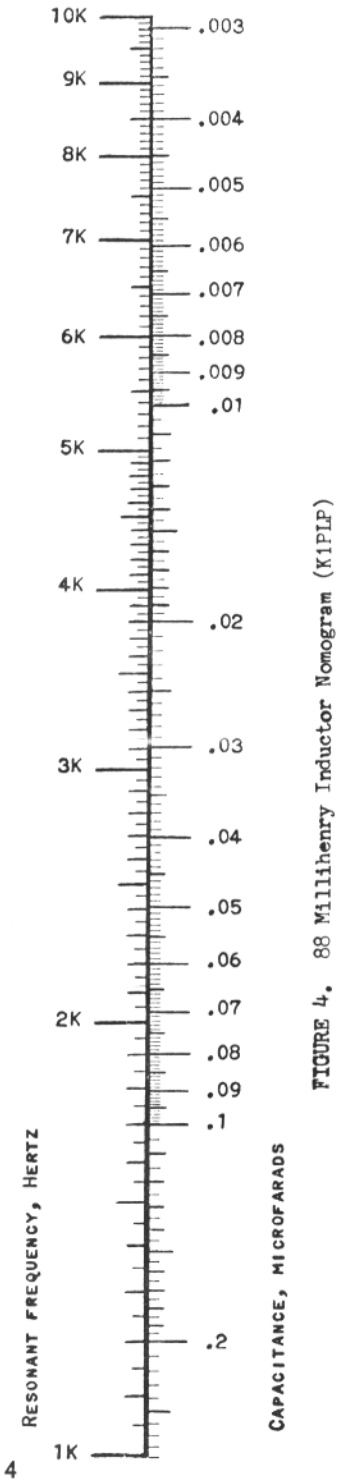


FIGURE 4. 88 Millihenry Inductor Nomogram (K1PLP)

board, lucite, or other insulating material are required to mount the toroid. If the latter materials are used, a circular hacksaw with an inside diameter of 1-1/8 inches is handy. With a portable electric drill several washers can be made in a manner of minutes.

A standoff will be required between the plug and the first washer. This could be a short length of 3/8 inch wood dowel, with 1-1/4 inch round head number 6 wood screws used at each end to secure the assembly. Or it could be a 1/2 or 9/16 inch length of 1/4 inch copper tubing, with the entire assembly held together with a single 6-32 nut and screw 2-1/2 inches in length. (In a pinch, the author has been known to cut a common nail to the 2-1/2 inch length and add 6-32 threads on each end in order to complete an assembly.) As the figure shows, the resonating capacitors are placed adjacent to the plug base, around the standoff.

TUNING A FILTER

In all construction projects it is desirable to resonate the filter at a specific known frequency. The amount of capacitance required for the wanted frequency can be calculated, but for those who prefer a simple approach, the nomograph of figure 4 may be used. This nomograph applies only to an 88 millihenry inductor, and gives the resonant frequency opposite the amount of capacitance required. (A copy of the nomograph alone is available from the author for a SASE.)

One problem encountered in the accurate tuning or resonating of a simple filter is the deviation of capacity values from the nominal value marked on the unit. The deviation will depend on the tolerance. About the best one can do at the local wholesale house or nearest mail order house is a 10 percent tolerance capacitor. If one were constructing a filter to resonate a precisely 2125.0 Hz and were to crank values through the formula, he would find a capacitance value of 0.063744 mfd was required with an 88.000 mhy inductor. It is not likely that you could walk in and buy such a capacitor. The wholesaler would probably laugh at you, or at least smile to himself. Then he would suggest that you purchase the nearest common value, 0.068 mfd, if you wanted to avoid paralleling several units. With a 10 percent tolerance capacitor, the actual value of this unit would lie in the range 0.0612 to 0.0748 mfd. Placed in a filter with the 88 mhy toroid, the resulting resonant frequency would lie somewhere in

the range between 1961.7 and 2168.7 Hz. Not too precise for the desired 2125.0 Hz response, is it! It therefore becomes necessary to do some pruning to arrive at the proper frequency of resonance.

Figure 5 shows the test set-up for the tuning of a simple L-C filter. An accurate frequency source is desired, such as a very well calibrated audio oscillator, an oscillator checked against a digital frequency counter, a frequency derived from or beat with that of a tuning fork, the signal from a "standard audio frequency" magnetic tape, or perhaps a signal obtained through the use of notes from the piano or a musician's pitchpipe. If an accurate frequency source is not available, another L-C filter which has been precisely tuned to the desired frequency may be used for reference, as explained later. It may be helpful in getting a usable signal level to insert an impedance step-up transformer between the audio source and the 1 megohm isolation resistor. To avoid loading the filter, the voltmeter should be a high impedance instrument. A VTVM is best. Sensitivity permitting, an even larger value than 1 meghom should be used for isolation, such as 2.2 or 2.7 megohms. With a low impedance meter and low isolation the tuning indication will be broad, yielding less accuracy.

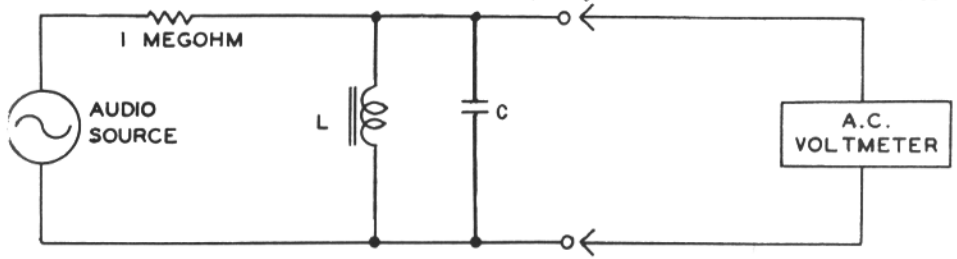


FIGURE 5. CIRCUIT FOR TUNING AN L-C FILTER.

