Converting DX 60-

Continued from page 9

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.

*****

Address Correction Requested
RTTY JOURNAL
P O Box 837
Royal Oak, Mich. 48068

FIRST CLASS MAIL

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NOVEMBER .1972
EXCLUSIVELY AMATEUR RADIO TELETYPE
VOLUME 20 No. 9 30 Cents

Winner-- World RTTY Contest-

'Al' IICAQ

CONTENTS -

VOLTA RTTY CONTEST- -
December 2-3

The SSB & RTTY Club of Como (Italy) claims the eighth edition of the Alexander Volta RTTY DX Contest.

The contest will be entirely devoted to increase the interest of all the radio amateurs in RTTY and to remember the Italian discoverer of electricity Alexander Volta.

RULES

1) **TEST PERIOD:** 14.00 GMT December 3, 1972.

2) **BANDS:** The test will be conducted in the 3,5-7-14-21-28 MHz amateur bands.

3) **EXCHANGE POINTS:** A) All two-way contacts with stations in one's own zone will receive two points. B) All two-way contacts with stations outside one's own zone will receive the points stated in the Exchange Points Table.

4) **CONTACTS:** Stations may not be contacted more than once on each band. Additional contacts may be made with the same station if different band is used.

5) **MULTIPLIERS:** A multiplier of one is given for each country contacted. The same country may be claimed as a separate multiplier, if a different band is used.

6) **SCORING:** Total exchange points times number of multipliers.

7) **COUNTRY STATUS:** A.R.R.L. Country-list except KL7, KH6 and VO, to be considered as separate countries.

8) **MESSAGES:** Stations will exchange messages consisting of: A) Check (RST); B) Zone number;

9) **LOGS AND SCORE SHEETS:** Use one log for each band. Free log forms and score sheets are available on request from: SSB & RTTY Club - Box 144-22100 Como (Italy). These printed forms are not obligatory. Log should contain in order: band, date, time GMT, call sign of station contacted, numbers sent and received (RST and zone), countries multipliers, exchange points.

Any log compiled in discordance with Contest rules or in discordance with correspondent's datas or omitting the summary score sheet will not be considered for competitive listings or awards. All entries become the property of SSB & RTTY Club and none can be returned.

10) **SWL:** The contest is valid also for SWL RTTYers. Are valid the same rules of the OM and a separate result table will be made for these entries. The logs must contain: Date, time, GMT, call sign of station heard, RST and number sent by the station heard, exchange point. The same station is valid only once on each band.

11) **DEADLINE:** Logs and score sheets go to: A.V. RTTY CONTEST MANAGER - FANTI Dr. FRANCO - VIA A. DALLOLIO 19 - 40139 BOLOGNA (Italy). They must be received not later January 20th 1973 to qualify.

12) **DISQUALIFICATION:** Failure to comply with the contest rules shall constitute grounds for disqualification. In all cases of question, the decisions of the SSB & RTTY Club Committee are final.

13) **CERTIFICATES:** Certificates will be awarded:
to the two top scorers in each country;
to the two top scorers in each US call district;
to the three top scorers SWL

14) **WORLD RTTY CHAMPIONSHIP:** Points and positions achieved will be valid for inclusion in World Championship 1972.

***

PROPOSAL -
Operating Times In DX Contests-

Submitted by----
PAUL BLANKMAN, KH6AG
98-823 Iliee St.
AIEA, HAWAII, 96701

The first objection to Contest operating times probably originated the same day that the Contest was announced. The proposal that follows is nothing new in concept, but is merely an attempt to interest more people enough to give the situation some thought.

One of the objections that has been stated, re-stated and printed in various

Continued on Page 6

The VE5TO Push-Button CW IDer-

E.C. ODLING, VE5TO
1121 Minto Street
REGINA, SASK. CANADA

This piece of business is comprised of 3 units as shown on the drawing and described briefly as follows:

(1) **Push Button and Lamp Panel**
This can be located anywhere handy to the operating position and constructed to the individual desire.

(2) **Relay Unit**
Three relays are used each equipped with a 6V winding and three pole single throw contacts.

I just happened to have 3 - Potter & Brumfield KRP 14A relays salvaged from something but any type you have in the junk box would do.

1 - Transformer to operate the relays and lamps. In my case, I used a 6 volt.

This unit can be mounted anywhere handy but I put the relays and transformer on the same chassis with the keying unit.

(3) **Keying Unit**
This is comprised of a motor driven aluminum disc with your call sign in morse code notched along the circumference. There are several types of small reduction motors and drives around and anything around 6 RPM will do.

At 6 RPM - (one revolution takes 10 seconds) your ID will run 10 seconds before and after each transmission. At this speed, you can decide how many times and the speed you want your call to go out both of which will determine the diameter of the code disc. A six inch diameter disc gives you lots of room (18") to spread out your call. A small micro-switch is mounted so that the arm runs in the notches making dits and dahs to suit your call.

Another micro-switch, SPDT (or equivalent) is mounted so that it can be operated by a stud on the disc. This stop stud is located so that it will operate the stop contacts at the end of the code sequence.

OPERATION - (Rube Goldberg would love this)

Pushing Button #1 - connects 6 volts to the lamp panel and relays and turns on lamp #1 (green) to indicate the circuit is ready.

Pushing Button #2 - turns on lamp #2 (amber) and operates Relay #2

Relay contacts #1 and #2 - lock the relay on

Relay contacts #3 and #4 - puts ST-6 on standby

Relay contacts #5 and #6 - turn on transmitter

In this operation no ID is sent and can be used for fast break-in etc. To turn things off from this position, push button #1 and relay #2 will return to normal.

Pushing Button #4 - turns on lamp #4 (red) and operates relay #1

Relay contacts #1 and #2 lock the relay on through stop contacts #2 and #3

Relay contacts #3 and #4 turn on relay #2 which functions as before

Relay contacts #5 and #6 complete the 120 V A C circuit to the motor which starts the disc turning and sends out the call from the keying contacts via the AK - 1.

Upon completion of one revolution of the disc, the stop stud momentarily opens stop contacts #2 and #3.

This drops relay #1 out and stops the ID motor but leaves the AK - 1 and transmitter on via relay #2.

The momentum of the motor carries the stop stud past the stop contact arm so that contacts #2 and #3 return to normal.

Pushing Button #3 - turns on lamp 3 (white) and operates relay #3.

