Additional Classified

PUZZLE ANSWERS

D	U	S	T	Y		C	A	L	L		R	T	T	Y
E	N	A	R	E		A	M	I	E		A	E	R	O
B	A	R	E	S		N	O	R	S		D	I	E	U
S	L	I	M		A	D	R	O	I	T		F	A	R
			O	I	L	Y		T	O	R	O	I	D	S
J	O	U	R	N	A	L		N	A	P				
O	L	A		E	T	A	N	A		P	A	P	E	R
H	E	R	D		E	N	S	U	E		L	O	R	E
N	O	T	E	D		D	A	T	E	D		L	I	D
			P	E	A		O	R	I	S	O	N	S	
E	R	L	A	N	G	S		S	I	N	E			
M	A	O		S	E	N	A	T	E		L	A	M	A
I	D	O	L		N	A	S	A		S	C	R	A	P
T	I	K	E		T	I	E	R		H	A	I	R	S
S	O	S	O		S	L	A	T		E	L	A	T	E

FIRST CLASS MAIL

RTTY

JOURNAL

October 1976

"Marv", KJ6DL

"Marv" will be glad to make skeds for Johnsons Island - write - Marvin Feldman, PSC, BOX 884. APO, San Francisco, 96305

CONTENTS-

World Wide RTTY ART Contest.

(1 October thru 30 November 1976.)

1. All worldwide licensed radio Amateurs and members of their immediate families (except as otherwise provided in these rules) are eligible to participate in this contest.

2. Entries must have been originated by means of manual inputs to a teleprinter using a standard communications keyboard, and may be submitted only by the originator of the art, or by the Amateur on behalf of a family member.

3. Submitted art may be of any subject suitable for transmission via Amateur Radio. Preference will be given to American Bicentennial subjects.

4. Entrants may submit as many entries as desired.

5. Each entry shall be given a short title.

6. Submitted art may contain overline shading.

7. Tapes of entries shall be formatted to permit a reasonably short running time, and to be compatible with machines which do and do not downshift on space. Compatibility with machines which interchange the bell and apostrophe is not required. At least three functions must be used between each line, normally: CR LF LTRS.

8. Each line of the art shall be limited to a maximum of 72 characters (including spaces). Prints must be in one single part - no splices. Tapes must be limited to a maximum running time of 40 minutes at 60 words per minute for the art itself, exclusive of any other information on the tape.

9. Each entry must have been transmitted for the first time via Amateur Radio after 1 October 1976, and must be accompanied by a confirmation of at least one receipt of its transmission, identifying the title of the art and the call letters of the receiving and transmitting stations. All confirmations must be in writing (not by RTTY transmission), and must have been obtained by the entrant from the receiving station. Entrants may obtain necessary transmission of their entry by any Amateur Radio station.

10. The tape and prints of each entry shall carry the full name of the author, call letters of the submitting station, and mailing address. This information shall be both written upon a beginning leader of the tape and also punched in the tape to appear on page copy when reproduced.

11. Entrants must submit one (1) five-level paper tape and five (5) prints of each entry and by such submission agree that the tapes and prints may be used, duplicated and published for any purpose.

12. Tape, prints and transmission confirmation information should be securely packaged and sent to: RTTY Art Contest, c/o Don Royer, WA6PIR, 18765 Santa Isadora St., Fountain Valley, California, USA 92708. Entries must be postmarked on or before 30 November 1976. Entries will not be acknowledged nor returned. Winners will be announced as soon as possible after the closing date. (Since mail damaged tape will be of little value, it is suggested that tapes be wound tightly upon a hard core.)

13. Entries will be judged on the originality of the author in selection of subject matter, on excellence of technique in producing the art and formatting the tape, on overall appearance of the art when viewed from a distance, on suitability for publication, and on the entrant's compliance with these rules.

14. A committee of judges, made up from those Amateurs who have exhibited an interest in RTTY art, will select first, second, third and honorable mention winners. Winning entrants will receive a plaque for first place and certificates for other places. Winning entries will be published in the RTTY Journal and other Amateur radio magazines. The decisions of the judges shall be final.

15. Officials and judges of this contest and members of their families shall not be eligible to participate herein.

VHF RTTY NEWS

Ron Guentzler, W8BBB, Editor
212 Grandview Blvd.
Ada, OH. 45810

1976 OCT.

From Tom Talley, W8HQQ, we have an update on the Cincinnati, OH, repeater operation: "The 147.690 - 147.090 MHz RTTY repeater that I wrote you about some time ago has been most successful. About one year ago we moved it to the 860-foot level of the WKRC TV tower. The repeater runs, currently, about 100 watts ERP and has over 75 users of which about 50 are auto-start. In the process, the MARA club was merged with the Cincinnati Repeater Association, so as a result, some 400 members of CRA have been exposed to RTTY and many are becoming interested in RTTY. The repeater is fully battery-powered and has RTTY reprocessing. It is shared with voice operation, with RTTY being the first order of usage. If you are interested in the repeater and club, please let me know." Thanks, Tom.

From the New York Area, Paul Vydareny, WB2VUK, sent the following: "The Westchester County Repeater, WR2AIS, operates on 147.660 MHz in, 147.060 MHz out, with an auxiliary RTTY input on 146.550 MHz. Chiefly thru the efforts of K2LOZ, K2UTB, and with the help of WA2WKP, we have put a simulataneous RTTY and voice system into operation to make the repeater more versatile.

"The original plan had been to operate RTTY above voice at 2890 Hz Mark. 2975 Hz Space, for 85 Hz shift. We had tested the system, but due to the fact that a special discriminator and AFSK oscillator was needed, we opted in favor of standard 170 Hz shift, 2125 Hz Mark and 2295 Hz Space. The system uses an ST-5 with autostart feeding a UART for regeneration and, with interface circuitry, an AFSK oscillator consisting of two 566 chips, one for the low tone and one for the high tone. Recently, thru the efforts of K2UTB, an active filter was designed and built (a notch at the Mark and Space frequencies) and put into the system so that when the autostart is activated in the ST-5, the filter is inserted into the line between the voice receivers and the input to the transmitter, while the RTTY is fed thru directly.

"The system has worked quite well. We have reduced the tone deviation down to about 1 kHz and maintain the voice at almost normal levels. Provided the TU being used has some sort of bandpass filter, no interference with voice is experienced. We have all got perfect copy with simultaneous voice and RTTY operation.

"Right now we have approximately 8 to 10 people on autostart and perhaps 5 more who have used the system. We invite others to come on and use the system except during quiet hours - midnight thru 6:30 A.M." Thanks, Paul.