As the audio source is tuned to the resonant frequency, a maximum meter reading will occur. Pruning of the filter may be done in several ways. Probably the easiest is to select a capacitor value in the right ballpark for the desired frequency, and then either add or remove turns from the toroid as required. Number 30 enameled wire can be neatly spliced to add turns. The enamel provides its own insulation when turns are added over the splice, but a touch of glyptol, fast drying cement, or fingernail polish over the splice will give added insulation. The placement of the extra few turns is not critical. Refer to figure 1. I have found that a difference of one turn on an 88 mhy toroid resonated at 1 KHz shifts the resonant frequency by about 1.4 Hz. When resonated at 5 KHz, one turn shifts the frequency by about 6.8 Hz. It appears that the frequency change per turn added or removed is directly proportional to the resonant frequency. An average value of 1.35 Hz per turn per KHz was noted. In other words, for a 2 KHz filter, you could expect a resonant frequency shift of about 2.7 Hz for each turn of wire added or removed, etc.

Another method of pruning the filter would be to experimentally try several capacitors of the same nominal value until one was found which came to the desired frequency. By this method a rather large number to select from is needed. If none was found from the selection, you could then use the one which came closest but was slightly on the high-frequency side, and pad the filter with much smaller value capacitors on a trial and error basis until the exact resonant frequency was reached.

USING A REFERENCE FREQUENCY FILTER

If a highly accurate frequency source is not available, a precision frequency L-C filter (one that has been very accurately resonated at the desired frequency) may be used as a reference for obtaining the wanted frequency. An uncalibrated audio oscillator or a unit of questionable calibration can easily be set to within a few cycles of the precision filter frequency. Or your receiver audio output may be used instead of an audio oscillator, by energizing the BFO and beating against a 100 KHz marker or other stable signal.

Use the circuit of Figure 6 and tune the audio source through the frequency range of the filter. A maximum meter reading will occur at the resonant frequency of the filter. If very high accuracy is desired, depending on the tuning rate and tuning linearity of the audio source, you might offset the audio frequency above and below the resonant frequency for equal but slightly reduced meter readings, and then set the audio tun-

ing control midway between these two points Using great care by this method, accuracy of 1 or 2 Hz can usually be attained, assuming of course that the reference filter is precise.

CAUTION: If the audio source has high harmonic content, false peaks will occur when the output frequency is a subharmonic of the filter frequency. If the approximate frequency of the source is not known, these peaks may be avoided by starting from a frequency much higher than that of the filter, and tuning down until the first meter peak occurs.

Once the frequency has been set, the audio signal may be transferred to other circuitry as desired. Depending on its stability, the source frequency may require periodic checking. If the frequency of another filter is being compared with that of the precision frequency filter, two such circuits can generally be driven in parallel from the audio source, eliminating the need for transferring the output.

RECEIVER TUNING DISPLAY

The high Q of these filters makes them useful for a receiver tuning indicator for HF RTTY, when used in conjunction with an oscilloscope. A pair of filters is required, one for the mark frequency of your demodulator, and one for the space frequency. See figure 7. This circuit gives the W6AEE or plus pattern display. Some amateurs prefer to reverse the oscilloscope inputs from those shown. The potentiometer is used to balance the displayed audio. If desired, the fixed resistors shown may be eliminated and a 1 megohm or so pot used. Unloaded, the display will be almost a true plus pattern, with vertical and horizontal lines as the signal frequency shifts. Most amateurs using this display, however, prefer to load the circuits so that the vertical and horizontal displays are narrow elipses with a width about 1/8 the size of the length, instead of straight lines. This can be done by using a lower value pot, 100K or 250K ohms, or adding resistors in series with the toroids as shown. A little experimentation with the resistance values should give you this broadened display. In use, if the receiver is not correctly tuned, the elipses become distorted in a manner that is characteristic of the amount and direction of mistuning. After a little experience is gained with this broadened display, you can tell at a glance in which direction the receiver need be tuned and approximately how far, whether the sending station is transmitting a steady mark, from the keyboard, or from a tape. You can also tell at a glance whether his shift is too narrow or too wide. The display can be used for setting your own RTTY Shift.

Succeeding articles of this series will contain additional information about the use of the 88 millihenry toroid in L-C filters.

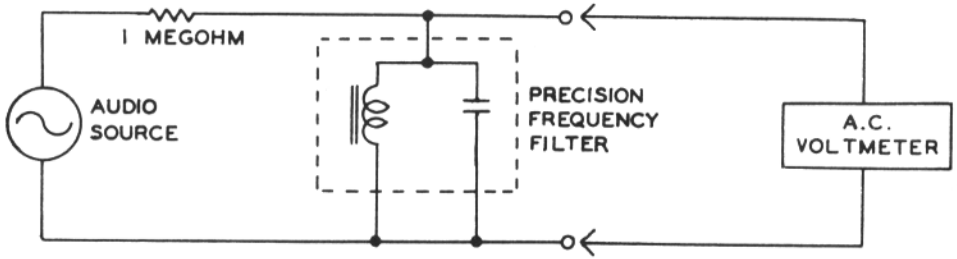


Figure 6. Using Filter for Frequency Reference.

