ORIGINATED BY BILL, W8LTJ, FLORHAM PARK, NEW JERSEY - '74 ART CONTEST

THOMAS A. EDISON

2nd Place

"BIG BOTTLE"

ORIGINATED FOR RTTY BY DUSTY, WA3IRK, CAMP HILL, Pa - '74 ART CONTEST

3rd Place

FRIENDSHIP THROUGH COMMUNICATION

ORIGINATED BY DICK, WA1PWF, NORFOLK, MAINE - '74 ART CONTEST

Honorable Mention

****

FIRST CLASS MAIL

RTTY
JOURNAL

January 1975

EXCLUSIVELY AMATEUR RADIO TELETYPE

VOLUME 23 No. 1   **30 Cents**

"T W O   W O M E N"

ORIGINATED FOR RTTY BY RICK, W5SOQ, DALLAS, TEXAS - '74 ART CONTEST

Winner- 1974 RTTY ART CONTEST-- See Page 2

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WINNERS - 1974
RTTY ART CONTEST

This first art contest was truly international and produced ten entries, six from U.S. artists and four from our DX friends. The five judges all saw the entries slightly differently, thus requiring a point system to determine the winners. Since all of the entries were very good, the scoring was close. The first three places and two honorable mentions are:

1st place:	Rick Albury, W5SOQ	"Two Women"
2nd place:	Bill King, W2LTJ	"Thomas A. Edison"
3rd place:	Dusty Chapman, WA3IKK	"Big Bottle"
Honorable Mention:	Dick Peters, WA1PWF	"Friendship Through Communication"
Honorable Mention:	Horst Miers, DL6US/ DL6USA	"Groggy"

Plaques donated by the RTTY Journal will go to Rick, W5SOQ, and Bill, W2LTJ, for their efforts, with third place and honorable mention winners receiving certificates.

Entries were also submitted by Ed, VE2GA (two pictures); Lynne, WB8DSN, and Duane, W9HWQ. Horst, DL6US, also submitted two entries.

The winning entry was the fifth such effort by Rick during his three years on RTTY and using his model 15 gear resurrected from the Missouri Pacific Railroad. Rick, a trophy "peddler", lives in a Dallas apartment and has the usual antenna problems but does operate VHF whenever he can.

It was also interesting to note that the second place picture was the first RTTY art attempt by Bill. Some of the others may also have been first efforts but that information was not available. The judges, John, K2AGI; Lee, WA5EHA; Don, WA6PIR; Dick, WA7RQV; and Neil, K9WRL, indicated that the biggest problem encountered by entrants was in formatting their tapes. Almost all of the tapes contained extra or unnecessary functions and some would not print on machines having non-automatic features. Problems were also presented by the different keyboards used throughout the world.

Participation of all the entrants is sincerely appreciated. Since this contest is planned as an annual activity, it is hoped that these artists and other potential ones will be ready for the '75 competition.

Prom Controlled CW ID Generator-
Double Message.

"DON" PURLAND, WØLZT
8201 Northwood Pky.
NEW HOPE,MN, 55427

Here's another CW ID unit. Only this one has a PROM to store the CW message. In fact, there is enough room (256 bits) to store 2 CW ID's! The PROM, a Monolithic Memories 6330 or a Signetics 8223, is readily available and inexpensive. The PROM replaces all the diodes and the multiplexer/decoders. It has the equivalent of 256 diodes. The PROM comes with a fuse in series with each diode. By "blowing" the proper fuses a permanent message is "burned" into the memory. Once programmed, it is impossible to change it, when it is in the operating circuit.

I use the first half of the PROM (most significant bit a "O" - A4) for the beginning message CW ID, and the other half of the PROM (most significant bit a "1" -A4) for the ending message CW ID with the K's.

I borrowed the CW format from Howard Nurse's (W6LLO) article in Ham Radio of Jan 74: - dot-1 bit; dash-3 bits; between dots & dashes -1 bit; and between words -7 bits. Also from W6LLO, I used a sub-multiple of the RTTY bit rate - 1/4 th.

CIRCUIT DESCRIPTION -

IC U1&2 are a divide by 22 for the 60 wpm speed and follow the formula: -f equals 1/period equals 1/.022 equals 1000/22 equals 45.45 Hz. This is useful here and for future articles where we will generate digital RTTY messages - sending the time, and common high useage phrases. I'll also have the divider for 100 wpm speed RTTY.