Relay contacts #1 and #2 lock the relay on

Relay contacts #5 and #6 turns on relay #1 which functions as before

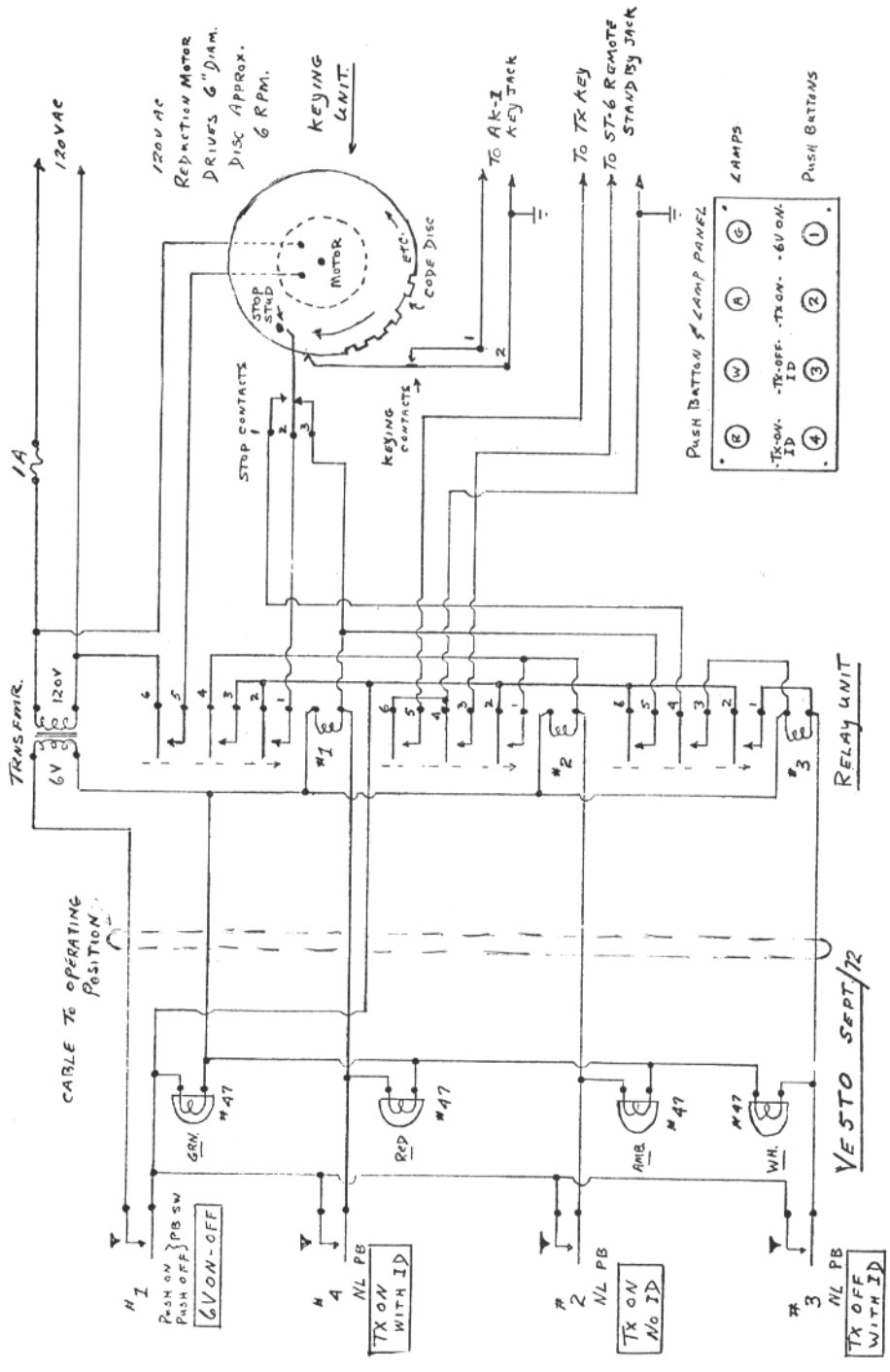
Relay contacts #3 and #4 set up a circuit to short the secondary of the transformer through stop contacts #1 and #2 and relay #1 contacts #1 and #2

Upon completion of one revolution of the disc, the stop stud closes contacts #1 and #2, putting a momentary short circuit on the secondary of the transformer.

When this happens, all relays return to normal, shutting off the ID motor and the transmitter and taking the ST - 6 off standby.

To sum up what happens at the operating position:

(1) Push button #1, the green light comes on and you know the circuit is ready.



(2) Push button #2, the amber light comes on and you know the rig is on the air, ready to type (use this for break in etc. when no LD is wanted)

(3) Push button #4, both the amber and red lamp come on and you know the rig is on the air and your ID is going out. When red lamp goes out and the amber remains on, you know the ID is finished and you're ready to type.

(4) When you've run out of things to say, push button #3, the red and white lamp come on and you know the ID is going out but this time around it will shut off everything leaving only the green lamp on ready for the next go around.

*****

Surplus Equipment- Nomenclature - -

GORDON WHITE
1502 Stonewall Rd.
ALEXANDRIA, VA. 22303

The following list is quite comprehensive on the identification of all surplus equipment that might apply to RTTY. To many of us a string of numbers and letters means little. Maybe this list will help identify some of the items you see advertised. May we again remind that when writing to any author for information to include a SASE.

CV-2C/TX -- FAX demod/keyer, interfaces recorder-scanner with radio receiver & transmitter.

CM-14/URR -- diversity comparator for CV-57, CV-60, CV-71 demodulators. Unit is seldom used with ham operations because of difficulty in setting up diversity reception of brief amateur-type contacts.

CM-22/UR8-A -- virtually identical to CM-14, but used with CV-89 demod.

CV-31/TRA -- RTTY Diversity demod, IF type, 400-510 khz input

CM-42/URR -- similar to CM-14, used with URA-12 set

CV-62/U -- audio-type, variable shift RTTY demod, 117 vac, 100-1100 shift avail.

CV-116/URR -- IF FAK demod used with R-390 receiver

CM-185/UGC -- part of FGC-60 set, compares two FSK signals and selects the best one for receiver output

CV-57/URR -- Intermediate - Frequency type RTTY demod. Rack or table-top mounted, has tuning scope, local controls, Input may be tuned from 400 - 500 khz. Excellent IF T.U., but may be slightly broader in tuning than audio demods. May be used without any modification. 117 vac power.

CV-60/URR -- Audio-type RTTY demod. Externally identical to CV-57, but requires FSK audio input. Has scope, easy to use. This set is electrically identical to the CV-89 demod.

CV-71/URR -- I.F. type demod, identical to the CV-57, but input is 50 khz.

CV-81/FGC-5 -- "code converter" from FGC-5 time-division multiplex system. Of no use to amateur RTTY

CV-89/URA-8 -- audio type RTTY demod, with tuning scope, 117 v AC power

CV-94/FGC-5 -- MUX retransmission set, of little amateur interest

CV-97/UX -- Facsimile receiving demod, for 400 khz IF from receiver. May be convertible to 455 khz. Otherwise requires no modification for ham FAX use.

CV-172/U -- older standard Navy FAX signals. Very simple circuit; easy to use.

CV-182/GRC-26 -- FSK demod, I.F. type, 440-510 kc input. An older, but still usable T.U. requiring no conversion.

CV-205/FGC-1 -- data converter from the old, very heavy, FGC -1 set

CV-223/URR -- Audio frequency-shift demod, by Northern Radio, variable input (shift) may be tuned. Has 2" tuning scope. No Conversion required.

CV-227/URR -- IF type, 200 kc input demod

CV-243/FCC-3 -- tone translator for tone-division MUX. Of little amateur use

CV-244/FGC-3 -- similar to CV-243 but transmitting side of MUX set

CV-278/GR -- IF type demod, 450-500 kc input, DC output, 28 volt DC power required.