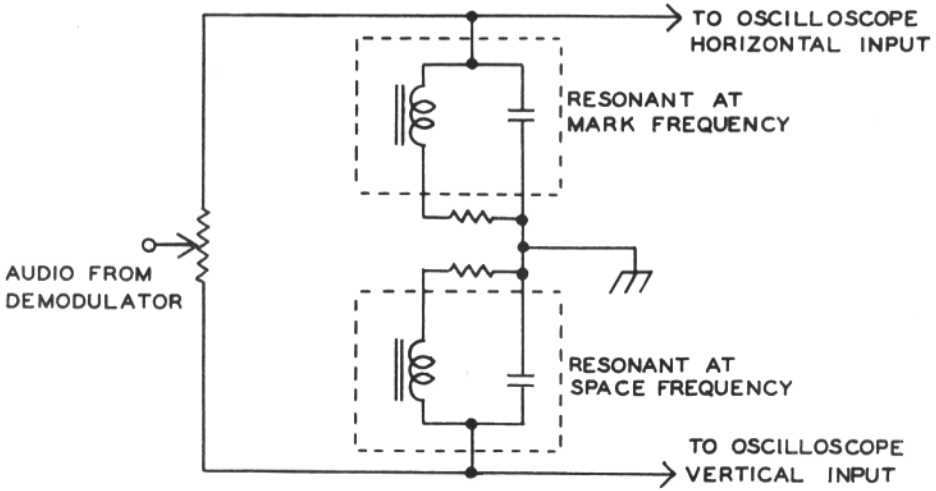


Figure 7. Receiver RTTY tuning indicator circuit.

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CONVERTING The DX-60 A

BERNARD A. NEUMAN, W7AHW/7
8902 Battery Rd.
Alexandria, Va. 22308

At this station we have found tnat the Heath DX-60A, when supplemented with a f.s.k. crystal oscillator (RTTY Journal Dec. 67), turns out to be an excellent arrangement as a primary or secondary transmitter for RTTY on autostart or other use. The DX-60A is in wide use by novices as a CW transmitter, and good used ones can be readily obtained. It is relatively simple and inexpensive, provides a clean and stable RTTY signal when used with a well-designed oscillator, has adequate punch for most RTTY purposes when used "barefoot", and can easily drive an amplifier if desired.

The f.s.k. crystal oscillator is used in lieu of a VFO, and is fed into the transmitter VFO input jack. The accessory socket at the rear chassis apron will provide the required filament, B plus and bias cutoff voltages for the crystal oscillator. However, it is recommended that the 300 VDC which is available for VFO operation, be converted to 150V regulated for the oscillator, and this can be easily accomplished as follows:

1) Remove the shaft going to rotary switch BK (crystal switch).
2) Install a seven-pin miniature tube socket on the chassis, centered 4 inches from the rear edge of the chassis, and 6-3/8 inches from the left edge.
3) Mount a two-lug terminal strip to one of the newly installed socket attaching bolts, locating it between the socket and the driver shield.
4) Install a 5K 20-watt resistor on the two-lug terminal strip, allowing clearance for replacement of the BK rotary switch shaft.
5) Remove the present wire connection from lug 13 of the BK rotary switch to pin 4 of the accessory socket.
6) Connect lug 13 of the rotary switch to one end of the 5K resistor.
7) Connect the other end of the resistor to pin 1 of the newly installed socket.
8) Connect pin 5 of this VR tube socket to pin 4 of the transmitter accessory socket.
9) Ground pin 2 of the VR tube socket. (The ground lug of terminal strip L is handy for this purpose.)
10) Replace the rotary switch shaft previously removed.
11) Install a OA2 tube in the socket.

You will now have 150 VDC regulated at pin 4 of the accessory socket for operation of the f.s.k. crystal oscillator, instead of the normal 300 volts B plus. This will only be available with the transmitter crystal selector switch in the "VFO" position.

It is suggested that the two audio tubes (V4 and V5) be removed when using the DX-60A for such RTTY operation, to aid in cooler operation and conservation of components.

***

Hint

With the increased use of PC boards, many which require drilling, I have found that by clamping the board to a heavy piece of wood, using clamps on each corner, drilling is much easier and the board is protected against possible damage.

Bob, W8UAI

* *

"SAROC" Fourth Annual fun convention scheduled January 8-12, 1969, in Hotel Sahara's new space convention center, Las Vegas, Nevada. Advanced registration closes January 1, 1969. Ladies program in Don the Beachcomber. Technical seminars, FM, MARS, RTTY, QCWA, WCARS-7255. Registration $12.00 per person entitles "SAROC" participant to special room rate $10.00 plus room tax per night single or double, occupancy, admittance to cocktail parties, technical seminars, exhibit area, Hotel Sahara's late show, Sunday breakfast equal to any banquet dinner, ask any "SAROC" veteran. Brochure planned November mailing for details QSP QSL card with ZIP Southern Nevada ARC, Box 73, Boulder City, Nevada 89005

VHF RTTY NEWS

RON GUENTZLER, W8BBB Editor
Route 1, Box 30
Ada, Ohio 45810

We have a few items of interest regarding operating activity.

Dave Woolstrum, K3ASI, Route 3 - Box 63, Centerville, PA 16404 sends the following information: "K3YAK, Meadville, PA and myself, K3ASI, Centerville, PA., are on two meters with 170 or 850 AFSK on the freqs. of 146.70 MC. and 146.820 MC. We are trying to get more fellows interested in RTTY on two and get a good net going. So far by the end of this summer there should be four of us on. I do hear other stations are coming out of Michigan very strong on some nights even to start up my auto start here. I have tried calling them back but no luck yet. I have just finished putting up a new 8 over 8 skeleton slot here and hope that it will help hi. The elevation here is 1475 feet above sea level and I have a 50 foot tower. We are on in the evenings on weekends and I am on after midnight week days on phone but always listen up the band for RTTY".