One-half of U8 is used as a latch, and stores the fact that a CW message is being sent. U5 is used to indicate which CW message is sent. Two lights indicate which message is sent. To reset to the beginning QSO CW ID the BEGIN pushbutton is pushed, this resets U5, and a "O" will be sent to the A4 input on the PROM. When the START button is pressed, U8 latches and puts a "O" on the counters U3, U4. , then the 45.45 Hz is divided by 4 in U3, and then binary counter (U4) sequentially steps thru the memory, on every 8th count of counter
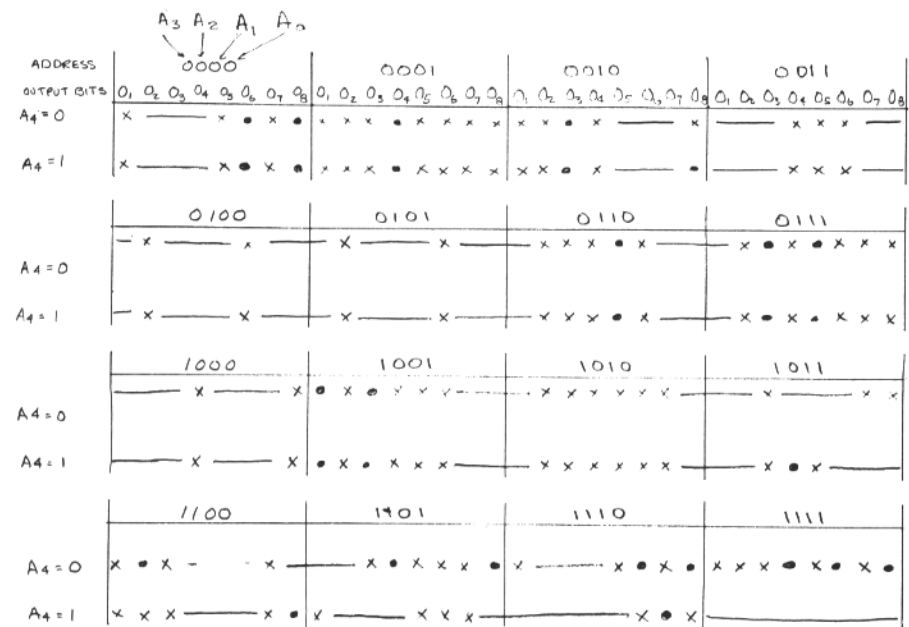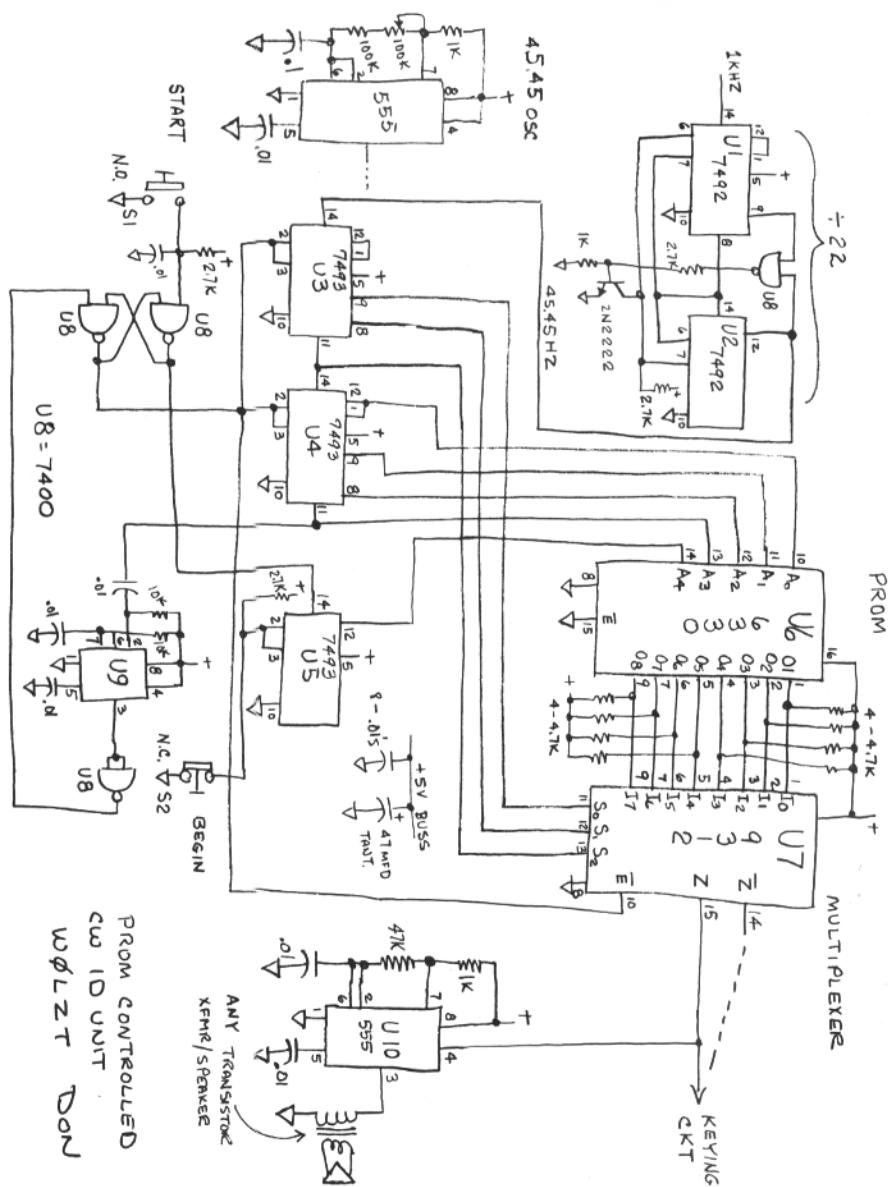
U3. The memory chip U6, a 256 bit store, has 5 input bits of address and 8 output bits of message. The address then has 32 (25) addresses containing 8 bit messages. If we string these messages serially, it is a 256 bit message. If we forget for the moment, address bit A4, we have then 16 addresses (24) of 8 bit outputs, which gives us a 128 bit message. If we control address bit A4 to be a "1" or a "O", we then have 2 128 bit messages - 128 bits when A4 is a "O" and 128 bits when A4 is a "1". U7 is a 8 position multiplexer, like an 8 position switch. The SO,S1,S1 inputs, control which signal input gets to the output, in binary fashion, 000 lets the 10 input get to the output; thru 111 which lets the 17 input get to the output. At each of the memory addresses we stop, for 8 counts, and let U7 step thru the memory's 8 output bits with counter U3, that is connected to the S0, S1,S2 control inputs on U7. As U3 counts at a faster rate than U4, connected to the addresses of U6, it can be seen that U7 will look at all 8 outputs of the memory before the memory is stepped to the next address. When the address is increased by 1, a new part of the CW message is ready for U7. This is repeated until we get through the last address, and the last 8 steps of U7. When counter U4 goes to "O", at the end of the message, (A3 bit) falls to "O". This falling edge starts one-shot U9 that resets the U8 latch. When U8 resets - 1. U3&U4 are held in reset. 2. U8A's output falls and flips a counter stage of U5 putting a "1" on address bit A4, and the ending lamp will light, 3. U8B's high state disables U7 and forces a "O" at the Z output. With A4 a "1" the memory is ready for the ending message with the next push of the START button.

The outputs of U7 are the Z and the Z pins, which are the true and the inverted outputs. Depending on your type of CW initiation you will use either of the 2 outputs. If you change your keying requirements it is a simple matter to reverse it by changing to the other output. U10 is always connected to the Z output and will give an audible tone for monitoring the sent CW. (borrowed from Bert Kelley's article - RTTY journal Oct. 1974 - a very good idea.) The output bits will be serial and will come out in the

sequence shown in the program form. This is 0000 address for I0 - I7 then 0001 address for bits I0 - I7 and so on until 1111 address bit I7 and then reset. I have shown this for my CW IDer.

Sounds simple! And it is, as the PROM does all the work!

For those of you who don't want to use the 1 KHz divider, a 555 oscillator is shown for 45.45 Hz.

$A_4 = 0$ MESSEGE — DE WØLZT MPLS
$A_4 = 1$ MESSEGE — DE WØLZT KKK

CONSTRUCTION

The PROM takes up much less real estate and you can put the whole thing on a small card. I found that the most convenient way to mount IC's is on a plug-in circuit card. It makes construction easy, and allows modification and trouble shooting without unsoldering leads to get to the guts. I have been using VECTOR #3677-2 D.I.P. Plugbord. and connector R644. These cards are available from most (Newark, Allied) mail order houses. The cards have the B plus and GND busses and IC patterns on one side and a 44 pin connector, and will hold 15 IC's.

It is very important to use enough bypasses (.01's) on the unit as R.F. sneaks in everywhere especially on TTL logic! If you want this unit by itself, put it inside a chassis and put a bottom plate on it to completely shield the circuitry.

PROGRAMMING

Make a form similar to the one shown. It would be best to cut it up and put it end to end, so that your CW is one continuous line. Make it so that you can have a double CW message, one below the other for the A4 1&0 messages. Leave the first bit empty, if possible, and draw out your CW message. It might take several trys to get one that fits. Don't forget to leave a bit space between each element, it is very easy to miss one. After you have it in the 127 blocks, divide the cw up into groups of 8. There should be 16 groups, 0-15. This will be the address - A0-A3 bits, binary notation. Where there is a blank bit between the CW, put an "X" in it. The x's will be the fuse links that will be blown with the programmer. Make up a paper that has 32 lines down and 8 blocks across. On the left side mark them 0-31 down and on the top, left to right mark them 1-8.