CV-291/GXC-3 -- FAX FM to AM converter. May be used to demodulate FAX FSK

CV-292/TRA-7 -- Rtty Diversity control/combiner (send or receive) for amateur purposes

CV-292/GXC-3 -- FAX AM to FM transmitting converter

CV-305/U -- RTTY demod, audio type, dual diversity type

CV-357/A -- FSK demod, 300 kc IF type, for AN/ARC-21 or ARC-65 aircraft transceiver, 28 volts DC, 115 volts, 400 cps AC required. Has FS6 Keying for transmitter as well.

CV-384/U -- FSK demod/keyer, also used, like CV-357, with ARC-21, ARC-65 ARR-36 aircraft sets.

CV-395/U -- RTTY signal level monitor. Used with CV-166/URR.

CV-398/UG -- Rtty to CW transmitting converter. Used punched RTTY tape to send keyed audio Morse signals for transmission.

CV-407/UGC-1 -- time-division MUX converter, solid state. Not usable for any known amateur RTTY signals.

CV-408/UGC-1 -- similar to CV-407

CV-432/UG -- Morse to RTTY receiving converter.

CV-435/FGC-44 -- RF frequency mixer unit (not RTTY)

CV-436/FGC-44-- synchronous TTY receiving component. Not usable for amateur stop-start TTY.

CV-437/FGC-44 -- see CV-436

CV-438/FGC-44 -- see CV-436

CV-439/FGC-44 -- see CV-436

CV-483/URA-17 -- Solid-state RTTY audio demod, similar to the tube type CV-89. Has tuning scops, 117 volt power input.

CV-584/FG -- two-channel MUX demod, possibly usable on 2 meter RTTY

CV-587/GX -- FAX FM to AM converter, used in receiving

CV-588/GX -- FAX AM to FM transmitting keyer

CV-663/A -- RTTY keyer: converts DC loop pulses to tones for transmission via AFSK, or demodulates FSK for operation of the printer. Used in airborne systems.

CV-717/U -- FSK demod, audio type.

CV-763/URR -- audio type FSK demod. Similar to TMC Corp. model PSP-1

CV-786/TRC-75 -- Collins FSK demod, 850 cps shift (1575/2425 cps tones)

CV-865/URC -- AFSK demod, 24 volt DC power required.

CV-972(P)/UGC -- solid-state FSK demod, 117 volts 60 cps power required; 16 MUX channels available by paralleling units

CV-1052/GGA -- serial to parallel converter, Crypto set, part of GGA-11

CV-1053/ARC -- demod, input audio FSK, output DC loop, used with AN/ARC-38 aircraft HF receiver.

Boehme 5-C -- Dual-diversity Audio type RTTY demod. Has tuning scope. An old but still excellent unit, one of the easiest to use in ham diversity receiving. Variable-shift tuning.

Northern Radio

Type 107 model 2 -- FSK converter, audio type, dual channel, fixed-shift, has tuning 'scope. Tube type

Type 174 Model 1 -- dual diversity Audio type FSK demod, has tuning 'scope Plug-in units determine shifts.

Type 174 Model 3 -- similar to 174 Model 1 but solid-state circuit, tuneable shift control.

Type 328 Model 1 -- AFSK demod, solid state,

Type 125 model 1 -- FAX Receiving converter, AFSK to AM.

Type 178 Model 1 -- Twinplex converter, for twinplex RTTY signals, audio to DC loop.

Type 104 Model 3 -- tone-demodulator, audio to DC loop. Not suited for FSK.

Type 152 Model 3 -- tone-demodulator (two complete units per section) not suited for FSK work.

***

Proposal-

Continued from Page 2

publications, numerous times is that "The long hours involved make the contest a test of endurance rather than of ability". There is some merit to this statement even though most contests require a 12-hour "off-air" or "rest" period. Anyone that has participated in a contest the maximum number of hours allowable, certainly has that "dragged out" feeling when the big switch is finally thrown. And it is interesting to note the marked decrease of activity on the RTTY frequencies after completion of a contest.

Another objection, that is best illustrated in the attached Time Table, is that in some countries (notably ZL, VK, JA) the end of a normal contest is during their normal working hours on a Monday morning. Most of us will agree that this is a disadvantage.

The twelve hour rest periods that are required during most contests were probably originated to alleviate the so called endurance test. However, a side product generated by this rule, is that activity on the two lower frequency bands (40 and 80 meters), is decreased. The reason for this is quite obvious in that the majority of contestants will utilize their required "rest periods" during periods of worst propagation on the three upper bands (10, 15, and 20 meters). And it also follows that these identical periods are probably when propagation on the two lower bands is at its best.

There is no Utopian method to run a contest, with respect to operating times, but some improvements might be made. The attached time table shows a possible weekend contest schedule of operating times that alleviates, to some degree, a few objections. The schedule is based on three, eight-hour operating periods, with eight hours off between each operating period. The elapsed time between the start and finish of the contest is 40 hours, but note that only 24 hours of the 40 hour period are used for actual operating. The 24-hour operating period is so arranged that there are no blanks or holes for a given time of day or night. For example, the three operating periods, in GMT are 0000 to 0800, 0800 to 1600 and 1600 to 2400. However they are not in sequence. It must be pointed out that in some locations, the operating period might end during a good DX opening, and that when resumption of operating is started again, propogation conditions may be entirely different.

Many objections and advantages can be listed for this proposal but remember, this is merely a statement to provoke thought.

*****

PROPOSAL--WORLD WIDE DX OPERATING TIMES

CONTEST PERIOD GMT	LONDON +0	EST -5	PST -8	HONOLULU -10	NEW ZEALAND +12	AUSTRALIA +10	JAPAN +9	SOUTH AF. +2	EUROPE +1
0200 SAT	2AM SAT	9 PM FRI	6 PM FRI	4 PM FRI	2 PM SAT	NOON SAT	11AM SAT	4AM SAT	3AM SAT
0200 MON	2AM MON	9 PM SUN	6 PM SUN	4 PM SUN	2 PM MON	NOON MON	11AM MON	4AM MON	3AM MON
(TYPICAL)			TYPICAL CONTEST PERIOD SHOWN ABOVE						
0000 SAT	MIDNIGHT	7 PM FRI	4 PM FRI	2 PM FRI	NOON SAT	10 AM SAT	9 AM SAT	2 AM SAT	1 AM SAT
0800 SAT	8 AM SAT	3 AM SAT	MIDNIGHT	10 PM FRI	8 PM SAT	6 PM SAT	5 PM SAT	10 AM SAT	9 AM SAT
		FIRST OF THREE PERIODS SHOWN ABOVE							
1600 SAT	4 PM SAT	11 AM SAT	8 AM SAT	6 AM SAT	4 AM SUN	2 AM SUN	1 AM SUN	6 PM SAT	3 PM SAT
2000 SUN	MIDNIGHT	7 PM SAT	4 PM SAT	2 PM SAT	NOON SUN	10 AM SUN	9 AM SUN	2 AM SUN	11 PM SAT
		SECOND OF THREE PERIODS SHOWN ABOVE							
0800 SUN	8 AM SUN	3 AM SUN	MIDNIGHT	10 PM SUN	8 PM SUN	6 PM SUN	5 PM SUN	10 AM SUN	9 AM SUN
1600 SUN	4 PM SUN	11 AM SUN	8 AM SUN	6 AM SUN	4 AM MON	2 AM MON	1 AM MON	6 PM SUN	5 PM SUN
		Third of Three Periods Shown Above.					KH6AG.		