RTTY Signal Bandwidths

About seven years ago, we ran a series of articles on the bandwidth required for RTTY signals, using the standard mathematical technique of Fourier Series for the analysis of the signals. With the advent of the "Bandwidth Docket" (Docket 20777), the bandwidth required to transmit various signals becomes most important. Therefore, next month we will begin "rerunning" the Fourier Series series (no pun) in order to make the information easily and currently available.

73, ES CUL, RG

***

RTTY JOURNAL INDEX 1959-75

After a number of hints that a RTTY JOURNAL index of past articles would be nice - somebody has done it. It is a dandy - covers everything from 1959 through 1975. With 23 sections and many, many headings, it fills 20 pages of the Journal size. Gary Buda, WA0WDN is the excellent engineer of the project which lists the month, year and page of each article.

Since the index is too large to print in an issue of the Journal, Gary has offered to supply a copy for $1.00 pp. anyplace in the world. A real bargain. Send to Gary Buda. WA0WDN. Apt. 301A. 5621 Quebec Ave. North, New Hope. MN 55428 for your copy. We hope to be able to keep this up to date by publishing a supplement index of each year in either the December or January issue.
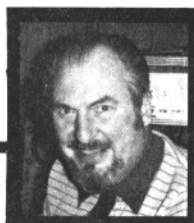
*****

CARTG DX SWEEPSTAKES -
Oct. 2-4

See last month for details.

*****

RTTY-DX

John Possehl, W3KV, Editor

P.O. Box 73, Blue Bell, PA.19422

Hello there . . .

The 1976 SARTG Contest is history and those that took part surely had an enjoyable week-end. Unlike most endurance contests, this one gives you at least an eight hour breather between sessions and this also encourages use of the lower frequencies, that is if you want to make a good score. We found band conditions to be excellent for the first two sessions with some degrading noted for the final eight hour period. There were plenty of the "rare" prefixes available to give some of the newcomers to RTTY-DX a good opportunity to raise their country totals. Gene, UA9PP, started off at the opening bell and in fact was the first contact here at 0000 z. Ariel, 4X4MR, was active on most all bands with excellent signals. Paul, HB9AVK, and some of the Swiss boys set up a station at HB0AVK, and it seems that it is only during a Contest that you can find a Lichenstein station QRV on RTTY as none of the few stations active from there are on the mode. Many were surprised to contact Tom, KC4AAC, and he gave many of the contestants their first Antarctic contact. With Antarctica having the unofficial status as the 7th Continent, those running Contests that use WAC as a multiplier might consider giving that area such status for Contest purposes similar to the counting of call areas in various countries as a multiplier. Many nations presently have scientific groups stationed in Antarctica on a year round basis and this may encourage more RTTY activity from this area particularly during Contests.

Last April we mentioned that Marvin, K4KEW, would be signing KJ6DL in the near future. Sure enough, Marv did show up on the bands just prior to the Contest and was very active on all bands during the games.

As most of the above mentioned stations have QSL managers, it might be best if we list a few of them for you.

KC4AAC via K7ODK   Fred Dorffeld
4286 W. Maplewood Ave.
Bellingham, Wash. 98225

KJ6DL via WB5HVY   Floyd Gerald
4800 Finley Ave.
Gulfport, Miss. 39501

HB0AVK via HA9AVK   Paul Kung
Glaubtenstr. 106   Zurich, 8046, Switz.

4X4MR   Ariel Roth
Box 213
Nathanya, Israel

The recent activity by Magne, JX2FL, has created intense interest on the RTTY bands. After all, it isn't very often that you hear activity from Jan Mayen on any mode much less RTTY. We must report that this is not a "first" as Alf, JX6XF was active for a short time in May/June of 1967. We understand that Alf is also on the island at the present time. The boys are manning a government weather station there and that usually means a tour of duty of at least a few months. The excellent signals are coming from a complete Drake Line and a TH6DXX antenna. Machine is a Siemans running at 50 baud but they copy 45 with no trouble, it seems. Magne says to QSL via the bureau or via his manager . . .

Hans Kinck, LA4YF
3800, BO I
Telemark, Norway

The abrupt mid-summer QRT by JY4JW was due to an extensive trip to Canada and Europe. Wassim is now active again with his usual strong signal. He is still running at 50 baud and requests that you answer him at the same speed. All QSL cards have been made out and by the time you read this, you should have received yours by direct mail. Wassim is sorry for the delay but it was unavoidable.

Blackie, JY9BB, has been quite active and will be returning to the States soon for a visit. The pile of QSL's at his Virginia QTH will be answered at that time. In addition to the QTH given last month, you can also reach Blackie at P.O. Box 5034, Amman, Jordan. At a recent operating session from there, Charlie, JY9CS was at the keyboard and seemed to be quite interested in the RTTY mode. At around March of next year Charlie will be signing A7XC from Qatar and we naturally urged him to bring along some RTTY gear if it was at all possible. His present QTH is Box 2788, Amman.

Still looking for Vermont for WAS? The hunt should be over now as Larry, KILPS, is active again. The antenna situation is not so good right now but Larry hopes to make rapid improvements. QSL's go to . . .

Laymans Guide to trouble shoot
the UT-4

No. 1 in a series of Articles.

RONALD LIGHT, WB0NSR/4
621 SW 70th Ave.
PEMBROKE PINES, FL. 33023

WE are again pleased to present a series of articles by Ron Light, that should be of immense benefit to all that own the UT-4. Since it's birth roughly a year ago, there have been several articles, modifications made on and about the UART or the UT-4, but no repair guide. The person that is not knowledgeable in digital techniques may find himself rapidly lost and bewildered by the complexity of the UT-4, and it is hoped that armed with this series of articles, the owner will be prepared and enlightened with enough information that repairing the UT-4 will be very simple.

To begin with, we must first put the UT-4 aside, and learn a little about digital technology and because so much has been written and is available on this subject, I feel that this type of teaching is beyond the scope of this article. It is suggested to those wishing to learn more about digital workings, that a purchased copy of the "TTL Cookbook" would be a very wise investment.

But to a good many people, those funny looking pieces of plastic with all those pins have been somewhat of a mystery and have even forced some people to ignore their existence. In this first section, I will try to show you how simple some of this is.

In Digital circuits, most circuits operate on a principle of "on" or "off". In positive logic terms, "on" simply means "high" or normally 5 volts, while "off" means "low" or normally 0 volts. While I have a tendency to jump from on to high to 5 volts, try to bear in mind this is the same thing.

In most digital circuits, most things can be thought of as transistor switches, although in actual practice this is not necessarily true. So bearing in mind that we are working with switches that can be opened or closed, and are capable of opening or closing as fast as 30 nanoseconds, we will proceed a little deeper into digital logic.

The simplest form of digital logic is the "inverter". The inverter does exactly what it's name implies - inverts. If for example we apply 5 volts to the input of an inverter, its output will be low, and conversely, if we ground the input of the inverter, its output will be high or 5 volts. This inverter may simply be a transistor in which the base is the input and the collector is the output, such as the circuit shown in Figure 1, or it can be in the form of an IC where six individual inverters are placed inside one chip, such as the 7404.