From your CW program, starting at block "O", put x's on the form where they appear in the first group of 8. Continue through with the rest of the groups. This is now your program form. Most places, where you buy the PROM's, will program it for you if you send them this programming form, or you may be able to borrow a hand programmer from your local sales representative. If there is no way to get the PROM, I can obtain the PROM for you and program it. The cost is $12.

Good luck and I'll be looking for your signals on the bands.

***

RTTY From Oscar 7

In a letter from Joe Kasser, G3ZCZ/W3 we received some new information on Oscar 7 regarding the RTTY transmissions. Oscar 7 is successfully sending back RTTY telemetry at 60 wpm, 850 shift, on 435 1 MHz on Sunday, Tuesday, Wednesday and Friday (GMT). AFSK telemetry may also be heard at 145.98 MHz on Monday, Thursday and Saturday (GMT). AMSAT is interested in receiving reports and will be glad to acknowledge them with a special QSL card.

The telemetry format is as follows: 60 words in 6 lines, each word contains 5 digits, the first 2 being the channel number. Words 60 through 79 are clock and status words and are explained below. The word numbers start at word 00.

Joe also sent us a copy of the Calibration Equations, but as all this information can be obtained by writing AMSAT, PO Box 27, Washington, D.C. 20044 we feel that anyone this interested will want complete information.

This is a challenge that many RTTY fans should be interested in. If you need particular information on some problem Joe has offered to help. Send a SASE to Joe Kasser, 11532 Stewart Lane, Apt. C-1, Silver Spring, MD. 20904. An information net is also operating on SSB at 3850 KHz every Monday evening EST at 0100 GMT (Tuesday).

```
-00262-01912-02900-03903-04903-05000-06906-07903-08910-09910

-10000-11748-12609-13009-14337-15000-16120-17548-18000-19000

-20477-21908-22902-23903-24910-25000-26901-27893-28905-29904

-30000-31000-32715-33000-34000-35289-36000-37290-38286-39287

-40499-41907-42906-43907-44907-45000-46916-47912-48913-49912

-50000-51745-52609-53183-54896-55296-56160-57093-58000-59870

-00016-01036-00016-00036-00016-00036-00016-00036-00016-00036

-00016-00036-00016-00036-00016-00036-00016-00036-00016-00036
```

INTERPRETATION OF THE STATUS WORDS IN TELETYPE TELEMETRY CHANNELS 60 - 79

The seventh and eighth lines of telemetry data from the teletype telemetry encoder are spacecraft status words, coded in octal (base 8) form. Two status words are sent alternately, "satellite clock time" (sent in teletype telemetry channels 60, 62, 64, 66, 68, 70, 72, 74, 76, and 78), and spacecraft state/mode (sent in channels 61, 63, 65, 67, 69, 71, 73, 75, 77, and 79).

Each status word consists of five octal numbers. The first (left-most) digit is not used and should be disregarded. The second, third, fourth and fifth digits are octal numbers containing the status information.

Satellite Clock Time (Teletype Telemetry Channels 60, 62, 64, 66, 68, 70, 72, 74, 76, and 78)

Satellite clock time is telemetered in AMSAT-OSCAR 7 to permit identification of the approximate time that a frame of telemetry was recorded. The clock increments every 96 minutes and repeats again from zero every 273 days. The clock reading is telemetered as a five-digit word in octal form. For example, the word X3746 represents a clock count of $(3 \times 8^3) + (7 \times 8^2) + (4 \times 8^1) + (2 \times 8^0) =$

$$1536 + 448 + 32 + 6 = 2022$$

(The left-most digit, represented above as "X" is not used and should be disregarded. It will generally be zero.) At 96-minute intervals, the word would increment to X3747, then X3750, then X3751, and so forth.

Spacecraft State/Mode (Teletype Telemetry Channels 61, 63, 65, 67, 69, 71, 73, 75, 77, and 79)

The state/mode of the spacecraft is transmitted in octal form in five digit words. The first digit is not used and will usually be zero. The second, third and fourth digits are command status words corresponding to the last command received by the spacecraft command system. This information can be interpreted by means of the command status word table given on the following page.

The fourth and fifth digits provide information on the Mode (i.e., whether the satellite is in Mode A, B, C, or D), and whether the 435 MHz and 2304 MHz beacons are ON or OFF in accordance with the table on the next page.

VHF RTTY NEWS

RON GUENTZLER, W8BBB Editor
212 GRANDVIEW Blvd.
Ada,   Ohio 45810

This month we have several VHF RTTY News items, including the results of the BARTG VHF RTTY Contest, and some RTTY Current Awareness information.

Operating News

From Ronnie Middleton, WB5KEI, in Levelland, Tx. : "Thought I would write you about the two meter activity here in West Texas (Lubbock). There are a few of us on 146.700 MHz - all have autostart. We hope to have a repeater on in Lubbock around the first of the year. The frequencies will be 146.100 MHz in - 146.700 MHz out. At present there are Don WB5BRY, Tommy W5HFT, Joe WA5LMK, and myself WB5KEI. Have approximately three more waiting for crystals for their rigs. Would like to know about activity in other areas of Texas."

From Stephen Hawes, WB6UZX, Berkeley, Ca: "There is in operation in the San Francisco Bay area a RTTY repeater: WR6ABG, Input 147.93 MHz - Output 147.33 MHz, located in Marin County, operated by Herb, WB6IMP. Current standards: Wide shift AFSK. 2125 Hz Mark - 2975 Hz Space. 5 KHZ peak deviation, vertical polarization, 60 speed. As of 1975 JAN 01, the operation on WR6ABG will be narrow shift: 2125 Hz Mark - 2295 Hz Space. Around the same time, the repeater is expected to be moved to a better location in Marin County and change call to WR6ACR. Some of us lurk there on autostart. There is a net on Thursday nights at 8 PM local time. The CARC (California Amateur Relay Council) has designated 146.580 MHz for use (in Northern California, at least) as a non-voice simplex frequency, but I don't know of any activity there."

Steven Roth in Vienna, Va writes: "I returned from Chile a year ago where I was CE3YO. I am just now becoming active on 2 meters with HF soon to follow. Currently, a small group of us are working 170 Hz, FM, AFSK RTTY on 146.580 MHz and a few of us have autostart so we can monitor the frequency evenings and weekends. We are looking for more individuals to join the group."

Larry Herring, WB5GRF, Dallas, Tx., has some amusing comments: "Well, seems that everytime I try to state a fact, someone gets hold of it and suddenly I'm wrong. The OCT RTTY Journal reported my information on the activities in the Dallas-Ft. Worth "Metroplex." At the time those facts were true, but being a highly advancing group down here there are a few changes I would like to note! (In other words, we're changing things faster than I can write. . .HI.) There are still quite a few on 146.700 MHz AFSK FM, and there are more joining us daily, especially with the winter approaching. But since the trend is toward narrow 170 Hz shift, we have all decided to use the state-of-the-art narrow shift. So those still not in there with us should crystal up that dust-collecting two meter FM rig, and get the patch cords to substitute the FM rig audio out for that HF rig they have been running. And an audio oscillator that will shift from 2125 to 2295 isn't that hard to build. We have one enthusiast that can receive but doesn't have his oscillator built yet; he has gone to the extent of having another ham in the group make up short RTTY audio tapes that make short calls asking the autostart boys to open the speaker so he can QSO phone/RTTY (until he gets the oscillator finished). I'll bet there are over 1000 machines in the area stashed in ham's garages; sure would be nice to see them put to use!"