We have determined that Dave has heard the MI stations but they have not heard him because he is running AM and they are running FM. This problem occurs frequently. An AM receiver will be able to a fair job with an AFSK FM signal and the operator may not even realize that he is receiving an FM signal. Going the other way, however, the FM receiver will usually completely reject the AM signal.

The following letter, although lengthy, is printed here because it contains some very worthwhile information: ". . .Ilive in the San Diego area of southern California which is easily within working distance of most of the L.A. area, where VHF is growing at an amazing rate. Some of the things that we have found concerning FM operation will undoubtedly be of interest to your readers in less populated areas, and I would like to pass them on so that as more stations become active, there will be (hopefully) less of a compatibility problem with operating modes.

"First, let me say that there is more than enough activity in this end of the country to keep a dozen FM channels busy. By far the busiest channel is 146.94, the national calling and working frequency. Operation on this channel is virtually all voice, and RTTY is frowned upon here because the channel is so busy. The original RTTY channel here was 146.70, and it still is active. However, the emphasis has been changed to 146.82, due to the operation of an automatic repeater by a certain individual who insisted on repeating 146.7 to 146.82. There is now considerable activity on .82, most of it autostart, and some of it selectively coded. Of course, there is some AM activity, but I am not familiar with it since my interest is strictly in FM.

"The tremendous amount of activity naturally causes problems and frequently leads to accusations of jamming. Whatever the case may be, one of the solutions is more efficient use of spectrum space. Problems will soon be felt on the 450 band also, unless we do something to more efficiently utilize what we have. One of the easiest and best ways of accomplishing this is to use narrow band FM - that is 5 kc deviation, rather than 15 kc. Quite a few of the more technically minded have tried narrow band systems on 50, 144, and 450 mc and have found that narrow band gives better results. How much better? The benefits are plural. First, receiver sensitivities improve. This is a result of reducing the amount of noise passed by the portion of the receiver ahead of the detector. Second, capture ratio improves... Third, signals that give the same amount of quieting in the wide- and narrow-band systems are more readable on the narrow band system. That is, if you have a 10 db quieting signal, it will not be very intelligible on a wide band system, but a narrow band system will give markedly better readability. Fourth, the reduced deviation will make possible twice the number of channels in the same amount of spectrum space. One station claims that he gets a 3 db system improvement by going to 5 kc deviation.

"Now, the disadvantages of narrow band systems. Greater stability is required at both ends of the circuit to avoid distorting the audio waveform. This is not difficult to come by - the commercial stations have been doing it for years. Some will claim the noise rejection is greatly impaired in the narrow band system. This is not true - an improperly aligned receiver will suffer more from AM noise on narrow band, but proper alignment will make a receiver virtually immune to AM noise, such as ignition interference. Now, the greatest problem of all that confronts narrow band operators is the wide band station. The wide band operator has no problem receiving the narrow station, except possibly when he is very weak. But the narrow band operator gets terrific amounts of harmonic distortion from his receiver when the wide band station transmits. In some cases, the squelch on the narrow band receiver may close on modulation peaks due to so much of the energy of the wide band station being outside of his passband. This problem is easily solved by asking the other operator to reduce his audio level, but it then becomes difficult to maintain a reasonably constant audio level.

"Altogether, narrow band has enough superiority, even if only from a system gain viewpoint, that the conversion is worth while. To this end, I would like to recommend that new activity begin on 5 kc deviation, especially since some of this equipment is becoming available to amateurs. Incidentally, the narros bandwidth is easier to slope detect on an AM receiver.

"Almost all Motorola equipment can be easily narrow banded. Most of the GE equipment can be narrow banded only with considerable effort, at least the equipment available to amateurs. . .

"I should probably add that I have tried wide and narrow systems on 50 and 144 mc, and I am staying with the narrow. It is akin to the difference between AM and SSB on lower frequencies. . ." 73 de WB6APU, Robert Hale, 4348, 50th Street, San Diego, CA 92115.

We will make the following comments: 1) Wide-band vs. narrow-band is rapidly becoming a "hot issue". See, for example: FM, 1968 SEP. p. 43. 2) So long as the incoming signal is above "the threshold of full improvement", the wider the system bandwidth, the quieter the signal from the audio output. However, for weak signals, the narrower the bandwidth, the quieter the signal. Also, for weak signal work, SSB or AM is much better than FM.

So that's it for this month. Next month we plan to continue the "beginner's series" by discussing receiving RTTY signals.

--73 ES CUL RG.