If we carry this idea slightly further and add a second switch to the input of our inverter as in Figure 2, we now have what is called a "NAND" gate in digital logic terms. Ignore the fact that in these illustrations it is possible to short the power supply to ground as I am showing a principle rather than an actual circuit. In this circuit, if both switch 1 and switch 2 are in the ground position, the output will be high. If we now move switch 1 to the five volt position, nothing happens and the output stays high. This is because the base of the transistor is still held to ground by switch 2. The same thing would hold true if switch 1 were left grounded and switch 2 brought to 5 volts. However, if we should take BOTH switches to five volts, the output will now come low.

Taking the NAND gate slightly further, we can substitute square waves or pulses in place of the switches. In Figure 3 you will see that we have eliminated switch 1 and have instead substituted a pulse in its place. Notice that the baseline of the pulse is low and every time the pulse occurs, it goes to plus five volts. Because the baseline is low (ground) the baseline (inerted) at the output will be high. This is just the same as flipping our original switch from ground to five volts and back again to ground. If we now take switch 2 and place it in the ground position, this will take the Base of the transistor to ground (the output HIGH) and thus prevent any further pulses from getting through the circuit. Putting the switch back to five volts will again allow the pulses to appear on the output.

If we now go a step further and eliminate switch 2 and replace this with a pulse also, we can now control the output by two digital components. In Figure 4, we see such an operation, and you will notice on input #1 we have a series of short pulses, while on input #2 we have one long pulse. Since a variation in output can only be obtained when both inputs are high, we produce a wave form on the output as shown. Its duration will only be as long as the longest positive pulse. Such a circuit would be found in something like a frequency counter. If for example we make the shorter pulses be the frequency we are trying to measure, and we make the long pulse be exactly one second long, then the output will contain just one seconds worth of these pulses. If we now count each of these pulses inside that one second interval, we have counted the pulses per second, or in other terms, the cycles per second which is its frequency.

By reversing the logic of the longer pulse, as in Figure 5, we now have a somewhat different type of wave on the output. You will notice that the output is pulsing until input #2
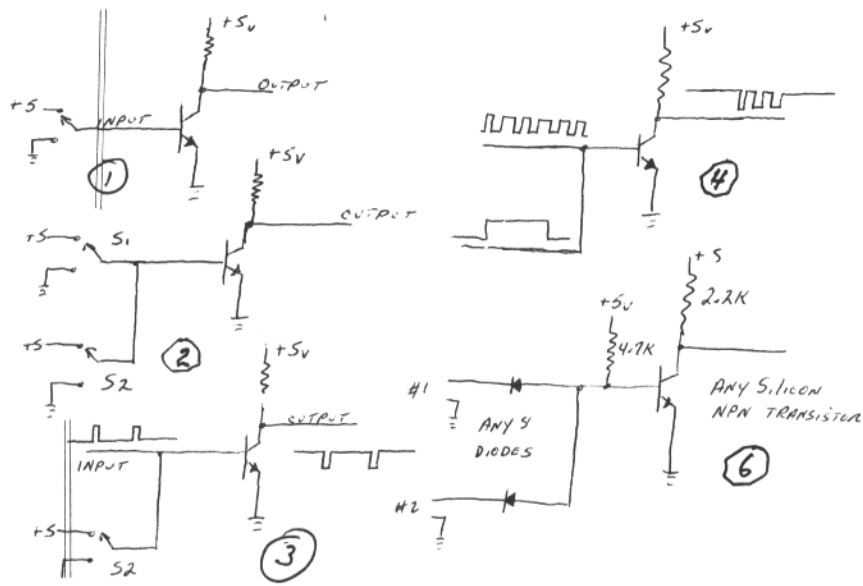
goes low, and then continues pulsing after input #2 returns to high again. This type of thing is very common in digital techniques and in this type of operation, input #2 would be used or said to inhibit the output, for whatever reason the output would need to be inhibited.

In summary, the NAND gate can serve many functions. It can be used as a simple inverter such as in Figure 3, or it can be used to enable certain circuits as shown in Figure 4, and by changing the pulses around as in Figure 5, it can be made to inhibit operations of circuits. At this stage, you may be wondering or feeling that there has got to be more to digital circuits than just this, and of course there is, but a good many circuits, circuits found in the UT-4 for example, rely heavily on the operation of the NAND gate. If you would

like to experiment with the NAND gate in its simplest form, the circuit in Figure 6 is an actual working circuit of the older style of design. This design was known as diode to transistor logic or simple DTL. The DTL has been replaced with present day transistor to transistor logic or TTL.

It is suggested to those who have a hazy conception of the NAND gate or to those that are seriously interested in learning digital logic to build up the NAND circuit in Figure 6 as several NAND circuits are found in the UT-4 and understanding their operation will greatly aid you in tackling the UT-4 with confidence.

Next issue we will go a little deeper into the NAND gate and get into two or three of the actual circuits of the UT-4 that use these gates.

***

A serial Baudot to ASCH11 - ASCH11 to Baudot converter for 8 level machines.

ERIC KIRCHNER, VE3CTP
Ontario Science Center
770 Don Mills Rd.
Don Mills, Ont. Canada

From CARTG "RTTY NEWS"

At the outset, I would like to stress that this is a project for the advanced amateurs among us and those who have enough technical know-how to enable them to connect this converter to suitable points in existing demodulator and FSK circuitry.

Furthermore the physical lay-out of parts, and hand wiring these, is quite a task in itself. Use of sockets for the integrated circuits is mandatory, as some of these are MOS and

sensitive to ungrounded soldering irons and static electricity.

The use of fairly heavy bus wire for the ground (common) and the plus 5 volt leads, and the liberal use of .01 mf ceramic disc capacitors, to by-pass all plus 5 and minus 12 volt to ground at different places on the board is necessary. These capacitors are not shown on the circuit schematic.

All NAND gates used as inverters can be replaced by Hex-inverters and 74121 chips can be replaced by 74123 which is a dual 74121, in order to reduce the component count.

Truthtables for programming the 8223 Proms, using the programming box described in an earlier CARTG Bulletin will follow in a subsequent issue of the bulletin.

Those interested only in receiving RTTY with an 8 level machine can save much time and money by deleting the connections to the much more complex ASCII to Baudot section, shown below the dotted line of both UARTS, except for the grounds and clock inputs.

The cost for the complete converter should be well below 100 dollars, possibly around 50 dollars. The 8223 Proms can be substituted by 82S23 which are currently on the U.S. market for around 3 dollars a piece. The UARTS can be had for around $6.50 and the 3351 Fifo for $14. - through W6KS as mentioned in the "RTTY JOURNAL". The other chips are standard and in the 50 cent-or-so bracket.