Thanks so much to Ronnie, Stephen, Steven, and Larry for the operating information. It's this kind of information that helps others get on, because they then know "where to go", as it were. Keep the info coming - cards and letters.

Ted Double, G8CDW, BARTG Contest and Awards Manager, sent the results of the 6th BARTG VHF RTTY Contest held in 1974 SEP. "First place went to DJ1QT/F who scored 49 points on 144 MHz and 120 points on 432 MHz with 11 contacts and best DX for him of 269 km. DJ8EA was in second place with 78 points on 144 MHz and the best DX for the contest of 380 km. In

RTTY·DX

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

Hello there . . .

For the past few weeks activity has been quite low possibly due to spotty band conditions. However, once you drop your guard something does come up that makes you wish you had monitored the bands more closely.

As for example. One bright Sunday morning we were astonished to print OE2EM/YK in contact with several European stations. You can bet we stopped to take notice as it is rare indeed to hear activity from Syria in any mode, much less RTTY. Uli, DK3CU, was doing an excellent job in making order out of chaos, as the QRM from BK'ers was unbelievable. With Uli acting as traffic director many stations were able to make contact with Ernst. His actual location was at Faovar, Syria, in the Golan Heights area. However Ernst indicated that QSL's were to be sent via the Austrian QSL Bureau. Later we received a more direct QTH, so you can make your choice.

Ernst Kapsamer, OE2EM/YK
Austrian Contingent
Undof, Abt 11
1150 Wein, Austria

With United Nations observer teams so prevalent in the Middle East at this time you will no doubt copy a few more exotic calls from that area from time to time in the months ahead. For starters here are two that have been worked by some of the boys so far. DM3BBM/-4X, and VE6CCS/SU1. Additional information is not available at the moment but that station from Egypt should be a first on RTTY.

The path from Bonin Island into Europe seems to be quite good at around 0800z. Signals from Kei at JD1ABH were rolling in during November and the chances are that he is still active from there. We are advised that Marcus Island should again be active sometime in February and we hope to have more information next month.

From Zone 17 in the USSR, UK7EAA has been reported active and further East into Siberia UK0FEK has been logged.

HONOR ROLL-100 DXCC

Confirmed

ON4BX	137	W2LFL	107
ON4CK	133	W3DJZ	107
W3KV	132	W8CQ	104
WA3IKK	114	I5ROL	104
W5EUN	112	G6JF	101
I5KG	112	W4YG	100
W5QCH	111	JA1ACB	100
DK3CU	111	K8YEK	100

50 or OVER CONFIRMED

1.	I5WT	105/96	16.	EI5BH	76/62
2.	K6WZ	92/88	17.	W3EKT	74/62
3.	LU2ESB	101/85	18.	K4VDM	64/60
4.	W4CQI	96/85	19.	F5JA	72/59
5.	DL8VX	93/85	20.	ZL2ALW	63/58
6.	W4EGY	87/84	21.	SM0OY	67/57
7.	DJ8BT	90/82	22.	KH6AG	79/55
8.	W1GKJ	89/82	23.	K6YUI	64/55
9.	OK1MP	83/80	24.	W0MT	58/54
10.	W8JIN	88/78	25.	SM5BO	60/52
11.	WA2YVK	90/75	26.	W0HAH	62/51
12.	W2PLQ	79/74	27.	HB9AKA	62/51
13.	K3SWZ	71/70	28.	OZ4FF	67/50
14.	G8LT	73/69	29.	W5TZB	54/50
15.	CE3EX	76/65			

UNDER 50 CONFIRMED

1.	XE1YJ	58/49	12.	DJ0RR	49/28
2.	ON5WG	57/49	13.	DL0AK	49/28
3.	HB9ACQ	61/48	14.	WA0TAS	42/28
4.	W8CAT	48/46	15.	WB4MAV	52/27
5.	HB9HK	56/42	16.	PA0WDW	45/26
6.	W7BCT	49/41	17.	W4ZCM	41/25
7.	G3LDI	58/39	18.	PY6HL	33/23
8.	VK6PG	53/38	19.	W4ZLH	30/15
9.	K4YZV	60/34	20.	W0LZT	33/14
10.	ON5CZ	60/31	21.	WB4TPU	25/3
11.	SM6EZD	35/30			

*****

RTTY activity from Faeroe Islands has been increased by one with OY1A showing up on the band. OY1A and Mike OY1M are a Father and Son team with Mike as the "junior" op. We are advised that all logs have recently been sent to QSL manager, W6TCQ, so cards should be coming through soon and probably

already have.

One afternoon recently we had a rare QSO with Cork, EL2FD, and when he was called away temporarily the keyboard was taken over by Hans, EL2FU, for his first RTTY QSO. Hans really enjoyed the mode so perhaps you will be hearing more of him soon. As soon as we sent out sk to the boys in Liberia they were contacted by Bob, HI8XRM, another call we have not printed for a long time. Soon after that the printer here typed out KP4AXM, so it seems that the boys at the U.S. Naval Radio Station at Fort Allen, Puerto Rico are back on the bands again. We do hope that all of the above calls will continue to keep the machines going, many of the fellows on the band could use those rarely heard prefixes.

Toward mid December Noel VK3NR, was due to make calls at several ports on the East Coast of North America. Noel is Radio Officer on the ship "Australian Exporter" and has been popping in to visit some of the RTTY gang when possible. He has been to just about all parts of the world over the past two years.

Sid, VP2KH/VP2MKH, was also due to stop over in New York for a few days in December while on his way back to England. He was staying with Knobby, W2PLQ, and no doubt many of the boys in that area had a chance to say "Hello" to Sid and wish him bon voyage. While he sold all his RF gear before leaving St. Kitts he did retain the RTTY machine and TU and we understand he has a new FT-101B waiting for him in the U.K. so you will be hearing Sid again sometime in the near future and no doubt with some exotic call sign.

The following Awards have been issued this month with our congratulations. WAC NR.233 Knobby Walsh VP2MRW WAC 14mhz NR. 9 Otto Klaeger DJ1QT NR. 10 H. Yates Holleman W4ZLH NR. 11 Knobby Walsh VP2MRW

The Volta Contest takes place after this goes to the printers so we hope to have a report on that activity next month.

The "Giant Flash" Contest will take place over two weekends as usual and this year it is January 18th and 26th. An 8 hour operating session for each weekend. The "handicap" rule this time should give the newcomers a more competitive chance so read the rules on other pages of this issue.

To give you an idea of what has been going on during the past month here are some additional stations reported. CP5AD, IT9FCA, LU5EY, OZ4DZ,

OH5ZU, OK3KFK, OK2BFS, EA7JS, EA8FE, EA8FF, JA1DI, TU2DU, YV3AY, Zs1IY, FG7XT, PA8VVN, DM25A, VK1AOP, VK1RY, UQ2AN.