[- - - - - ONE WEEK END - - - - - -]

VHF RTTY NEWS

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

The MARA RTTY REPEATER

Recently we received the following letter from Tom Talley, W8HQQ: "I am enclosing a specification and instruction sheet on the repeater, and that will give you some idea of how it works. You will note that in the RTTY mode, the M and S signals turn the repeater transmitter on after proper accessing thru an LS. On AM, MCW, and FAX the repeater is tone controlled with automatic time out.

"The repeater was designed by myself and Joe Hopster, WB8DNO, and is owned by myself. The unit is on an indefinite no-charge loan basis to the club with the club paying only maintenance and electricity costs.

"The Midwest Amateur RTTY Association (MARA) now has 92 club members in Ohio, Indiana, and Kentucky. Most of these members are active with between 40 and 50 members being present on our regular Monday evening Net. (1930 hrs local time on 50.3 MHz with the repeater input on 51.6 MHz.) All club business, elections, etc., are handled over-the-air. The club has no scheduled meeting other than on-the-air. This club is strictly an on-the-air, active radio club."

The following is an excerpt of the 12-page description of the repeater and the operating procedure. (Please keep in mind that although it is a RTTY repeater, it can also be used for MCW, FAX, and voice from either a base station or from a car.)

"Input frequency - 51.6 MHz. Repeater output frequency - 50.3 or 50.35 MHz selected by over the air control signals.

Transmitter input power to the final amplifier - 180 watts.

Modes of operation - AFSK on AM, 60 WPM, nominal Mark frequency of 2125 Hz, nominal Space frequency of 2975 Hz; AM voice by special RTTY tone access; FAX signals by special RTTY tone access; MCW signals by special RTTY tone access; Mobile voice access by special tone access. Note: The repeater will also pass two types of CW shift ID in the RTTY mode: One type is a shift within the Mark bandpass (2025 and 2225 Hz) or within the Space bandpass (2875 and 3075 Hz).

Audio processing - RTTY: 60 dB limiting with complete reprocessing and automatic limiting of modulation. AM: 9 dB compression and reprocessing with automatic limiting of modulation.

Transmitter modulation - AM plate with limiting to absolute limit of 95%. Modulation indicator scope to sample RF and modulation audio, is built in.

Internal control system - Sequential selector (28 LS) is built in for radio control of transmitter gate voltage, transmitter shut-down, repeater output frequency control (50.30 or 50.35 MHz), 2 meter tie in, logging and identification plus other functions. A number of these functions are also controlled on the 'local control panel' as well as via phone lines and 449 MHz link.

Power drain - approx. 600 watts with all functions operating.

Antenna system - Receiving: 2 phased, 1/2 wavelength halos, non-directional, 3 dB gain, located at 180-foot level (1004 feet above sea level). Transmitting: 2 phased, 1/2 wavelength halos, non-directional, 3 dB gain, located at 150-foot level (974 feet above sea level). Antenna systems fed with RG-8/AU.

Logging - Audio tape at 15/16 IPS, RTTY logging controlled by RTTY signals into repeater; on voice, logging is activated by pause in transmissions.

Repeater identification - Built-in integrated cct. I.D. unit, diode matrix type, on RTTY activated by RTTY signals into repeater; on voice, automatic at 2 minute intervals.

Miscellaneous information - RTTY signal entry time (on 51.6 MHz) to activate stunt box control unit in repeater receiving system is 4 seconds, drop-out time is one second. Provisions for voice operation (after RTTY access) and mobile voice operation without RTTY access, automatic transmit shut-down in 2 minutes, automatic safety shut-down is 5 minutes."

Those are just the rough specs! The following will summarize some of the RTTY features.

"When you come on the air (when you transmit on 51.6 MHz with your Mark tone), the repeater hears it and after 4 seconds the autostart in the internal terminal unit in the repeater turns the sequential selector (28 LS) on. Then you type the letters MARA (don't put any spaces between them, don't bother with any line feed, CR, or anything else - just the four letters MARA). This will operate the selector and turn on the transmitter and your Mark signal will now be transmitted on 50.3 MHz. Now your Mark tone will control the transmitter. If you drop off the air (stop transmitting your Mark tone on 51.6 MHz), the repeater transmitter on 50.3 MHz will turn off immediately. . . .We in effect have two gates. One gate is the Mark tone and the second gate is the letters MARA. You have turned on the MARA gate so now your Mark tone, which you are transmitting on the 51.6 frequency becomes the second gate. As long as it is there, the transmitter on the 50.3 output frequency will be in operation. As soon as you remove it, the transmitter on 50.3 MHz will turn off. One last item on the MARA gate - how long will it stay on? It will stay on for a period of 10 minutes from the last RTTY transmission or you may turn it off sooner if you wish. This means that you can turn the gate on, call a CQ and be answered by someone, then talk back and forth on RTTY for any period of time you wish, as long as you do not allow more than 10 minutes to pass without a transmission by either party because each time someone transmits, the MARA gate resets and the time out begins at the end of that transmission. Why such a long time? Well, we felt that this would give you plenty of time in case you had to leave the room or something like that so you would not have to be typing MARA at the beginning of each and every transmission. If, for some reason, you feel that over 10 minutes has elapsed since the last RTTY transmission, you can type the letters MARA at any time. If more than 10 minutes has elapsed, then this will reset the gate. If less than 10 minutes has elapsed, no harm is done at all as the gate is still latched from before.

"When you are finished with your last RTTY transmission, then we prefer that you shut off the MARA gate, rather than letting it shut down itself. This can be done anytime by sending 'N CR N CR' - just those four keys with no spaces between them."

There are many more details to RTTY use as well as the voice, FAX etc. If you are interested in using the repeater or in building a RTTY repeater you should contact Tom and have him send a copy of the specifications and operating procedures. Tom Talley, W8HQQ, 940 North Hill Lane, Cincinnati, He would appreciate a self addressed envelope with 24¢ in stamps on it.

Perhaps by reading the description and just the beginning of the user instructions as given above, it will become obvious that a great deal of thought went into the logic in order to make the repeater easy to use.

That's it for this month. Keep the information coming. 73 ES CUL, RG.

***

CONVERTING The DX-60 A

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

Reprint -Nov. 1968 RTTY Journal

At this station we have found that 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 cut-off 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).

Continued on Page 16

RTTY-DX

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

Hello there . . .

This month one station stands alone for congratulations on WAC and that is...

Nr. 201 Ronnie Gillis WA5QCH You may recall that we recently noted the fact that Ronnie made WAS RTTY so his next goal should be DXCC and we wish him good luck in that effort.