Baudot to ASCII/ASCII to Baudot converters appeared in other publications, but they were not directly compatible with Radio Teletype which is script.

I would like to thank my friend Paul Hudson, VE3CWA, for valuable circuit suggestions.

Circuit Description:

The serial 5 bit Baudot signal at TTL level enters UART-1 at pin 20 and appears in parallel form at pin 8 to 12. The 74C30 #1 and #2 sense if the letters or figures character has been sent and set R/S flip-flop #4 to such a state as to enable the appropriate 8223 Prom. The 8223s translate the 5 bit Baudot code and present the corresponding 7 bit ASCII code at pin 1 to 7. (The #8 bit is a parity bit, used in conjunction with computers, and is unnecessary for Ham RTTY. I have fixed my Model 35ASR so the #8 bit is always a zero.)

This data is applied to UART - 2 and appears in serial form at pin 25 which is connected through a driver to a 4N33 Optoisolator. Another 4N33 is connected in series with the first one and the whole combination is inserted in the 20 MA loop of the Model 33 or 35. This keeps modifications of the ASCII machine to a minimum. The signal originating from either the keyboard or the tape reader of the ASCII machine is connected to the input of the second 4N33 and its output serially feeds into pin 20 of UART-2 and appears in parallel form at pins 12 to 19. As there are no "LTRS" and "FIGS" characters in the ASCII code, they have to be generated additionally. For this reason the 6th and 7th ASCII bit, which appear at pin 7 and 6 of UART-2 respectively, are sensed by 7474 flip-flop #12 and it in turn, in combination with 7474 flip-flop #11 disable the 8223 proms #8 and #8 temporarily.

If a "LTRS" character has to be inserted into the text, transistor 2N3641 #10 is non-conducting, so all bits on the left side of Proms #8 and #9 are high, signifying the "LTRS" code. If a "FIGS" character has to be inserted, transistor 2N3641 #10 conducts, making the center bit zero, which signifies the "FIGS" code.

The ASCII bits are applied to the address lines of the Proms #8 and #9. Here the ASCII code is translated to the corresponding Baudot code and is fed to the two 3351 Fifos. A "data available" pulse at pin 19 of UART-2, delayed by two 74121 one-shots, appears at the "Shift in" pin 17 of Fifo-#13, loading the Baudot characters into the Fifo memory. - These Fifo memories are necessary, because the information from the ASCII machine is fed in at 100 W.P.M., while the Baudot output from UART-1 is at 60 W.P.M.

Ordinarily, when typing by hand, only occasionally will the ASCII speed exceed 60 W.P.M. (at least when I am typing, Hi!), but when the ASCII tape reader runs, the memory will eventually become fully loaded. As the two Fifos can only store a maximum of 80 characters, the T.D. control circuit, consisting mainly of an up-down counter (2 x 74193), will interrupt the current to the T.D. clutch, holding it until the Fifo memory is empty again.

The parallel data at the output of Fifo #14 is applied to UART-1 and appears in serial form at TTL level at pin 25 of UART-1. This signal can then be used to key an AFSK generator, such as one using an EXAR 2206. (phase continuous AFSK).

The 555 clocks are suitably stable when using high grade R/C components. Crystal stability is nice but not necessary. The precise resistance values have not been given as they may differ from case to case, but they can easily be arrived at with a frequency counter.

When using the converter in conjunction with the tunable FSK demodulator described in an earlier issue of the "CARTG" bulletin, an inverter has to be inserted between its output and pin 20 of UART-1.

The "Baudot speed" switch enables you to copy signals running at other speeds than the ham standard of 60 W.P.M.

No pin numbers for the gates have been given on the schematic as a new lay-out will be made for the final version.

The system has been fully tested for many hours and works reliably. No doubt there is room for refinements. I would be grateful for suggestions. Maybe someone will find the time to provide a printed board? ?

I hope that this project will get some of the many 33's and 35's on the air presently sitting idly in basements.,

Maybe this would also stimulate a little RTTY experimentation using the ASCII code at 100 W.P.M. directly on the air, a privilege which we have over our U.S. friends.

NOTE: The only character not translated from ASCII to Baudot is the bell signal. With additional gates, this could be accomplished, but I felt the added complexity unjustified.

DRAWING ON NEXT TWO PAGES

***

SERIAL
BAUDOT to ASCII
ASCII to BAUDOT
CONVERTER

for Model 33 & 35
Machines
8 June 76 VE3CTP
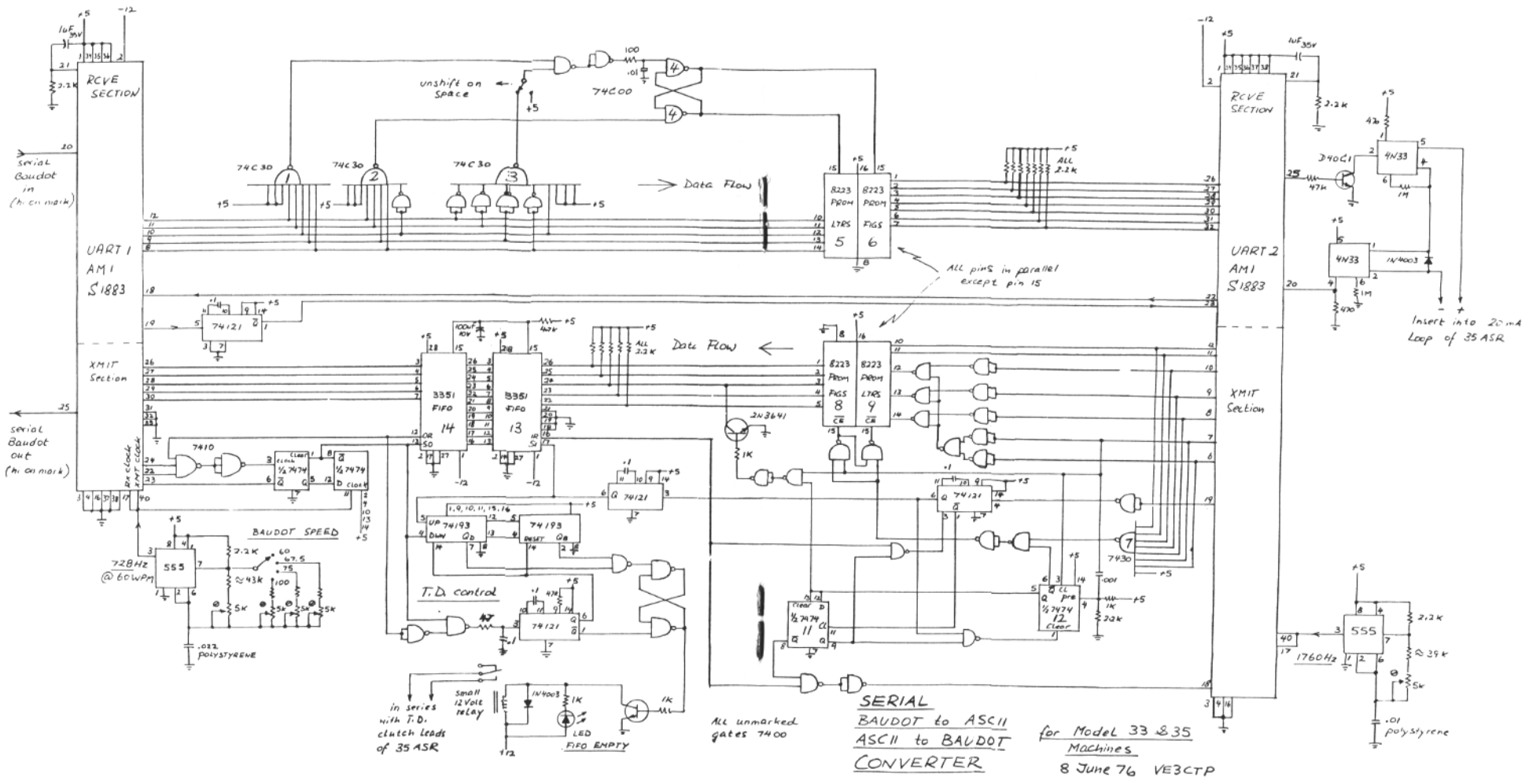
We mentioned last month that the ARRL has decided to award a DXCC Certificate endorsed for RTTY.