DX-RTTY January 1965 W6MTJ, W6LVQ, and W8CAT made WAC bringing the total up to 43! PA0FB says that interest is increasing with PA0WX, PA0VDZ, and PA0TED active. VK3KF is looking for 40 meter contacts. LX1DE is getting a Model 19 set up. 5A5TR and 5A5TX reported active. KG-4CG adds a new one to many logs.

Thanks to - W2LFL, W2PLQ, W3DJZ, G6JF, JA1ACB, K6WZ, ON4BX.
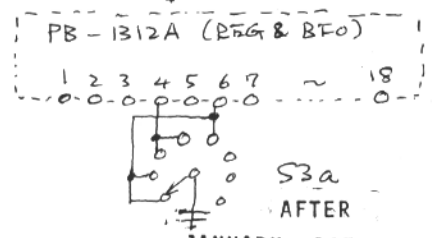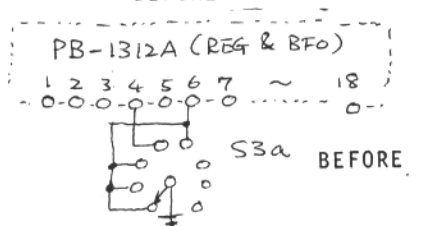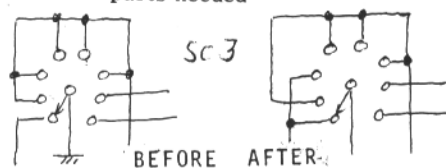
Happy New Year -
73 de John

***

FR101 Receiver

TACHIO YONEMURA, JA1BRK
5-4-18 Zaimokuza
KAMAKURA, KANAGAWA, 248, JAPAN

The new FR101 receiver has a RTTY position on the mode switch. It requires an optional BFO crystal (3177.45 KHz to pass 2125 and 2975 audio through the SSB filter for 850 shift. However since the 170 shift is more popular than 850 it is effective to use the regular CW filter for narrow shift.

The following easy modification will put the CW filter in RTTY mode position and pass 2125 & 2295 Hz in LSB. No extra parts needed --

We can't think of anything glamorous about the figure nine. It doesn't even fit anywhere in the new metric system, but this issue starts the ninth year of our publishing the Journal and we feel that a lot of thanks and best wishes are due to all those that have made this possible. To Ron Guentzler and John Possehl our two column writers that have never missed an issue. To the hundreds of contributors of interesting articles (with no recompense) and to the thousands of subscribers who have been so loyal. A very Successful New Year to you all . . .

***

Back issues continue to be a problem. About two years ago we decided to print more extra copies so we would have a complete stock (almost half of the new subscribers order some back issues eventually) of consecutive issues. This makes it easy to fill orders, is profitable for us and convenient to readers looking for special issues. Alas - Mr. Murphy left our radio shack for a while and wandered into the Journal office where he soon ran us out of April and May-June, 1974 issues. As these issues contained the UART articles we originally ran more copies than usual but also made the mistake of taking a number of each to Dayton for the RTTY forum where they all disappeared and also made the mistake of selling a number of copies to one party, soon they were running low and with the UART popularity bringing a number of requests we are now completely out of them.

***

Another embarrassment -- Binders -- about the time the last issue went to press we had a full box of binders on hand and they were moving slowly, however we checked with the binder supplier about another shipment and found the price had gone up about 20%. This meant we would have to raise the price to $4.00 each. It seemed absurd to pay a third more for a binder than the cost of the magazines to fill it, so

we did not reorder any.

Then came a deluge of orders, from 1 to 8 at a time and we were soon completely out. After checking with some who use them and most seeming willing to pay the increased price we sent in a reorder. Shipment will not be until around Christmas however so we are returning all orders received and if you still want them at the new price of $4.00 each please reorder after January 1st. We are happy to accommodate anyone but frankly we don't think they are worth it.

***

We have had a number of requests for UART articles and if we can get some of interest, we may use a future issue and re-run the original UART articles along with some new in it. This would partially help being out of the original issues.

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For several years John Isaacs in California was supplying Xeroxed copies of any back issue. Because of a health problem this service had to be discontinued.

We have just received notice that this same service is again available. A long time advertiser in the Journal, Atlantic Surplus Sales, 1902 Mermaid Ave. Brooklyn, N.Y. 11224 can supply a duplicated Journal copy of any issue at $1.50 each plus postage. If you need a specific issue it is nice to have some source. As far as we know any past issue, is available, at least for the last 10 years.

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For sample copies, or a few back issues, we often get coins mailed in a letter. The work and ingenuity of the senders to protect these coins is amazing. We have received carboard with neat holes cut out to fit the coins or folded in layer after layer of paper but most of them all have one thing in common, - scotch tape - egad the time we have spent trying to get at the coins, usually we tear out the paper from the back but when we got one that

was taped on both sides we decided to try burning the entire wrapper, believe us scotch tape will burn but also stinks. Really it is only necessary to fold the coins in paper a couple of times and stick in the envelope. If we get the envelope we will get the coins. With inflation the way it is the tape will cost more than the coins and the tape is NOT necessary.

The bottom of our barrel of articles is showing again. Our pleas in the past have always been answered and we are not worried this time but if you have something that might be of interest send it on. We can use all lengths but exceptionally long articles have to be used sparingly because of space limitations. And especially some UART applications. Please . . .

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VHF Cont.-

CONTINUED FROM PAGE 7

third place, OEIVKW/3 scored 71 points on 144 MHz and 6 points on 432 MHz with his best DX being 368 km. The rest of the contestants were G3OUF, G3NYK, G3PLX, G3RED, G3OZF, G3IIR, DK3QA, HG5KDQ, G8ART, and DK1AQ/P. Some confusion was caused in England by operators using different speeds. DK1AQ/P used a lighthouse to support his antenna and had to use 90 metres of feeder cable. In addition to the thirteen contestants listed above, 32 other stations were active and gave points." Although it's a while before the 7th Annual contest will be held, anyone desiring more information should write to Ted at: 89, Linden Gardens, Enfield, Middlesex, England. Thanks, Ted.

Current Awareness

Vince Staffo, WB2FYZ, said that the book "Principles of Telegraphy (Teletypewriter) "is still available at $1.50. A price list "Radio and Electricity," which contains a host of fine literature available at reasonable cost, is available free from Superintendent of Documents, Government Printing Office, Washington, DC 20402. Thanks, Vince.

In case you missed them, the following articles in Ham Radio are of interest: Robert Clark, K9HVV, "The Heathkit HO-10 and SB-610 as an RTTY Monitor Scope," 1974 SEP, p. 70; Bert Kelley, K4EEU, "Adding carriage return to the automatic line-feed generator," 1974 SEP, p. 71; and, John Fehlauer,

WA2WTL, "Coherent FSK RTTY," 1974 NOV, pp. 58-59.

Well, that's it for this month. Please keep the information coming. Tentatively, we will have more information on the history of Teletype from 1907 to present, in next month's column.
73 ES CUL, RG.