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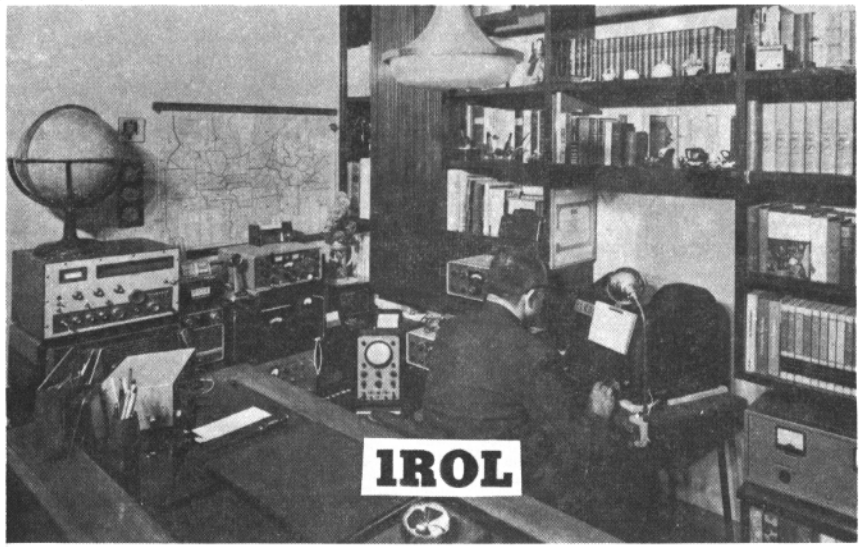

RTTY-DX

JOHN POSSEHL - W3KV
Box 73 Blue Bell, Pa., 19422

Hello there. . . . .

After most violent storms there follows a period of calm and tranquility. As this is being written, a day or so after the contest, there is hardly a signal to be heard after the week-end of fury thatoccurred between October 5 and 7. When the record is written it will probably go down in the books as the biggest contest yet, if not from a new country standpoint, certainly from the weight of numbers alone.

I suppose that after the contest a lot of the boys turned off the switch and threw away the key until next time. However, some of the real active rtty'ers were right back the next day to compare notes. I1KG, VK3KF, W5QCH, and FG7XT were all contacted and from their comments we can get a fair idea of conditions in various parts of the world during the contest.

Giovanni, IIKG, finished with a fantastic 192 QSO's and about 70 band/countries but laments the fact he did not hear any Asians. He had especially set up a machine on 50 band hoping that EP2HL would show but to no avail. Giovanni said that conditions were excellent on 40 and 80 meters and he worked about twenty countries on those bands alone. A big disappointment for him was when YU6ZAA showed up on Twenty at the end of the contest and Giovanni, being 200 miles away and inside the skip, could not work him.

That fellow who watches all contests from the side lines, Murphy, caught up with Jean, FG7XT, and as a result he was confined to Twenty meters for most of the contest. It seems that the traps in Jeans beam went bad causing a high SWR which in turn burned up the tubes in the linear. In spite of that he managed to work about 25 different countries in all continents but Asia although he did mention hearing EP2HL.

From down under, Eric, VK3KF, reports that conditions were generally good and that he operated on all five bands. He was sorry to miss both Africa and Asia this time which will drastically affect his final score. Even so, his rough estimate is in the vicinity of 448,000 which is certainly a terrific score. When you realize that every time Eric makes a contact it means about thirty-five points or more in the bag on a zone basis alone, you can readily see that it does pay to be on the outer fringes of DX land. Eric's additional comments were that although the bands were open longer it was more difficult to work into Europe via the short path as the path from Europe to the USA was open at the same time. This writer did observe Bob, ON4CK, working VK's, ZL's, and W's in rapid succession at one point in the contest.

From down in Texas, USA, Charlie, W5QCH says that the QRM was bigger and better than ever but that it's all part of the game. Charlie managed two new ones with LA4KF and LX2FB. He missed Asia so closely on Ten that it hurt. He had just tuned in KA2DO when they went QRT for chow and he never found them again after that. Charlie also says that although conditions did not seem as good as last year they were much better on Sunday than on the previous day.

In general it looks like all continents were represented in the contest with perhaps solo entries from Asia and Africa. As reported last month by Bud, W2LFL, as a possibility turned out to be true, KA2DO did show up on Ten meters and I guess quite a few of the boys were happy about that. Orbra, EL2N, was on as usual representing Africa but at this writing we are not aware of any others. Don, DL5PQ, sent us some information too late to get into print last month that CN8GE would be active for the contest but as we've had no word on him we presume that he did not make it. Incidentally, if you work this fellow on other modeshe will make a sked for RTTY. The RTTY gear is located some distance from his usual Qth so he rarely

gets to use it. I've been informed that Venkat was called away on another mission so could not make it either. We sure missed his big signal from Asia. As for stations from others areas. VP8JX was on Fifteen and Twenty with very strong signals and sending at 50 band. He counts as Antartica for a country and South America for a continent. A note from Maurizio, I1BPD, that was too late for the last issue said that he would attempt to be on from YU for the contest. We have had no report of his activity so we presume that he did not make it. YU6ZAA filled in quite nicely at the last moment, as indicated above. KL7FLR seemed to be doing a terrific job in giving out numbers from Zone One.

Now how about narrow shift? A lot of fellows have asked why there wasn't more of it and frankly I don't have the answer. It seems to me that more DX operators wereusing it than stateside. Fellows like VE5DR and I1AHN seemed to stay with it all through the contest and many others used it part of the time. From any way you look at it it is far superior to the wide stuff yet everybody seems to wait for the other guy. I suppose that if international regulations didn't outlaw spark we would be still hearing it and we still hear AM on the HF bands after all these years of pointing out the superiority of SSB in crowded band conditions. We all know the narrow is far better but I guess most of us don't take the step for fear of losing a QSO. Maybe if we all decided to go narrow the fellows sticking to wide would be looking for the QSO. You should see how fast everyone gets on narrow all of a sudden when KM6BI calls CQ.