Charlie, W5QCH, (don't get those calls confused) has his new shack completed and is back in business again. Funny thing was that on the new addition to the house the latrine was completed first and he had been operating from there temporarily with the "S" Line balanced precariously on top of the WC and with all that water directly beneath the rig had been getting fabulous reports from all points. Now that things are in order again he has resumed his schedules with VP8ME on South Orkney. These schedules are on Sundays at anywhere from 1700 to 1900z on 21095 khz. Jay, VP8ME transmits at 50 baud and with a shift of 450 hz in reverse but receives the standard 170 hz right side up with no trouble. Jay will welcome anyone for a QSO after the traffic is completed but it will be a lot easier if you can get word to Charlie sometime before the sked so that he can tell Jay that you are waiting on the frequency. His QSL manager is WA5FWC as previously listed but there will be a delay in acknowledging cards until about the end of the year, so, patience please.

While on the subject of QSL's, we recently received some interesting correspondence from Carl, K6WZ, (formerly WB6RXM). It seems that after many attempts to get cards from the USSR he wrote a note to and received a letter from the General Secretary of the Central Radio Club, Box 88, Moscow. It was all in Russian of course but Carl had it translated and it said in effect that the matter would be given utmost attention and priority and that he would receive his QSL's in a short time. Now I am waiting to hear from Carl as to whether the cards arrived.

Ariel, 4X4MR, has not been too active lately but those of you needing a contact with Israel can find 4X4HK and 4X4UF fairly active on 14 mhz. 4X4HK is a Club station of the Israeli Army Signal Corp. 4X4UF had been having shift problems but can be printed ok with a little effort.

Wil, CR6IK has his ST-5 TU going now and had been putting out an excellent signal considering the fact he was using a 40 meter dipole on 20 meters. The printer is a Model 15 and the shift is 850 hz at present. Wil has won many international contests on CW and SSB and is anxious to try his luck in the RTTY contests. He will be stiff competition once he gets things set up for contest operation.

There has been little if any RTTY coming from Tahiti since Henri went to Argentina. Henri, LU2ESB, maintains skeds with Phil, FO8BO every Friday at 0200z on 14210 khz SSB so it may be possible to get Phil to come down the band after the sked and try the keyboard, as we understand that there is RTTY equipment available there.

When Bob, W5VJP, isn't on RTTY he is up on SSB trying to get some of those rare DX stations to give RTTY a try. So far, through Bob's efforts, we have word of intense interest from the following areas. Swan Island, Ghana, and Indonesia. A few words on each may be in order.

As previously mentioned here Swan Island, KS4BH, has a machine and some technical information has been sent to them hoping to get them started. We will keep you posted as soon as things develop there.

From Ghana Emile, 9G1WW has a Model 28 KSR and has a ST-5, AK-1 (afsk), and an electronic speed control unit all on the way and in a recent SSB contact he said he was shooting for activity in the CARTG Contest. Whether he made it or not is too early to say at this writing but in any event he will definately be QRV from Ghana and it will be real soon. Emile's xyl is 9G1YA so it should be a real active station. The QSL manager is W5EGH and his direct QTH is ....

Emile Alline
Box 625
Tema, Ghana

There has been no RTTY from Indonesia since the activity of YBØAAO. However, a letter to Bob from there says that the group are extremely interested in getting on RTTY but are lacking all the essentials at the moment. Anything in the way of information, parts, machines, etc. would be appreciated and a letter to the following QTH can give all the necessary information on how to do this. Direct your letter to . . .

Lt. Col. J.B. Ottinger
Defense Liaison Group
Comm. Field Off. Indonesia
APO San Francisco 96356

Jerry, K1PLP, Ass't Technical Editor of QST sent us a letter received at the ARRL from ZE1CE saying that he has a machine (Teletype Mod 15) and is anxious to get it on the air. Lots of information has been sent and we are now awaiting further word from him. For any "local" African hams that may be able to assist him we are listing his QTH as follows . . .

D.H. Evans, ZE1CE
P.O. Box 300
Gatooma, Rhodesia

On any given month, Olle, SMØKV is likely to be at almost any spot on earth. At this writing he is in the Republic of Guinea on business for the Swedish Government. He is causing tremendous pile-ups as 3X1P, but alas, no RTTY available. However, Olle told us that Robbie, 5Z4ERR, in Kenya is just about ready to go just as soon as his TU is together so watch your page for print from this rare DX station.

Hop, W3DJZ, one of the old timers on RTTY called the other day to tell us that West Malaysia may be QRV in the coming weeks. John, 9M2IR, has equipment on hand and is looking for information to get a URA 8A Terminal Unit going. The boys are trying to get John fixed up but if you can offer any assistance get in touch with W3DJZ at . . .

A.B. Hopple
~~RDF~~ 1 Box 331
New Cumberland, Pa. 17070

Just as this is being written we have word that Greenland is now QRV with signals from OX6AL. We hope to have more details on this station next month.

During the latter part of September and early October Jean, FM7AJ, was in the States on a holiday. In those few weeks he met many of the Stateside boys he had made contact with since he has been QRV from Martinique. He was picked up at the airport in New York by W2LFL and had a fb visit with Bud and W2PLQ and also as a broadcast radio and TV engineer he had a opportunity to inspect the facilities at CBS in NY which he enjoyed very much. He then arrived in Philadelphia and spent some time at this QTH and met WA3IKK and K3SWZ. At this writing he was headed toward Detroit and W8CQ and then to HAL to pick up a ST-6 and AK-1, then possibly to Texas and W5QCH and W5EUN, and then if time permitted, up to New England before going back home (for a rest, I presume). Jean will be QRV until the end of the year and then will return to France (F6BEX). He promises that there will be additional activity from Martinique very soon with FM7AA very likely the first new station to get going down there.

Well, the Contest is over and if the conditions held up as they are now at the beginning of October it was a great one. Ten Meters had been open to all parts of the world until well into the night locally. Hope to have some details next month. Until then . . .

73 de John

Last minute news from DK3CU, "Uli" is that UB5SR has been worked. Name is "Iwan" but has limited knowledge of english so keep it simple with standard Q signals and report.

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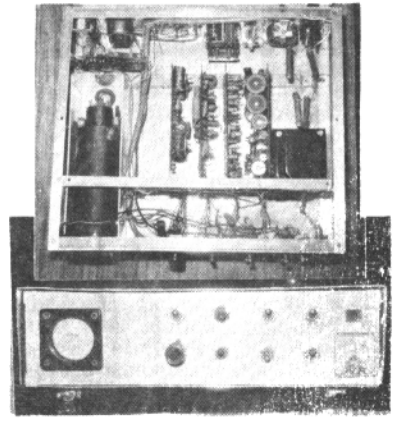
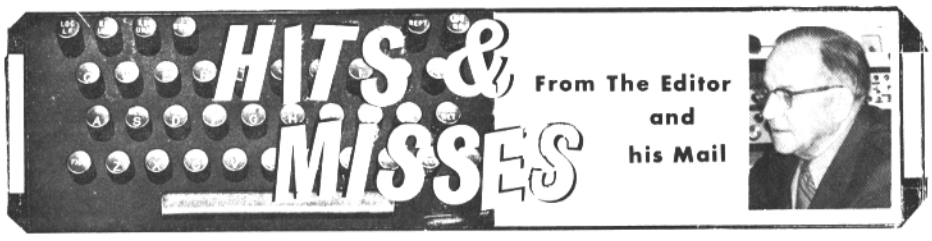


ST-6 TU Built by "Ven" VU2KV



Just a few days ago we changed from our beloved TT/L that has functioned perfectly for 6 years to a more modern ST-6 demodulator built by HAL Communications. At the same time we installed a DOVETRON speed controller for the printer. S'tunny but our very first contact was VP8ME, a rare one from South Orkeny Islands. He was upside down, 67 wpm and 450 shift and it took a bit of frantic tuning to get him to print but we finally made it. Solid copy and with a rather weak signal too. Just to see how much help the 67 wpm speed was we tried copying him at 60 with about half the results. So far we haven't had much time to play with our new toys but it is going to be fun. We can't help but give a plug for the ST-6 from Hals Communication. It is beautifully done and as for us, who shudder at seeing all those itty bitty parts wired on those complicated boards, the additional charge for a completely wired unit seems a bargain.