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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.

1971- July- Sept.-Nov.- [3]
1972- Apr.-May-July-Sept.- Oct. Nov.-Dec.- [7]
1973- Complete.- [10]
1974- Jan.-Feb.-March.- July, Sept.- Oct.-Nov.- Dec.[8]

RTTY Binders are out of stock. Another supply will be available after January 1st but the price will be $4.00 each and $5.00 each to overseas subscribers. See article in "Hits and Misses" this month.

More Commercial RTTY Frequencies.

More commercial frequencies furnished courtesy of Mark Regan, USN. Box 798 NAVSECGRUACT, FPO, N.Y. 09555.

THE FOLLOWING FREQUENCIES ARE USED BY UNITED PRESS INTERNATION FOR THEIR RTTY PRESS BROADCAST TO THE CARIBBEAN, CENTRAL & SOUTH AMERICA.
B-WIRE FOR RELYING INFORMATION IN EG & SP FROM
UPI N.Y. AND FOREIGN OFFICES ABROAD:

WFG-50	20985 KHZ
WFK-28	18484 KHZ
WFL-44	14660 KHZ

UPI ENGLISH PRESS SERVICE TO CARIBBEAN SUBSCRIBERS & OTHER POINTS:

WFE-20	20795 KHZ
WFD-86	16372 KHZ
WFI-29	9327 KHZ

UPI SPANISH PRESS SERVICE TO CARIBBEAN, CENTRAL & SOUTH AMERCIA

WFG-42	22975 KHZ
WFD-59	19580 KHZ
WFD-24	14695 KHZ
WFE-20	10825 (HZ
WFA-67	7760 KHZ

THE FOLLOWING FREQUENCIES ARE USED BY THE ASSOCIATED PRESS FOR THEIR RTTY PRESS BROADCAST TO THE CARIBBEAN, CENTRAL & SOUTH AMERICA.

AP ENGLISH PRESS SERVICE:

WFD-59	19540 KHZ
WEY-45	15914 KHZ
WFE-90	10213 KHZ

AP SPANISH PRESS SERVICE. THIS INCLUDES SOME ENGLISH TRANSMISSION ON TO MAKE IT WHAT AP CALLS THE BI-LINGUAL WIRE:

WGF-43	23928 KHZ
WFD-79	19620 KHZ
WFD-34	14710 KHZ
WFE-40	10890 KHZ
WFA-36	6935 KHZ

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Results, S.A.R.T.G. DX Contest. 1974

Nr	Call	Scores.	Nr	Call	Points
1	W3EKT	165.945	41	SMøACY	20.700
2	I6NO	165.360	42	JA1DI	18.980
3	K4GMH	155.250	43	DK4QS	17.250
4	I5WT	152.425	44	DK1AQ	16.800
5	I1YTL	119.385	45	W8UNB	12.870
6	I1BAY	117.400	46	OHøNI	12.750
7	IT92WS	108.855	47	G3ZWW	11.025
8	OZ4FF	87.300	48	SM6AEN	9.870
9	ON5WG	86.130	49	CE3NA	9.750
10	I5CW	84.000	50	VE7YP	9.660
11	W4CQI	83.055	51	OZ8DR	9.400
12	HB9AVK	75.320	52	OZ6FI	8.580
13	SMøOS	63.495	53	UA9PF	8.400
14	DJ9FT	61.215	54	JH1ISF	7.920
15	DK3NG	60.500	55	RF1PO	6.840
16	W5EUN	60.250	56	SM6CDG	6.750
17	1G2U	55.250	57	DK5VA	6.750
18	SM5EKA	53.550	58	LA2IJ	6.025
19	DK2KV	50.995	59	OZ4XR	5.800
20	W4ESY	48.760	60	DK5KG	5.775
21	WB4MAV	47.385	61	VE3BIW	4.720
22	OH2BJ	46.830	62	I8AMP	4.225
23	W3KV	46.535	63	JA1EUL	3.965
24	PAøRZ	42.075	64	VK5IF	3.920
25	SM5BTG	40.795	65	SM7BGE	2.460
26	PAøWDR	39.345	66	SM6EDH	2.460
27	JH1TFP	35.175	67	WA1SCX	2.000
28	SL5AR	35.055	68	G3RDG	1.750
29	K6WZ	34.710	69	OZ4GF	1.500
30	SM5CNM	33.540	70	WA1PWF	1.350
31	W3CRG	32.375	71	OX3JW	1.280
32	TF3IRA	30.770	72	SM6FBE	1.020
33	OZ8GA	29.520	73	PAøWDW	700
34	VK3NR	29.145	74	OX5XX	690
35	DL8KS	27.540	75	VE7RDQ	675
36	OZ2X	26.220	76	LA5PP	525
37	CE3EX	25.420	77	OZ4CF	150
38	WA9WJE	24.600	78	JA1EYH	135
39	OK1MP	22.940	79	SMøOY	70
40	KøWJF	21.840	80	SM4CMG	50

Class C, multi opr.		Class D, SWL's.	
SK5AA	61.180	Horst Ballenberg Gemany	101.075
OZ7RD	57.240	I4 14707	93.600
HA5KBM	26.460	Paul T.M. USA	85.120
OH2AM	21.895	BRS 27239	49.450
YU2RZR	13.700	I3 13018	43.925

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Giant RTTY "FLASH" DX Contest January 18 and 26th 1975

RULES

The **cq elettronica** Magazine of Italy is once again sponsoring the « Giant » RTTY Flash Contest. The purpose of this Contest is to promote increased interest in the RTTY mode of operation as used by Radio Amateurs. This is a « flash » Contest because the total contest time is limited to 16 hours periods on two successive weeks in January 1975.

1. CONTEST DATES
   1st 15,00-23,00 GMT January 18th 1975
   2nd 07,00-15,00 GMH January 26th 1975

2. BANDS
   3,5, 7, 14, 21, and 28 M... nateurs Bands.

3. COUNTRY STATUS
   The ARRL Countries list will be used except that the W Call areas WØ to W9 and the VE Call areas from VO to VE7 will be considered as separate Countries.

4. MESSAGES
   Messages will consist of:
      a) Call sign
      b) RST
      c) Zone number (Example I1XXX 599-15)

5. EXCHANGE POINTS
   a) Each two-way RTTY contact with station in one's own zone will receive 2 exchange points.
   b) Each two-way RTTY contact with station outside one's own zone will receive exchange points in accordance with the « exchange points table ».
   Note: stations may not be contacted more than once on any one band but additional contacts may be made with the same station if a different band is used.

6. LOGS AND SCORE SHEETS
   Use one log for each Band.
   Logs to contain: Data, Time (GMT), Call signs, Countries, RST and zone numbers sent and received, multipliers Country, Points and final score.
   All Logs must be received by not later than February 28th 1975 in order to qualify.
   Send them to:
      Prof. Franco Fanti
      Via A. Dallolio 19
      40139 Bologna, ITALY

7. MULTIPLIERS
   A multipliers is given for each Country worked. A separate multiplier may be claimed for the same Country if a different band is used.
   The operators own Country does not qualify for a multiplier, count zero point and zero the QSO numbers.