This year we did not enter the contest with our usual vim, vigor, and vitality,(???) It was our pleasure to have Arthur, ON4BX, as a guest over the contest week-end and as you know Arthur is quite a contest operator and DXer. He is in this country on a six week visit looking into the technical aspects of color TV as applied to the educational field. Since it is his first visit to this country and as he will be living out of a suitcase in hotels we figured that we would take the opportunity to show him a bit of this part of the country and get in a bit of contest operating as well. Most of the contacts made from herewas with Arthur at the keyboard. His schedule calls for him to visit the Detroit area, Denver, San Francisco, Los Angeles, before returning to the East again and home. Some of you more active RTTY'ers across the country may pick up the phone and hear a precise English voice with a slight French accent on the other end. That will be Arthur. As of this writing he is visiting Ed, K3GIF, in the Washington area.

Early in September there was a little dxpedition by I1CN to Sicily using the call IT1CN/P. The boys hauled a gas driven generator and all the gear to the top of a mountain to give the gang a new prefix on RTTY.

We have received some preliminary information from U1i, DJ9XB, RTTY Manager for the DARC. U1i says that the DARC will sponsor a RTTY contest on April 26/27 1969. Rules are to be similar to the popular WAE DX contest on CW and SSB. We will supply more information as soon as we get the final rules from U1i.

This item may be of interest to some of you readers. PA0AA in their weekly bulletin reports that RTTY bulletins are transmitted from Switzerland every Sunday at 1000z on 7040 kc.

A new station in Peru, OA4RR, was heard in QSO with I1KFL. Also, Ray, OA4HR got all set up on narrow shift just before the contest and at the same time a change of government took place. We hope it did not curtail their operating activities during the contest.

Jose, PY2CQ, whom you heard a lot of in the contest says that a couple of new stations are due on soon from down that way. PY2NBF, and PY2PH, so watch for them.

We have word via Dusty that VE3EUU will be operating from St. Martin (PJ2) and St. Martin (FS7) toward the end of October. This may be a repeat of Jeans tour of the area a few years ago and will be a good opportunity to get the rare FS7. Jose, PJ2MI, has kept St. Maartin very available particularly during all the contests.

This month the W A C honors go to --
Nr. 112 Jim Don Carlos DL5PQ
Jim has been on a tour of duty for a few years in Germany and currently uses the Heath SB-301, SB-401 combination into a dipole. Machinery is complete in the Model 14-15 category and the TU is the military CV-89A. His stateside call is W0ITU. Congrats on the W A C Jim.

In closing, please note that the next issue (December) will list all holders of RTTY Awards. This includes WAC, WAS, QCA, and the current standing of the RTTY-DX listing. This is getting to be a real

Continued on Page 13

HITS & MISSES

From The Editor and his Mail

Last month we brought out our crying towel lamenting the backlog of articles. Once again our loyal subscribers came through with some articles and promises but the months roll around fast and we can still use a lot more. And our backlog of pictures is down, just remember we would like YOU in the picture too.

***

We are not looking a gift horse in the face but if it is possible we would prefer copy for articles submitted with a type writer rather than RTTY type. With the copy all in capital letters it is necessary to re-type it for the printers. At the speed we type this can be quite a job at times. However if this is the only way you can submit articles send them on as we certainly are not refusing any articles.

***

One Hamvention we would like to attend is the SAROC held in Las Vegas in January. Not only because they have some active RTTY fans but the outside "extra curricular activities" promise an exciting vacation. Unfortunately the time of the year makes it impossible for us to make it this year anyway. From the reports of those that have attended we will have to miss a good time. If Howard Hughes hasn't bought the Hamvention out maybe next year we can make it.

***

We keep our log in GMT time. At the beginning of the contest we called a couple of stations and they both said it was an hour before the start. After much counting back on our fingers we finally decided maybe we were wrong. Seems that we forgot the daylight saving hour gained months ago. Anyway we are correct now after being an hour fast in our log for over five months. Nothing like being accurate.

***

A new subscriber, W7FSK, and on 73 St. believe it or not.

***

In the last contest a large number of stations appeared to be equipped for narrow shift-but were afraid to use it. There was no question that in the crowded bands it was much better but apparently many were afraid of missing a contact by using it. I1AHN, working narrow shift exclusively seemed to be busy with many shifting to narrow as they copied him, only to shift back again when calling a CQ. There was far more than in other contest however and the foreign stations were using it as much or more than the stateside boys.

***

The Auto start net on 3637.5 narrow shift, is active again and encourages anyone to call in. This is the spot to get any of your technical problems answered as someone among the regulars has the answer to most any question. Remember most of the stations are using selective call up and the station call sent several times will usually turn the printer on. A series of NNNN will shut the printer off.

***

The binders for the RTTY Journal have been promised for the end of November. Same as last year and the price is again $2.50 PP.

Check Your Renewal Date

Check your address stencil for expiration date of your subscription. The month and last numeral are the month and year of your expiration.

On your address stencil the month and year of the expiration of your present subscription are coded by an abbreviated month and figure. The figure being the last digit of the year. Dec. 8 - means the last issue on your subscription is December 1968.

From the response this past month, we know we are going to be swamped with renewals due the end of the year. You can save us a lot of time if you will give us the exact name and address as it appears on your Journal stencil.