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Sometimes it doesn't pay to ask. Thinking maybe we were paying too much for mailing binders we took one to the post office to check - only to find that the rate, last July had gone up and instead of 36¢ it was now 64¢. The rate for 3rd class mail had gone from 2¢ an ounce to 4¢. Since we had been mailing these at the old rate for several months and received no complaints we wonder how long it could have gone on. Seems the rate increase was a special one last July and as it applied only to 3rd class mail it received no publicity. Ignorance is bliss.

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If you want to have fun - at a bargain rate we highly recommend the Las Vegas - SAROC ham vention. This year it is January 4-7. Special deals have been set up including air transportation from most of the eastern cities. We attended one several years ago and can guarantee a wonderful time regardless of your interests. For affluent visitors there is always a chance (?) to win enough to get that 28ASR. For others there is plenty of ham activities and practically free entertainment from dark to dawn. Check around to see if there is any group from your area planning to attend. If not go alone or it makes a wonderful trip for the XYL also, there is plenty for her to do without listening to ham jargon. See the classified for all particulars.

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Trailers & RTTY Traffic -

Trailer Rallies, Public Service, and RTTY

The International Airstream Rally is no small affair! This past year it was held at Louisville, Kentucky. 3661 trailers were in attendance. This means that over 15 thousand people, above and beyond the normal population, inhabit a city for about ten days. With a city the size of Louisville, this may present no special problems, but what if the town itself only has a population of 25 or 30 thousand?

Next year, in 1973, it will be in Bozeman, Montana the last week of June and first part of July. When a new city, with half the population of the original town, is added overnight, many interesting things begin to happen. One of these things is a communications problem.

This is where amateur radio can help -- and does.

This past year, at Louisville, the Wally Byam Caravaneers Amateur Radio Club, handled a total of 1606 messages. In 1971, at Salem, Oregon, it was 1121, so you can see there is a need for our services.

How does RTTY fit into the picture? The rally itself lasts only for ten days, or more correctly, a week plus two

weekends. If one is to send out 1600 messages in ten days, the fastest possible method must be used. RTTY to the rescue!

We were very fortunate to obtain the very able assistance of Joe, K4DMU, at Louisville this past year. Joe furnished us with his own 28 KSR, 28 reperf, and 28 TD, and in addition found three model 14 typing reperfs complete with keyboards, so that tapes could be prepared. We trained people to cut tape, and things really went very smoothly. Last year at Salem, we did much of the same thing, getting assistance from WA7ARI, Jim, and Spence, W7TTF, the local postmaster.

In 1973, the "International" will be in Bozeman, Montana. At this time we know of no one in that area who is active on RTTY. Won't you please help us? If you know of anyone who is in on RTTY in the Bozeman area, or anyone who might be willing to help, we certainly would appreciate knowing.

At all of the rallies, we carry our own terminal unit with us (an ST-5 1/2 which is somewhere between an ST-5 and an ST-6) and have our own rigs. We do need assistance in locating some machines. We really need three machines to punch tape (such as the 14's used this year) and one complete ASR set for on-the-air use (such as a Model 19). If you can help, please let me know.

I should add that all of the messages were "good" messages -- no "junk" traffic. Many of the people attending these rallies are older, retired people that have sold their homes. Because of this they often have their mail forwarded to different cities. Much of our traffic was "Send mail in care of General Delivery, Podunck, Illinois." or similar.

This June and July, we hope to have our old special events call that we held in Salem, Oregon again. It is WF7WBC. Look for us on the air and say hello.

Ken Simpson, WA8ETX
President, WBCCI ARC
3700 Mountview Svenue
Alliance, Ohio 44601

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Linears that ground the antenna relay coil in the exciter unit such as the Heath SB 220 and 101/102 exciters can be made more versatile by adding a switch in the exciter to allow the linear to be cut off without turning the filament switch off on the linear as is usual.

Replace the audio volume control in the 101 with the same value pot but with an attached push pull switch. Then wire the switch in series with the control wire from the linear to the grounding contact on the 101 relay. With the switch pulled out(on) the linear will operate normally with vox or manual on-off control. With the switch pushed in, the linear filaments can be on with the blower but the linear will not operate until you pull the switch on the exciter.

Vernon Dillaplain W5E00

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BACK ISSUES

New subscriptions and classified ads are cash in advance as we have no method for billing. New subscriptions will be started with the current issue and one back issue, if requested. Please do not ask us to start any further back than this. Back issues - if available - may be ordered at 30¢ each at time of subscription. The JOURNAL is mailed about the 20th of the month preceding the dated month. May and June are a combined issue and July-August is a combined issue.

The ONLY back issues available are listed below. 30¢ each.

1966- Oct.- Nov.-Dec.- [3]
1967- NONE-
1968-March- [1]
1969- Oct.- Nov.-Dec.- [3]
1970- None.
1971-Jan.-May-June-July-Sept. Oct.-Nov.-Dec.- [8]
1972-Jan.-Feb.-April-May-July-Sept.-October. [7]

[May-June] -[July-August] are combined issues.

RTTY JOURNAL
Box 837
Royal Oak, Mich. 48068
Editor & Publisher - 'Dusty' Dunn, W8CQ

SUBSCRIPTION RATES

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	Air Mail	$3.50
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AirMail South-Central America		$5.50
Air Mail - - -	All Other Countries	$6.00

Classified Ads- Rates-$1.- 30words. ADDITIONAL Words 3¢ ea.

CLOSING DATE FOR ADS- 1st of month.....

NEW HAM MAGAZINE!! Interested in public services, humanitarian actions and international friendship? Sample issue free. Published every three weeks. Worldradio, 2509 Donner Way, Sacramento, Calif. 95818 WB6AUH

MORE RTTY! THAT'S RIGHT. In 1970 there were more feature RTTY articles in HAM RADIO Magazine than any other general amateur magazine. You need RTTY Journal, but you need HAM RADIO also. $6.00 per year; $12.00, 3 years. Ham Radio, Greenville, N.H. 03048

BACK ISSUES OF RTTY JOURNAL - I have a complete file of all issues from Vol. 1 No. 1 to date. Will reproduce any issue for $1.10 pp. Add 25c for air mail delivery. John Isaacs, 3175 Val Verde Ave., Long Beach, CA. 90803.