In reading the ARRL directors report we see that Phil Haller, director from the Central Division, and a long time RTTY backer, made the motion. On a roll call vote 4 directors were opposed. Those voting against the motion were - Roy Albright, West Gulf division -- C.M. Cotterell, Rocky Mountain division -- John Griggs, Southwestern division -- Larry Price, Southeastern division. All others voted in favor.

It is no big thing -- but in the future when you meet your director, compliment him if he was in favor and if not, ask him why. It can't do any harm to get some comments from RTTY fans.

***

A further note to the ARRL DXCC Certificate endorsed for RTTY. We mentioned that there was no charge for the certificate, BUT ONLY FOR ARRL members, was omitted. This is true for all certificates issued by the ARRL in the future. However, this does not apply to foreign stations. Return postage will be more for return of cards from foreign stations, but we do not know the amounts.

***

Crys and I are planning on being at the Mid-West ARRL convention in Omaha, Oct. 8-10. No special reason except to get away for a few days and hopefully meet some new and old friends.

***

Very seldom, but occasionally, we get a complaint from readers about non delivery from a classified ad. It usually turns out that the seller is waiting for some part to be delivered but has failed to notify the customer or answer any inquiries. We strongly suggest sending a post card stating the problem or offer a refund. It is only when inquiries are ignored, that trouble arises.

***

After a couple of months wait, we obtained one of the new Kenwood TS 828 transceivers. It is a honey and so far has done everything advertised. RTTY 170 shift (850 can be used with a very minor change) is built in. We have

not tried it on RTTY as we prefer separate units and are still using the A4 and 100V but from what we have seen, it should do a good job on RTTY.

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 35 cents 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. 35 cents each.

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1972- Oct.-NOV.-DEC.- [3]
1973- JAN. FEB.-MAR.- MAY.-
      JUL.-SEPT.-NOV.-[7]
p976- FEB.-APR.-JUL.-SEPT-[4]