* *

.R.I. MEETING in ITALY

1 - I1 SAB
2 - an SWL
3 - I1 MD
4 - I1 CGE
5 - Mr. Paoletti
6 - I1 DPR
7 - Mrs. I1 CLC
8 - Mrs. I1 CEG
9 - I1 CLC
10 - I1 BBE - The President of A.R.I.
11 - I1 FTS
12 - I1 ZJU
13 - I1 BYH
14 - I1 AFF
15 - I1 CTE
16 - I1 ORS
17 - I1 KPK
18 - I1 CEG
19 - I1 KFB
20 - I1 EVJ
21 - I1 ROL
22 - I1 ZWY
23 - I1 CAQ
24 - I1 NAO
25 - I1 AHN
26 - I1 KG

* * *

DX NEWS

Continued from Page 11

hot race and fast approaching the century mark. Please make a special effort to get me your countries worked/confirmed for this one. To be on the listing I must have the information by November 1st at the latest. Many thanks.

As we go to press Herb DL1VR has shown at Turkey and is on RTTY on fifteen and twenty meters. He expects to be there a week so we hope you all worked him. Using the Call TA1AH. 73 de John

TT/L-2 REPRINT

We have a new supply of the ever popular TTL-2 article from the RTTY Journal of September 1967. The new reprint also includes a suggested panel - chassis layout and several photographs of parts layouts. The cost 25¢.

* *

BACK ISSUES —

Only back issues available are July through December 1966, December 1967 and February to date 1968. Copies are 30¢ each.

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"Dusty" Dunn — W8CQ
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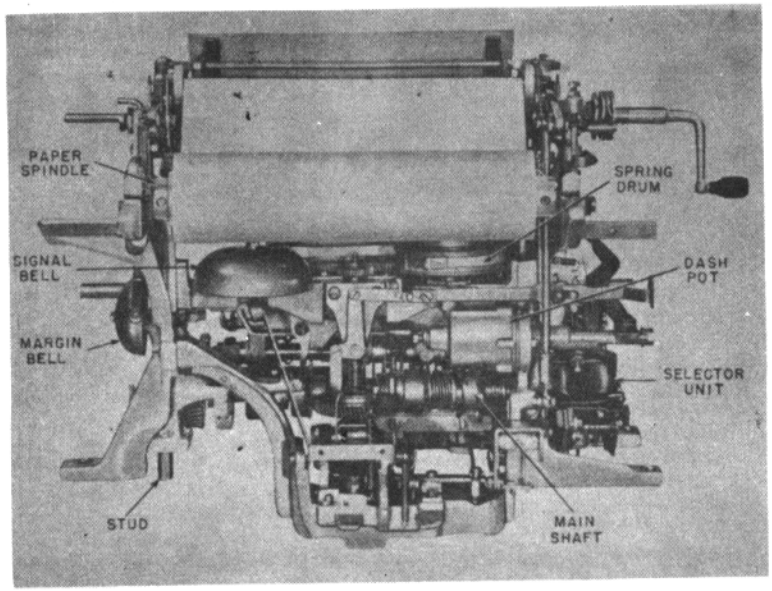
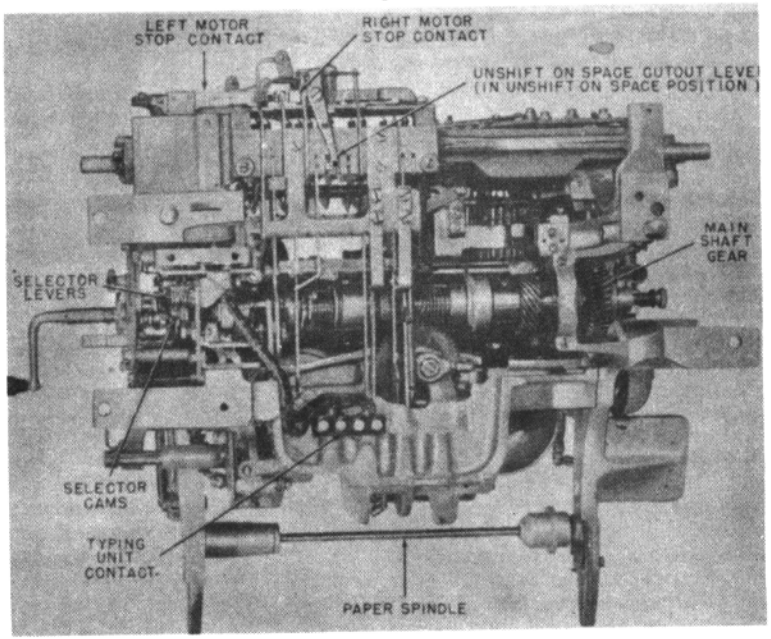
These pictures are of a Model 15 Teletype machine. Many articles mention certain parts and it is hoped that the illustrations may help you find or identify them. See October 1968 Journal for a wiring diagram of the model 15.



Back of typing unit.



Bottom of typing unit.

CLASSIFIED ADS

Rates - $1.00 30 words - Additional words 2¢ ea. Closing date 1st of month.

FOR SALE: AFSAV-35 (DEN-35) RTTY demod, built for Army Security Agency, with all data. Copy single or twinplex signals, with tuning scope. One of the most sophisticated RTTY converters ever built, in excellent condition, $39 shipping. Also AN/FCC-3 AFSK oscillator units $10.00, Tektronix 511 scope, 5 cps-10 mc $190, 513D, DC- 30 mc $335. List of other RTTY, Test, FAX gear free. G. White, 5716 N. King's Highway, Alexandria, Va. 22303 703-765-5478

TYPEWRITER RIBBON REINKER, Hand operated model now only $3.00. K575 or K764 Ink available at all National Cash Register Co. stores at 75¢ per tube. Walter Nettles W7ARS-8355 Tanque Verde Rd. Tucson, Ariz. 85715.