"RTTY SPEED CONVERTER" A drilled, fiberglass 4" x 6-1/2" printed circuit board now available for the WA6JYJ speed converter in the DEC 71 issue of HAM RADIO. $6.00 postpaid. Complete parts kit including PCB, $40.00, postpaid. P & M Electronics, 519 South Austin, Seattle, WA 98108. (41 words)

11/16" PERFORATOR TAPE, 40 roll case - $7.95. Sprocket feed paper, $3 per box (FOB). "Teletype Equipment, Supplies and Information for the Radio Amateur." FREE LIST. BVE, POB 73-R, Paramus, NJ 07652.

"AFSK GENERATOR" - PCB and all components except input output jacks, power supply and chassis. $6.60. P & M Electronics, Inc. 519 South Austin, Seattle, WA 98108 (23 words)

TYPEWRITER RIBBON RE-INKER; Hand operated model now only $3.50. K575 or K764 ink available at all National Cash Register Stores. 75c per tube. Walter Nettles, W7ARS, 8355 Tanque Verde Rd. Tucson, AR. 85715.

BUYING? SELLING? TRADING? Don't make a move until you've seen our new publication. Free sample copy! Six issues $1. HAM ADS, P.O. BOX 46-653J, L.A., Cal. 90046.

FOR SALE: TELETYPE MODIFICATION KIT 159417, Three speed gear shift (60-75-100) for single shaft Model 28 reperforator (typing or non-typing). This is the type that mounts in the small, separate one foot square box. It can also be used to convert the Navy Model T-192 Reperforator from 65-71-106 WPM to standard speeds: $50.00. I also have single shaft reperforator assembly with the selector assembly and range finder missing. The typing mechanism can be removed and installed on the standard non-typing perforator in the 28ASR to permit printing on the tape as it is punched. $25.00 Briefcase telephone. Free installation in automobile of Southern California buyer. Cost $1700 two years ago. $450. Tektronix 541A with CA Plug-in: $595. Singermetrics Spectrum Analyzer SB-15: $295. Panoramic Radio SB-8B Spectrum Analyzer: $125. Hank Scharfe, W6SKC, 1015 Fremont Avenue, South Pasadena, California 91030. 213-799-5886 or 213-682-3705.

PHONETYPE TERMINAL UNIT - MARK III, ACOUSTIC COUPLER, for use to operate teletypewriter, using a regular telephone. Highly reliable circuitry, thousands in use by deaf people nationwide. Automatic power switch, visual monitor light, self-contained unit ready to drive keyboard, magnet, and motor lines. $134.50 FOB. Send for brochure. R.H. Weitbrecht, W6NRM, APPLIED COMMUNICATIONS CORP., P.O. Box 555, Belmont, Calif. 94002.

WANTED; TELETYPE MACHINES - Model 15 and 32 in large quantities. In good condition for use by deaf people. Will accept donations or pay fair prices. Can be picked up anywhere - Lee Brody, N.Y.-N.J. phone TTY for the Deaf. 201-796-5414 evenings. 15-06 Radburn Rd., Fair Lawn, N J) 07410.

TYPETRONICS NEEDS YOUR unused surplus teletype parts. M 14-15- & 19 as well as M 28 and later. Please write what you have and asking price, cash or trade, to Fred Schmidt, W4NYF, Typetronics, Box 8873, Ft. Lauderdale, FL. 33310.

GOING OUT OF BUSINESS; Loads and loads of teletype and electronic "steals". Bring your truck or station wagon, wheelbarrow or lug it on your back; but come out. Facsimile machines, Deskfax units for sending and receiving. Loaded with tubes, optics, motors, relays, switches, etc. Operable and ONLY $9.00 each cash and carry - COME & GET EM WHILE THEY LAST. C.B. GOODMAN & CO. 5826 South Western Avenue, Chicago, Illinois 60636. Phone: 312-476-8200.

RTTY & RTTY JOURNAL BACK ISSUES. Sept. - Oct. 1954, 1955 except April - May. 1956 and 57 complete. 1958 except Jan. 1959 complete. 1960 except June. RTTY call books 1956 and 1958. Everything $18.00. Roughly 30c each. Frank C. White, W3PYW 2706 Harmon Rd., Silver Springs, MD. 20902

KLEINSCHMIDT MANUALS - for TT-4, TT-100, TT-76, TT-107, etc. Mite KSR teletypewriter supplies, gears, parts, covers. Wanted Teletype manuals. Send SASE for list. Typetronics, Box 8873 Ft. Lauderdale, FL. 33310. W4NYF.

ESSCO COMMUNICATIONS INC. announces availability of a phone-TTY modem.... an acoustical coupler ATC-3 which when connected to a teleprinter and an ordinary telephone enables you to communicate with the printed words with another similar coupler. Used by deaf people nationwide. Compatible with other modems in deaf network. ESSCO ATC-3 is only $129.95 FOB. ESSCO Communications Inc., 150 Marlton Ave., Camden, N.J. 08105. Phone 609-365-6171.

TECHNICAL MANUAL for Model 14 TeeDee, that long searched for complete description, adjustment, lubrication and parts book all in one for only $2.25 Postpaid. BVE Enterprises, "Communications Equipment, Supplies and Information for the Radio Amateur", POB 73, Paramus, NJ 07652. (Send for free list of other goodies.)

WANTED - FOR USE BY DEAF PEOPLE - TELETYPE MACHINES Model 15-19-26-28-32. Must be in reasonable condition, complete with keyboards. Can pick up anywhere. Send information to R.H. Weitbrecht, W6NRM, P.O. Box 555, Belmont, Calif. 94002.

TT-4A/TG KLEINSCHMIDT PORTABLE page printer w/kbd, used - good condition, price $48.00 with 60 and 100 wpm gears. Freight - $20. east of - $10.00 west of Miss. River. AD-DC goverend motor, all standard KSR functions plus motor stop. Units cleaned and tested at speed desired. Parts in stock. Mark/Space Systems, 3563 Conquista, Long Beach, CA. 90808. (213-429-5821.

"SELL MITE UGC-41 with extra speed gears, looks about as good as a new one. Will ship first check for $100.00 FOB, W4AIS, 300 Thornwood Drive, Taylors, S. C. 29687"

"BADLY NEEDED FOR MODEL 26, Communication type wheel and paper chute. Murray Fisher W7NSU, 1011 Hobson St., Walla Walla, Wa 99362"

SAROC EIGHTH NATIONAL CONVENTION THE PRESTIGE convention at the Flamingo Hotel Convention Center, Las Vegas, Nevada 89109, January 4 through 7, 1973. SAROC special room rate $15.00 plus tax, per night, single or double occupancy, only 500 rooms so get your accommodations request in early. Advance Registration $10.00 per person. Registration and eyeball session on Thursday. Seminars, Meetings, Exhibits, open Friday and Saturday. SAROC -SWAN Electronics Social Hour, Friday. Ladies Program, Saturday. SAROC Sixth National FM Conference, Friday and Saturday. SAROC-HY-GAIN/Galaxy Cocktail Party, with Leo WØGFQ, at the Organ, Saturday. SAROC Buffet Hunt Breakfast, with Champagne, Sunday. Advance Registration with Sergio Franchi Flamingo Midnight Show, two drinks, $17.00 per person. Advance Registration with Sergio Franchi Flamingo Dinner Show, no drinks, $21.00 per person. SAROC Jet Roundtrip Vacation Package Plan includes, airfare, Deluxe Flamingo Hotel Room for three nights, SAROC Advance Registration with Flamingo Hotel Dinner Show: via United Airlines departure cities; Baltimore/Washington, $280.00; Boston, $312.00; Chicago, $222.00; Cleveland, $250.00; Columbus, $246.00; Detroit, $244.00; Hartford, $304.00; Milwaukee, $233.00; New York/Newark, $296.00; Philadelphia, $290.00; Pittsburg, $262.00; via Frontier Airlines departure cities: St. Louis, $209.00; Kansas City, $188.00; Denver, $135.00; Omaha, $182.00; Lincoln, $176.00. The price quoted is per person, double occupancy in hotel room. If single occupancy in hotel room is desired add $25.00 additional per person to each amount quoted. All fares and schedules are subject to CAB rules and regulartions, send for additional details. Remember to send accommodations request to Flamingo Hotel. Send Advance Registration and information request to, SAROC, P. O. Box 73, Boulder City, Nevada 89005."