RTTY JOURNAL BINDERS-$4.00
```

Larry Filby, KILPS
RFD #3 (Berlin)
Barre, Vermont 05641

Larry now has permanent status with the Vermont State Police so future prospects look good for sustained contacts with this rare state.

Based upon the brief notice that appeared last month in reference to the ARRL DXCC RTTY we have had many requests for more information. We believe that complete details on the Award will appear in the October "QST". In the meantime, a call to the DXCC manager at ARRL, WLCW, gathered the following information which may answer some of the questions.

1. Requests for the Award will be accepted as of 1 November. Requests received before that date will be returned.
2. Regardless of the amount of cards submitted, only 100 will be used to confirm DXCC and no additional endorsements will be available.
3. The Awards will be numbered starting from One (1).

We hope this answers most of the questions and we advise that you read the rules in QST before applying. It also means that the number on the ARRL Award and the Journal Award will not necessarily coincide and some DX applicants may be at a disadvantage due to time and distance.

The BIG CARTG Contest starts soon after you get this but there is still time to get that gear in shape and that super antenna working. The main thing is to get your score in after it is all over. There are many prizes in many categories available and you may just win one of them. You'll never know unless you send in the score.
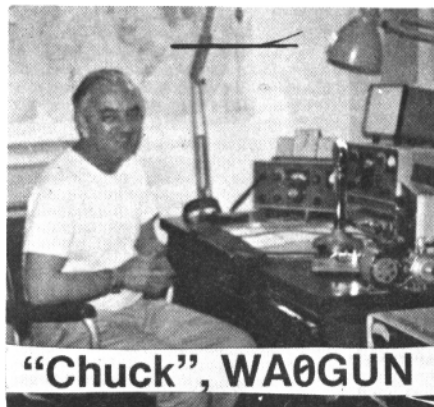
73 de John
***

Design Improvement for AK-2 AFSK Generator.

BOB. FELTON, K7WLX
Box 2866
CAPISTRANO BEACH, CA.
92634

The following is offered as a design improvement to the Mainline AK-2 AFSK Generator as presented by Irv Hoff, W6FFC in the January 1976 issue of RTTY Journal:

The current design only allows the output signal to change frequency at the positive transition of the signal at pin 8 of the 7473. Thus, there is a possible worse case elongation of the mark pulse by 470.6 microseconds and of the space pulse by 435.7 microseconds for 170 shift and 336.1 microseconds for 850 shift. This results in a 2.14%, 1.98%, and 1.53% respectively pulse width error relative to a 22 millisecond keying signal. A simple change to the circuit can cut these errors in half! Connecting pin 3 of the 7474 to pin 13 of the 7473 instead of pin 8 is all that is required. This allows the output signal to change frequency at either a positive or negative transition of the signal at pic 8 of the 7473. This is possible because of the signal at pin 13 of the 7473 has a positive transition at the same time the signal at pin 8 of the 7473 has a positive or a negative transition. See the figure below.


***

"Chuck", WA0GUN

***

Robbie - G8LT
Gwenn - VE3YL

Try It -- You'll Like It. - - -

Here is another crossword puzzle submitted by "Mary" W9NCZ. For those of you who "read throughthe JOURNAL" in 20 minutes, this should double the time. Since the FCC has banned large prizes, we cannot give a Dovetron to the first correct answer. Just satisfaction on your part for being so smart. The answers are all related to RTTY and Ham Radio.
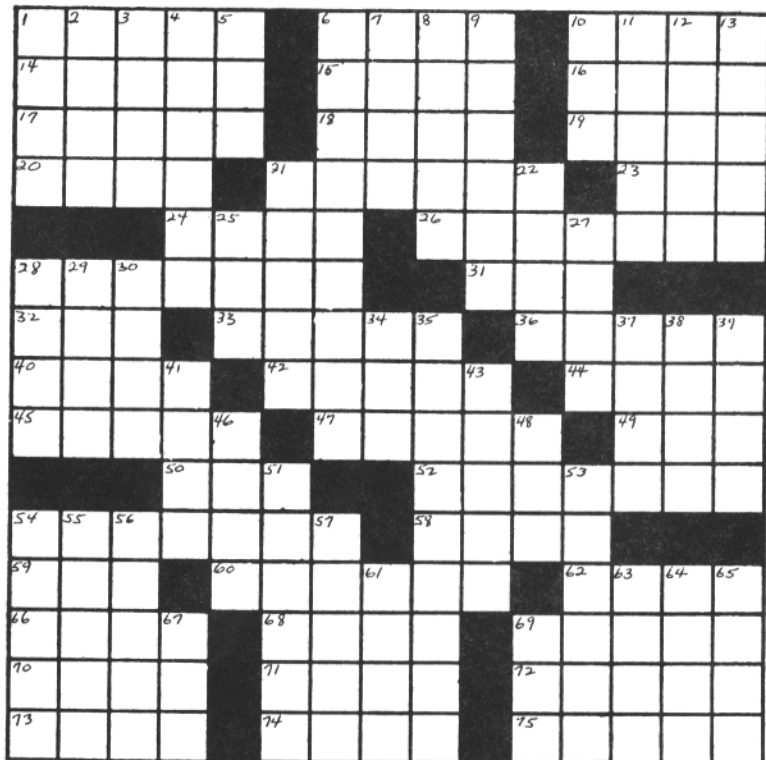
ACROSS

1. HON. ED.
6. HAM'S SIGNATURE
10. OUR FAVORITE MODE
14. FINNISH LAKE
15. FRIEND
16. PREFIX: AIRCRAFT
17. UNCOVERS
.8. OPPOSITE OF ORS
19. GOD: FR.
20. SVELTE
21. INGENIOUS
23. DISTANT
24. SLICK
26. FILIAR WOUND INDUCTANCES
28. RTTY _____
31. SNOOZE
32. PALM LEAF
33. HERO: BABYLONIAN MYTH
36. COMES IN ROLLS
40. GROUP
42. FOLLOW
44. LEARNING
45. FAMOUS
47. OBSOLETE
49. SLOPPY OPERATOR
50. VEGETABLE
52. PRAYERS
54. UNITS OF TRAFFIC DENSITY

58. TRIGONOMETRIC FUNCTION
59. _____ TSE TUNG
60. GOVERNING BODY
62. TIBETAN PRIEST
66. FALSE GOD
68. HOUSTON BASED AGENCY
69. LEFTOVER
70. TOT
71. ROW
72. HEAD COVERINGS
73. MIDDLING
74. THIN STRIP OF WOOD
75. MAKE HAPPY

DOWN

1. YOUNG LADIES
2. ONE
3. INDIAN GARMENT
4. QUAKE
5. AFFIRMATIVE
6. SWEET DX (IF YOU COULD GET IT)
7. LOVE
8. S.A. DOG
9. AN INJURY
10. RADICAL (ABBR.)
11. WELSH RIVER
12. FOOTBALL
13. BELONGING TO YOU
21. WINGED

22. SNARE
25. SUFFIX: LIKE
27. GEM
28. DX EDITOR
29. BUTTER SUBSTITUTE
30. UNIVERSAL ASYNCHRONONOUS
   RECEIVER TRANSMITTER
34. NATIONAL SCIENCE ASSOC.
35. NOT MANUAL
37. RICH MAN'S SPORT
38. IRELAND
39. COMMIES
41. E. INDIAN MEASURE
43. WEIRD
46. LAIRS
48. NOISE
51. REPS
53. SELECTIVE CALLING
54. GIVES OFF
55. OUR HOBBY
56. PEERS
57. MOLLUSK
61. SAILING
63. DIVA'S SOLO
64. STORE
65. PART OF CHURCH
67. LION
69. XYL

Answer on Page 16

* * * * *

UT-4 COMPONENTS. UART's $7.00, FIFO's $14.00, Motorola MC3408L D/A $4.50, 74221's $1.25. All postpaid. Most others, see prior ads. Peter Bertelli, W6KS, 5262 Yost Place, San Diego, CA. 92109. 714-274-7060.

DATAPOINT 3300 ASCII CRT TERMINAL, excellent condition, $636; Mite TT-299B/UG teleprinter, excellent condition, $165. Ron Ott, 528 Bonita Avenue, Pleasanton, CA. 94566 (415-846-1459).

TRADE: EXCELLENT 28 KSR, 60-75-100 gearshift. Auto LF/CR. Page Electronics D-2 DTC TU, 850/170 shifts. Manuals, Operating. Want mint late 5 Band tnsvr. 219-485-1430.

KLIENSCHMIDT: TT-100 ANF/GC20, choice 60 or 100, $39.95. TT 107 reperf $29.95. TT 122A, $20.00, FN-59-FG table for TT-100, $12.95. TT-4A/TG teletypewriter (2 only) $45.00 ea. All units operating and checked before shipment. Harmon, 5628 10th Ave. AL. 35222. Tel (205) 592-0835.

MODEL 19 W/AUTO CR/LF and motor control, extra typing assembly complete, Full maintenance instructions, Shipping extra. $150.00 or best offer. Hank Hunt, W1ORI, 6 Pine Tree Ln. Glastonbury, CT. 06033.

WAREHOUSE FULL OF MODEL 15's, 19's, & 28's. Reperfs, TD's power supplies, tables, cabinets and you name it. Can be inspected, purchased and picked up week ends. Phone first - (312) 432-3380. 2012 St. Johns, Highland Park, IL. 60035.

MODEL 28 ASR's – KSR's, Repurfs - Keyboards, TD's - Printers, Parts - All priced for Hams. All in excellent condition. A.D.M. Communications, Inc., 1322 Industrial Avenue, Escondido, Ca. 92025. (714) 747-0374