TOROIDS: 44 & 88 mhy. center-tapped, unused 5/$1/50 POSTPAID. 11/16" oiled (fresh) reperf tape $3/box. Page printer paper, standard roll size. $5.50/case. Simpson 260 VOM, excellent condition $25. Johnson 6N2 transmitter $75. Matching, 6N2 VFO $25. Model 28LP page printer with communications type and full stunt box $125. Kleinschmidt TT/117FG standard table model page printer, good operating $100. Hallicrafters HT-37 SSB $175. AR-22 "clik -box" rotator $20. WANTED: Drake 2B&2BQ and Collins 70E15 PTO for 51J3 receiver. Stamp for list. Van W2DLT, 302R Passaic Avenue. Stirling, N.J. 07980

RTTY GEAR FOR SALE. List issued monthly. 88 or 44 mhy toroids-5 for $1.50 postpaid. Elliott Buchanan and Associates, Inc. 1067 Mandan Blvd. Oakland. Cal. 94610.

MODEL 19 FOR SALE; Complete and well cared for. Also selling an MXD unit (7.42 code) and homebrew converter. Prefer package deal. Tanis, 1360 Kensington Dr. Ann Arbor, Mich.

KEYBOARD, for Model 15 teletypewriter communication complete with all springs, key caps and fiber gear, excellent $6.00 ea. Set of Key Caps (communication) used excellent, $3.50. Keyboard for model teletypewriter, call back with (here is) attachments to set up identification (who are you). 19 functions or characters, excellent. $15.00 ea. Typing reperf, with Synchronous motor and end of line indicator, excellent $30. ea. We buy and sell teletype equipment or parts. Atlantic Sales, 700 7th St. Brooklyn, N.Y. 11215

FOR SALE OR TRADE: 208-B Dumont Oscilloscope, $75.00; Cat. 4361 L&N Laboratory Shunt, $125.00; Model 273 Weston meter w/shunt/leads 200 Ampere, $25.00; Cat.1554-A1 L&N Precision Capacitance and Conductance Bridge; w/Cat 9842 Oscillator and Cat. 9847 Amplifier, $500.00. All 10 years old but unused (new condition). R.W. Gervenack, P.O. Box 171. Bothell, Washington 98011.

SELL:- CE100-V in excellent condition $325. also CV-89B in excellent condition $175. NEED Collins 500 KC filters, 2.1 KC for R-388 or any other bandwidth. George D. Tate, 7 Artillery Road, Taylors. S.C. 29687.

MODEL 14 TD For sale. $30.00 Like new. K.B. Crowell, 710 Powder Mill Lane, Philadelphia, Pa. 19151

ORDER; SIMPLEX Auto-CR & LF kit for model 15 and 19 printers. Completely mechanical, with complete instructions $7.50 PP. No postal money orders please. Robert Zelenka, W8TMO, 14446 Swanee Beach Rd. Fenton, Mich. 48430.

NEWEST RTTY RIBBON INK: Scientifically formulated, intense black. Dries instantly, paper and tape; never on ribbon. Tremendous ribbon life. Two ounces, $1.00. Foreign, $2.00. Guaranteed! Marv. Cook, WA2RDO, 1992 Windsor Street, Westbury, New York 11590.

MODULAR "PIONEER 900" TU KITS -- Now the Pioneer 900 is available in modular kit form. The basic unit includes circuit boards, components, wire, solder, hardware, etc., everything you need except power supplies. This basic unit is completely solid state with 14 semiconductors and one integrated circuit. Unlike most solid state TU's this unit's high voltage output transistor switches 125 volts to the printer magnets giving a full printing range and fewer errors. Other features include, a built-in bandpass filter, 250 hz per channel selectivity, no polar relays, and choice of input impedance. Price $89.95. ***Accessories include: **Tuning indicator better than a scope $18.95. **Metering circuit including special meter $11.95. **24 volt transistor regulated power supply, $14.95. **125 volt, adjustable current, loop supply, $24.95. **Tunable filter set for receiving any shift from 100 to 900 hz in the 2125-2975 hz range $29.95, (1275-2125 hz range $39.95) **Factory tuned mark and space filter set, (2125-2975) or (2800-2975) or (1275-2125) or (1955-2125), $11.95, -- in plug in cans with socket, $14.95. **Drilled chassis, cabinet and blank front panel, $22.95. **Clear anodized, grained aluminum front panel with flat black printing, drilled, $6.95. **Knobs, fuseholder, line cord, switches, hardware, etc. $4.95 -- The complete Pioneer 900 capable of receiving non-standard shifts, instant changing from wide shift to narrow shift and vice-versa, wire--tested, and guaranteed for one year, $195.50. Send check or money order to Pioneer Electronics, 729 Pacific Street, San Luis Obispo, California, 93401 We pay postage.

LARGE TT/L-2 DRAWING- 15x 30. $1.00 postpaid. Keith Pertersen, W8SDZ, 1418 Genesee, Royal Oak, Mich. 48073. Phone 313-585-4431

HEWLETT PACKARD 522B rack mount 120KC digital counter, excellent condition with book. $175. fob. Don Bohart, W7QCN/O. 1610 Shasta Dr. Colorado Springs, Col. 80910

NEED AN ACCURATE AUDIO frequency source for construction projects? With reference frequency L-C filter use merely voltmeter and uncalibrated audio oscillator or receiver/BFO. Especially handy for tuning bandpass filters to midfrequency etc. Octal-mounted precision frequency filter in 800-10K hz range, instructions, $2 or 3/$5. Specify frequencies. Jerry Hall, K1PLP 15 Endleigh Ave., Pinehurst, Mass 01866.