TRADE ONLY - Have model 28KSR 8" platen. Want Heath HW16, kit or completed. Will deliver 100 miles. Ray Edwards, K1IGF, 83 Lovers Lane, East Lyne, Conn. 06333. (203-739-2222)

CIVIL AIR PATROL SQUADRON has been given teletype equipment and would appreciate information about the following. - Standing wave ratio-power meter (ME-165G), Antenna Tuner (BC-939B), Frequency Shift converter (CV-116B/URR), Radio modulator (MD-239/GR), Radio transmitter (T-#c*C/URT), and also an inexpensive source for 7/8" teletype tape. R. H. Lunday, Box 693, Arlington, Tx. 76010

SALE; SYNCHRONOUS MOTORS for Mite teletypewriter, unused 115AC,60 Hz, 1 ph. $20.00 Each. For model 28ASR LMU 12, used excellent, $13.50 each. Parts, unused, for model 14, 15, 19, 28 Kleinschmidt and Mite parts, also gears. Model 14 typing reperforator complete with retakner and end of line indicator, keyboard, cover and synchronous motor, Excellent, $35.00 each. Atlantic Surplus Sales, 580 3rd Ave., Brooklyn, N.Y. 11215.

FM MOTOROLA SCHEMATIC DIGEST - 136 giant pages 11-1 2x17 schematic diagrams, alignment instructions, crystal information, trouble shooting information. $6.50 postpaid. S.M. Wolf, PO Box 535, Lexington, Mass. 02173

WANTED--TELETYPEWRITERS--All makes, all models, any condition. Cash available. Vardon & Associates, 930 N. Beltline, Suite 140, Irving, Texas 75062. (214)252-7502.

MODEL 28KSR -- $250. Will consider as part trade toward 75S1. Carl Holmes, W9JCB, Rt. 1, Cross Plains, Wisconsin 53528. Phone: 608-767-3610.

WANTED: STELMA PC-334, PC-336 or PC-403 PC plug in or any information on these. G. S. Nanawada, JA1ACB,3-4-8, Izumi, Hoya, Tokyo 188, Japan.

FOR SALE: M28ASR, can be had with or without the various options, such as three speed shift, auxiliary typing reperforator, keyboard typing reperforator, etc. M28KSR, auto cr/lf, non-overline and your choice of speed. M32KSR. M28 Typing Reperforator with three speed shift. M28 TeeDee (LXD4) with separate motor, cabinet, etc. M28 Typing Units, sprocket or friction feed. Dome mounting base with motor, etc., for ASR. Three speed shift assembly for M28 Typing Reperforator. M28 Typeboxes. M28 (compact) KSR with front panel three speed gear shift. LMU3 and LMU12 motors. WANTED: Collins 51S1 or 651S1 all-band receivers. Hank, W6SKC, 1015 Fremont Avenue, South Pasadena, California, 91030. (P O Box 338, Phone 213-799-5886).

KLEINSCHMIDT TT-98 Page Printer w/ comm keyboard and loop supply. $60.00. Kleinschmidt TT 100 Page printer w/ comm. Keyboard and loop supply $60.00. Kleinschmidt TT-117 page printer & TT178 A reperf combo, loop supply-$110.00 Model 28KSR, $185.00. Model 14 reperfs, R.O. $15.00. Model 2B R.O. missing cover-$10.00. Model 14 chad type R.O. reperfs w/ keyboard. 75 wpm. $22.00. TT-16/FG reperfs R.O., chad type - $15.00. 40 roll case 11/16 wide paper tape $5.00 per case while supply lasts. All black ribbons $4.50 doz. PPD. Hallicrafter HT 37 - $100.00. Model 26 TTY. $25.00 P Davis, 1830 Toepfer Rd. Akron, OH. 44312

RUBBER STAMPS with Name, Address, CALL LETTERS-Send Printing & $3.50 to SUPERIOR COMPANY, P.O. Box 9064, Newark, N.J. 07104.

GEAR SETS; for model 14 TDs, Sync 1800 RPM, 60WPM felt clutch, unused $5.00 set. Gear sets (2) for model 14 reperforator, sync 1800 RPM 60 WPM, used excellent $4.50 per set. Teletype sprocket wrench 5/16 with 12" long handle unused $1.00 each. Tuning fork; 120VPS unused. $2.00 each. Atlantic Surplus Sales, 580 3rd Ave., Brooklyn, N.Y. 11215.

MODEL 28 GEARS - All like new and ppd., 67 or 75 WPM set $4.00, 60 or 100 WPM set $7.00. WA3KDJ, P.O. Box 204, West Newton, PA. 15089.

BIG SALE ON MODEL 28 Typing Reperforators (RT) mounted on a tape handling stand which includes large tape take-up spool and supply reels as well. As an intermediate storage bin. O/A dimensions, 36" high, 20" long, 8 1/2 wd. Both LAXD transmitter-distributor and LPR typing reperforator come equipped with three speed gear shifts. Allowing down as well as up speed conversion. Synchronous motor LMU-12. Excellent. $85.00 each while they last. Atlantic Surplus Sales, 580 3rd Ave. Brooklyn, N.Y. 11215

TTL SELCAL DRILLED FIBERGLASS P.C. Board. See RTTY JOURNAL December 1971, double sided, solder coated. Instructions included. $15.00 each. K7WJC, Louis Staalberg, 7234 East Papago Dr., Scottsdale, AR. 85257.

COLLINS 30 L1, for sale, late model, excellent condition. $325.00. Paul Kirsch, 14158 Foche, Livonia MI 48154

JENNINGS VACUUMS, NEW with turning head, approx. 5 to over 250uuf, 23KV $27.50 PP; TOROIDS 88mh unpotted 5 @ $2.00 PP; WAØTJR, D. R. Kelley, 1490 Yaqui Drive, Florisant, Mo. 63031

FOR SALE: MODEL 19 TELETYPE, $75 Ed Luck 1710 Yahara Pl., Madison, Wisconsin 53704

R-390 A/URR EXCELLENT CONDITION $595. Will consider #28 or #33 Teletype in part trade. Alltronics-Howard Co. Box 19, Boston, Mass. 02101. (617-742-0048)