TELETYPE EQUIPMENT: MODEL 28 ASR's, sprocket feed, $300.00 UW. U.W. desk FAX's, W.U. model 2B's. Model 14 & 15 parts. Model 28 parts, polar relays. ESU's, perforators, typing reperforators, T.D.'s, etc. G.W. Hemphill, 132 Scott Swamp Rd. Farmington, CT. 06032. Tel. PM only. (203) 677-0678.

TELETYPE EQUIPMENT — Summer is over and now is the time to get back to hamming and TTY. A good selection of machines are available now in the model 28 series. Some test equipment and 14-15 series also. Service, parts and supplies. Fresh ribbons $1.20 pp. Parallel punch (5 level LARP) with tape holder and syncronus motor $30.00. Ideal for use with UARTS. 20 RO (sprokets) $120.00. SASE for new list - New Address - P. Anderson, 115 Boyhen Rd., Rochester, MI. 48063. (313) 652-3060.

HAL COMMUNICATIONS CORP. announces the MCEM-8080 microcomputer. The MCEM-8080 is a complete operating system on a single PC board, including serial I/O at RS-232C levels or 20-60 ma current loop, 3 parallel I/O ports, 1024 bytes of RAM, 1024 bytes of ROM containing the system monitor program, and switches and indicators to manually control all bus and control lines. The powerful 8080A CPU and its family of chips are used. The system monitor allows the use of either Baudot or ASCII terminals, and enables the user to load hex files, dump or display memory, insert data in memory and transfer program control to a specific location. Whether you are a RTTY operator turned computer hobbyist, or a computer hobbyist turning to RTTY for a communications link, the MCEM-8080 should be your choice. Write today for full details. HAL Communications Corp., Box 365RJ, Urbana, Ill. 61801. Phone 217-367-7373.

MITE TELETYPEWRITER AN/UGC 41. Excellent condition, complete with 60-67 & 100 gears. Complete Mil Spec manual, Price $225.00. Lou Savoie, K1RAK, 29 Hillsdale Rd., Holbrook, MA. 02343. (617) 767-1638.

RTTY PICTURE PERF TAPES: Over 575 different available. Special of the month; includes 10 different, 5 hours 28 minutes running time of nudes, $10.00. Send for free catalog to: Al Perkins, 217 Cedar St., Galesburg, IL. 61401

FOR SALE: CENTRAL ELECTRONICS 200V, good working order $300.00 firm, with manuals. Bill Kordik, WØLDO, 4857 Sunnyview Dr., St. Louis, MO. 63128.

28KSR AND 28ROTR, both with 6-75-100 WPM gear shift; 28TD and 14ROTR both 60 WPM. All in excellent condition. R.A. Neff - W8HSM, 4570 Bain Park Dr., Fairview Park, OH 44126.

WANTED: FOUR COMMUNICATION TYPE BOXES for model 28KSR, 2 motors for 28KSR, 2 bases for 28KSR with motors; 1 working 28ASR. Henry Freeman, Box 2931. Monroe, LA. 71201. Phone evenings (318) 323-5261.

PRINTED CIRCUIT BOARDS: RTTY SELCAL with TTL logic, (73 magazine November 72, $12.00. ST-5 W/PS, 2 boards, $6.25. AK-1, $4.25; CW ID'er, (Feb 73, 73 magazine) $4.75. Logic probe (Dec. 74 Magazine) $1.00. Autostart RTTY encoder and decoder (Jan. 57, 73 Magazine, $11.00) Instructions and parts list included. Walter Zalewski, 29307 Red Cedar Dr. Flat Rock, MI. 48134. (313) 782-9316.

MK11 28 KSR, NO CABINET $165.00. M28 TD. $75.00, M-28 non typing keyboard perforator with cabinet $145.00. MK111 M-28 complete with 3 speed gear shift $300.00. M-28 chad typing reperf with three speed gears $150.00. M-28 TD excellent $125.00. M-28 paper winder $25.00. All three of them together 28KSR, 28 reperf, 28 TD, $500.00. Cecil Armstrong, W7VKO, 3109 East Roma Ave. Phoenix, AZ. (602) 955-9393.

MODEL 19 TELETYPE with automatic carriage return, line feed, non-overline and paper rewinder. ST-6 with input bandpass filters and UART (45-50 baud xtal controlled clock) CW and RTTY ID'er and message generator remote controlled from model 19 (will program). Model 15RO, 3 head model 28 TD. Extra motor, keyboard - all for $400.00. Paper etc., Mike Sims, K4GMH, 8408 Cherry Valley Lane, Alexandria, VA. 22309. (703) 360-5439.

FOR SALE: HEATH HW-16 Modified for 80-40-20 Meters, 6146 Final. See Beginners Handbook for applications. W3KET, 25 Holly Hill Rd. Wilmington, DE. 19809. $60.00 plus shipping.

TELETYPE 28ASR, Typing reperforator, gears for 60-75-100, Prints, Was 83B3, answerback not installed, works good, $450.00. Jerry Wolfer, WAØRCX. Phone (605) 336-6275.

DOVETRON MPC-1000 (E Series) MULTIPATH-DIVERSITY RTTY TERMINAL UNIT. The new E Series represents the sixth generation and adds Automatic CRT Intensity Control, Keyboard Actuated Autostart, Automatic Threshold Control for unattended operation, Fast-Slow Autostart, and Autostart Delayed-Timeout to the MPC's MULTIPATH CORRECTOR, IN-BAND DIVERSITY MODE and the continuously variable Mark and Space channels. All IC's, transistors and Cmos logic elements are mounted in low-profile sockets for ease of servicing and maintenance. Interfacing to the TSR-100 or UT-4 speed converter/regenerator is accomplished by removing two jumpers at the rear panel. Your QSL brings full specifications. MPC-1000 (Amateur) $495.00. MPC-1000C (Commercial) $795.00. Shipping and Insurance: $7.50 Continental USA. Delivery: 30 days or less. DOVETRON, 627 Fremont Avenue, South Pasadena, California, 91030. 213-682-3705.

RTTY PICTURE PERF TAPES. Hundreds, including nudes, cartoons, animals, works of art, landscapes, all of the RTTY Art Contests entries. Chad type (fully punched, no lids) 11/16 inch standard Amateur 5-level paper tape. Guaranteed COMPLETELY error-free. Run times from 2 minutes to 10 hours. Listing and info free if request typed on 5-level printer, otherwise send 24 cents in STAMPS. For "Intro Pack" of ten picture tapes of the best, various subjects, various lengths (total run time - 2 hours 12 minutes), send $6.00, immediate delivery, POST-PAID, listing included. Due to popularity of above, "Intro Pack Deluxe" now offered, run time 12 hours 44 minutes, $30.00, shipped PRIORITY mail in USA, surface postpaid overseas. Joe Dickens, WA9UGE, 601 S. Dodson, Urbana, IL 61801.