8. SCORING
   Total exchange points times the total number of multiplier times the total number of QSO.

9. HANDICAP
   World championship holders: less 8% of the total final score
   Winners of five or more Contests: less 6% of the total final score
   Winner of one to four Contests: less 4% of the total final score
   Contestants with a previous Contest placing 2nd to 10 place: less 2%.

10. SWL'S
   This contest is also open to SWL RTTYers. For the SWLs the same scoring rules are valid. A separate results table will be made for these entries.
   The Logs for SWLs must contain: date, time (GMT), Call sign of station heard, RST and Zone number sent by station heard, multipliers Countries, points and final score.
   The same station is only valid once on each band.

11. AWARDS, MEDALS & FREE SUBSCRIPTIONS
   The contest Committee will compile two separate lists.
   a) General classification
   b) Short Wave Listeners
   In each of these two classes the following awards will be made:
   1st: gold medal
   2nd: silver medal
   3rd: bronze medal
   4th to 7th: will receive a 12 month's subscription to the cq elettronica magazine.
   8th to 10th: will receive a 6 month's subscription to the cq elettronica magazine.
   There will also be awards for all of the operators and SWL's that send logs.

12. WORLD RTTY CHAMPIONSHIP TABLE FOR 1974
   Points and positions achieved will be valid for inclusion in the WORLD RTTY championship table for 1973. The « Giant » is the last Contest for consideration for the Championship for the year 1974

13. RULES OF BEHAVIOUR AND PENALIZATION.
   The Logs must be compiled in accordance with the rules listed in (6).
   The contacts must be made by means of the RTTY mode and it is not permitted to use other modes of transmission either before, during or after the exchange of messages by Radio Teletype.
   During the Contest it is expected that Amateurs will observe the fundamental rules of courtesy and good operating during contacts.
   Failure to observe any of the above Rules will result in the exclusion of the entry from the final result and any such Logs received will be considered as check Logs.
All logs received become the property of the Edition CD and will not be returned.
The decision of the organising Committee in any dispute will be final and any subsequent controversy cannot be referred to the Civil Court.

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CLASSIFIED ADS- 30 words $2. Additional words- 4¢ ea.
Cash with copy, Deadline 1st of month.

MORE RTTY! ONLY HAM RADIO MAGAZINE consistently brings you more RTTY articles and better RTTY articles than any other general amateur magazine. You need RTTY Journal, but you need HAM RADIO also. $7.00 per year, $14.00 for 3 years. Ham Radio, Greenville, NH 03048.

CHICAGO AREA OPERATORS, EXPERT REPAIR work performed at reasonable prices. Cleaning and lubrication; printers $11.00, Keyboards $6.00, Reperfs $8.00, Repair work, any model teletype apparatus, $17.00 plus parts. Phone (312) 392-2358. Contact Neil.

HAL COMMUNICATIONS CORP.: HEADQUARTERS for MAINLINE Solid State RTTY Equipment. In demodulators, choose from the incomparable ST-6 or, for a low cost beginning in RTTY, the ST-5. Tailor either to your requirements by selecting the 425 Hz press discriminator, the AK-1 AFSK oscillator, and table or rack mount cabinets for the ST-6, or the AK-1 AFSK and the ST-5/AS autostart for the ST-5. Full details available in our current catalog. Charge your purchase to your BankAmericard or Master Charge account. HAL Communications Corp., Box 365RJ, Urbana, Illinois 61801. Phone 217-359-7373.

FOR SALE: MODEL 28 TELETYPE EQUIPMENT. Standard, deluxe and compact ASR; KSR; RO; R-T ROTR; Modification kits, parts available. Also model 15KSR and RO, 19, - 14 TD, 14ROTR. Model 28 machines and parts wanted. K8JOF, 2448 N. Wilson. Royal Oak, Mi. 48073

WANTED: MODEL 33 & 35 EQUIPMENT. Complete or partial units, any quantity. Will pay shipping. Terminal Systems, Inc., 11300 Hartland St., North Hollywood, CA 91605 (213) 769-6772.

RTTY VIDEO DISPLAY UNIT: 1000 characters, plugs into loop or logic circuits. ASCII or BAUDOT available. Works with any TV set. Leland Associates, 18704 Glastonbury Rd., Detroit, MI 48219

NEWS-NEWS-NEWS - Amateur Radio's Newspaper, "Worldradio", Trial subscription-Two issues for one dollar. "Worldradio" 2509-F Donner Way, Sacramento, Calif. 95818.

WANTED - ANY AMOUNT of back issues RTTY JOURNAL. Morris Sugerman, WA3MEA, 6713 Chippewa Dr. Baltimore, MD. 21209. 466-9500

FOR SALE: HAL ST-6 factory wired with AK-1 and 425 shift board, Good as new $285.00. Control data 5-6-7-8 level tape punch, model 607800, useable on any level, good condition, $55.00. Control Data 5-6-7-8 level photo electric tape reader model 600700 cds photocells, useable on any level, good condition, $35.00. Special on reader and punch combination - $75.00. Friden 2312 tape reader, any level modern cabinet - $50.00. Friden ATR tape reader, any level $35.00. Two-CV89 left at $95.00 with manuals and 3 connectors. Lou Carbaugh, Box 398, New Cumberland, PA. 17070

HAL COMMUNICATIONS CORP. announces the DKB-2010 Dual Mode Keyboard. Provides flawless transmission of RTTY and Morse Code with standard 3 character buffer and optional 64 or 128 key buffer. Call letter identifier and "Quick Brown Fox" sequence standard. Write for detailed spec sheet. HAL Communications Corp., Box 365RJ, Urbana, ILL. 61801. Phone 217-359-7373.

EQUIPMENT FOR SALE: Model 28 KSR teletypewriter complete, geared for 65 WMP, internal loop, $350.00. 1-RO 28 Teletypewriter complete, geared for 67 wpm. Internal loop, $250.00.1-FCS 250 Converter, 2975 and 2125 coils complete with autostart, $150.00. 1 - Homebrew converter, 2125 & 2295 coils, w/ 24 hour clock start, $35.00.2 - Regenerative repeaters, w/ mercury wetted relays, as is, each $15.00. 1-11-0 to 110v voltage regulator transformer, $10.00. 1-6' Bud relay rack, $10.00. 1-RCA fixed freq. (crystal) receiver, 7 to 12 KC with squelch. $25.00. 1 - Rack mount and cabinet for 28 Teletype table mount, $30.00. Contact Bill Haley, WOEGA, 2310 Jones St. Sioux City, 1A,51104, 255-8332.

TECH MANUALS---$6.50 each: TT-63A/FGC, CV-591A/URR, TS-2/TG, CV-116; Following manuals $8.50 each: TT-47/48, R-388/URR, FR-114/U, USM-50, 51J4; following $10.00 each: R-390A/URR, SRR-11, 12, 13, USM-32, URR-35C; Model 14 TD manuals $2.50 each. Other manuals now available: (limited quantity) UGC-38, 40, 41 $13.50, TT-298A/B, TT-299A/B $15.00, WRR-2/FRR-59 $22.50, WRR-3A $18.50, UPM-70, 70A $20.00. Immediate delivery. Prices postpaid in USA only. Thousands more in stock. Send 50¢ (coin) for large list. W3IHD, 7218 Roanne Drive, Washington, DC 20021.