MOD-U-LINE CABINETS, ST-6 style MCP 3-17-12 $27.97. Now shipping gray color in 24 hours. All Sizes available, but some not stocked. 1 day to 6 weeks delivery on some special sizes in tan or blue. Special sizes in gray or black 2-6 weeks. UT2 and UT4 Components available. Send stamp for our free catalog. NuData Electronics, Dept. B, 104 N. Emerson St., Mt. Prospect, IL 60056.

DOVETRON TSR-100 TELEPRINTER SPEED CONVERTER-REGENERATOR is a 6" by 7" PC card designed to mount inside of any MPC Series Terminal Unit and is intended to provide signal regeneration and UP-DOWN speed conversion. The 18 socket-mounted CMOS devices include a Uart, two FIFO Ripple Memories (80 characters), a programmable crystal-controlled Dual-Clock, and a bilateral steering section that permits solid-state switching between Transmit and Receive. All Uart functions including Parity are switch-selectable. Both sections of the Dual-Clock are programmable for 60, 67, 75, 100 WPM Baudot and 110 Baud ASCII codes. All 8 parallel data lines are available at the output of the Memory section. The TSR-100 also offers Variable Character Rate, BLANK Diddle and memory functions of Preload, Recirculate and Reset. The BLANK Diddle is Uart-generated (Tri-state mode) and does not contribute time delay or first character errors. A unique Memory Unload circuit prevents character over-runs and provides a TD Inhibit. A pair of LEDs indicate Memory status. All signal input and output ports are fully buffered for easy interface to other terminal units. Power requirements: +5/+15 volts at 85 mils and -12/-15 volts at 10 mils. TSR-100: $195.00. POSTPAID Continental USA. Delivery: 30 days or less. DOVETRON, 627 Fremont Avenue, South Pasadena, California, 91030. 213-682-3705.

SALE: MODEL 28 LPR RECEIVE ONLY Typing Reperf. On stand alone base complete with 3 speed gear shift (60-75-100). AC Syn Motor, and cover. Good condition $165; Model 28 LXD Transmitter Distributor, stand alone type, complete with AC Syn Motor and cover. Good condition $125.00; Model 28 RO Base complete with 115 V AC Syn motor, and intermediate gear assembly. Good condition $69.00; Model 28 RO Table Top Cover, Good condition $39.00; Model 28 LP Stuntbox Mark 111 with stunt bars still in place, $24.00; LPW paper winder 300, Good Condition $39.00; Model 28ASR machines complete with Reperferator and T.D. $495.00. Other machines available so let us know what you need. WE ALSO BUY MACHINES, PARTS, MANUALS: ATLANTIC SURPLUS SALES, 3730 Nautilus Ave., Brooklyn, New York, 11224. Tel.: (212) 372-0349.

GIVE YOUR KEYBOARD, KEYPAD, AND SUPPORT electronics a handsome home with the UNIVUE keyboard and instrumentation enclosure. Only $32.95 plus shipping on 17 lbs. Stamp brings additional information. ADS, P.O. drawer 1147, Marion, OH 43302. (614) 382-7917.

TECH MANUALS - $6.50 each: TT-63A/FGC, CV-591A/URR, TS-2/TG; following manuals $8.50 each: R-388/URR, TH-5/TG, USM-50; other manuals - TGC-14/14A, $12.50, TT-298A/B, TT-299A/B, UGC-38, 40, 41 - $15.00. Model 14 TD manuals, $3.00 each. All manuals mostly new, unused. Thousands more in stock. Send 50 cents (coin) for large 22-page listing. W3IHD, 7218 Roanne Drive, Washington, D.C. 20021.

MODEL 28 KSR'S, FRICTION—FEED XTelco units in good condition, crated ready for shipment. Quantities available. $200 each FOB N.H. Satrak Telemetering, Martin Geisler WA6TIC, 11300 Hartland St., North Hollywood, CA 91605.

FOR SALE: FACSIMILE RECORDER, transmitter, 180 RPM will transmit 8½ in. x 14 in. copy, receives on wet electrolytic paper. Can be used on metallic loop or on radio using 600 ohms impedence. Have assorted spare parts and manual. Will pack and ship in USA for $200.00. For additional info call or write W. Callison, P.O. Box 1554, Huntington, W. VA. 25716 (304) 522-8943.

CLEANOUT-THE-BASEMENT SALE: Frederick 1301 SELCAL $50. Frederick 1300 storage unit - speed converter $75 - Frederick 1323 and 1322 storage units $50 - 1312 storage extender, $75. Model 28 typing units $35, RO bases, $15, TD heads (LXD) $20, dual-TD base (for ASR) $20, 32 typing units (as-is) $15, LMU-10 motor & tach $15, Tele-Signal digital keyer (301D) $10, all shipping extra, will swap. Jack, WA2HWJ, 205 Powell Avenue, Central Islip, NY. 11722. 516-582-9364.

DOVETRON TELEPRINTER IDENTIFIER TID-100. Mounts inside of all Dovetron MPC Series (and ST-6) terminal units. CMOS circuitry requires less than 1 mil standby and 8 mils functioning. May be programmed for CW, Baudot or ASCII. 128 bit capacity. Two LEDS indicate CLOCK RUNNING and CODED OUTPUT for easy visual verification of programmed code. All four CMOS chips are socket-mounted and programming instructions are etched right on the circuit board. Includes 50 programming diodes: $34.95 postpaid. Factory programmed with DE and your call: $39.95 postpaid. DOVETRON, 627 Fremont Avenue, South Pasadena, California, 91030 213-682-3705.

HAL COMMUNICATIONS CORP. will display the line of RTTY and microcomputer equipment at the Midwest ARRL Convention in Omaha. See you at the show.

FREQUENCY COUNTERS: Palomar FC-40, 40 Mhz 6 Digit LED, AC or DC $185.00; Regency EC-175, 175 Mhz 6 Digit LED, AC or DC Type Accepted $400.00; PS-1 Prescaler Use Your 30 Mhz Counter to 300 Mhz, In Two Tone Blue Cabinet, LED Indicator, AC Supply, Wired & Tested $35.00; PS-2 Kit of Parts for 500 Mhz Prescaler, No Cabinet, Requires 5VDC $45.00; SASE for Brochures; Transcom Communications, 2073 Grange St., Oregon, Ohio 43618. Phone 419-726-5937.

"FREQUENCY LISTS - We have over 25 lists covering VOICE & RTTY frequencies on HF-Shortwave as well as VHF-UHF. Lists cover US Military, US Coast Guard, International (Interpol), Police, Aviation and Marine Stations, and much more. Send SASE for a free catalog. HANDLER ENTERPRISES, Code X, Box 253, Deerfield, Illinois 60015."

AUTRONIC CODE READER; Factory built, like new, with the RTTY interface installed. Less than half price $125.00. Ed Trego, W9WKC,517 Market St. Hoopeston IL. 60942. Ph. (217) 283-6914.

CLASSIFIED ADS--See Page 16