MODEL 28 - RIBBON REINKERS - MODEL 28 We have cleverly (well, we think so!) remanufactured the Model 14 reinking mounting brackets, so that they install on the Model 28 typing units in just minutes. No cutting, or drilling required. Comes with installation instructions, spare inkwell, replacement felts, etc. Send check or money order for $3.50 (includes postage in U.S. - overseas customers include an additional $.50) to: W.H. Craig, P.O. Box 947 Grayson, Kentucky, 41143. For an additional $.85 we'll include a nice fresh tube of NCR's K-575 black ink. Return for full refund if not satisfied. Limited quantities.

NS-1 PLL Demodulator (Oct. '74 Journal) complete unit wired, tested $25.95 ppd. less switch, meter, powersupply. Board only undrilled $4.75. Nat Electronics, Box 1043, Tavares, FL 32778

CIRCUIT BOARDS: CW-ID, Oct. 1974 Journal $8; Frequency Standard 1974 Ham Radio, $8; Digital Autostart June 1973 Ham Radio, many built, a few left at $10 set, including automatic CR/LF board; SSTV Test Generator July 1973 Ham Radio $5. All boards epoxy, plated, undrilled, sent First Class mail, US or Canada only. Bert Kelley, 2307 S. Clark Ave., Tampa, Fla. 33609

SALE: MODEL 28 TYPING REPERF, type 315/UG code LPR-35, or TT 317/UG code LPR-37, tape data 11/16" wide, Chadless or fully perforated; Good $25.00 each. Model 28 Transmitter-Distributor type TT 334/UG code LXB-9, Good $25.00 each. Tuning forks 96.19 VPS. or 120 VPS. Unused $2.00 each. Mite PD/82U 115VAC, 60 cy. Synchronous motor with connector Unused $18.00 each. Reader, High Speed Ferranti model Mark II or III Good $15.00. TT Socket wrench 5/16" with 12" long handle. 75¢. 60 WPM set gears for Model 14 TD 1800 RPM Unused $4.75. . . Model 14, 15, and 19 Machines available, Also LORENZ LO-15 ASR and KSR (IT'S A REAL BEAUTY). Send us a list of your needs. ATLANTIC SURPLUS SALES CO. 1902 Mermaid Ave. Brooklyn New York 11224 Tel. (212) 266-2629.

CLASSIFIED ADS-

FOR SALE - DUAL SHIFT ST-6, no autostart, $200 PPD, AK-1 AFSK, $28 PPD, Phase locked Loop Converter, $75 PPD, Solenoid actuated TD suitable for K4EEU's digital TD, $15 PPD, Heath HW-7 QRP rig with AC power, $50 PPD, Kleinschmidt sync motor for TT-4, etc., $5 PPD, Frequency standard from April '72 QST, $20 PPD. All items complete with cabinet & PS, aligned and ready to operate. L.L. Filby, K1LPS, USNAF - Box 80 - FPO, N.Y., N.Y. 09520.

RTTY FOR SALE: New loop supplies for M28 LESU's, $8 ea., Model 15, 19 typing unit hold-down screws, $.75 ea., 3 for $2. Model 15, 19 friction-feed conversion kit complete, $13.00. One (1) NEW Model 15 typing unit, unused, $75. Model 28 floor cabinet, $60. Model 28 style table-stand, $25.00. M28 Stand-alone TD with cover, motor, $125.00. More, send SASE for complete listing. Lawrence R. Pfleger, P.O. Box 21956, Milwaukee, WI 53221.

COLLINS FILTER, Crystal Bandpass with 455KC Center Frequency and Minimum 6DB Bandwidth of 300 CPS. Type No. X455KF300, P/N 526 7073 010 Collins spec. sheet included.
Use for Narrow Shift RTTY with 75S Line (no receiver modification necessary) or 75A4 (installation instruction included on request).
Brand new in original factory carton @ 49.95 postpaid. WAIMRG, 387 Birch Rd., Fairfield, Conn. 06430

HAL COMMUNICATIONS CORP. will show THE line of electronic TTY equipment at SAROC and Miami in January. We'll look forward to visiting with our customers there.

TELETYPE RIBBONS, Black nylon, fresh stock - $3.95/DOZEN, 50¢ each, plus postage (2 pounds per dozen). CV-89 SCHEMATIC and 14 important pages copied from NAVSHIPS manual. $2.95 postpaid. 11/16" PERFORATION TAPE, $2.95 for ten rolls, $8/case of 40 rolls plus shipping (49 pounds per case). JIM COOPER W2BVE, Communication Equipment, Supplies and Information, P.O. Box 73-T, Paramus, NJ. 07652.

FOR SALE: MITE TELEPRINTER, MODEL JJ299B/UG. Mint condition with 60 and 100 wpm gears. Price $175 f.o.b. Also SJ-5A and AFSK, price $90. Floyd Timmons, R 2, Box 29, Fredonia, Kansas 66736.

SALE: MODEL 28 COPYHOLDER TYPE 164024, offset copyholder for a 28 Cabinet type LAC or LAAC etc. unused $5.25; Model 28 Electric paper winder type PW-201 BR 115 V 60 Cy Unused $65.00; Distortion Test Set with Scope Type Stelma TDA-2, 115 V 60 Cy good $38.00; Terminal Unit, Teletype Converter type TH-5 TG unused $49.95; Kleinschmidt allen wrench on 12" long handle for those hard to get at places, Unused $1.00; Distortion Test Set Type TS-2B/TG 115 V good $58.00; Tape, Perforator 11/16 oiled, Red with 2" center hole, Box of 10 Rolls, $3.60 or case of 40 Rolls $9.95; Model 28 LESU units in steel housing Unused $33.00; Model 15 Platen unused $4.50; To speed your order please enclose sufficient postage. ATLANTIC SURPLUS SALES CO. 1902 MERMAID AVE. BROOKLYN, NEW YORK 11224 Tel: 212-266-2629.

FOR SALE OR TRADE: COMPLETE SET of RTTY JOURNALS. From number 1 to current. Also included numerous other early RTTY articles and publications. Approx. 10 lbs in all. Make offer to H.E.S.A. Box 1, Beulah, CO. 81023.

UART's/FIFO's/74221N's. TMS-6011NC UART $11.00. Fairchild 33512 plastic 9x40 FIFO $13.00, 2/$25. SN7422IN One-shot for up-coming UT-4 and other UT-4 and other applications projects for UART, $1.25 each. All postpaid. See prior Journal ads. Peter Bertelli, W6KS, 5262 Yost Place, San Diego, CA, 92109. 714-274-7060.

P & M SPEED CONVERTER, half price, assembled, complete as from P & M, never had one volt in it! (Got Dovetron instead) $20.00 prepaid. Bill Terrell W8NTZ, 1400 N. High St., Hillsboro, Oh. 45133

FOR SALE: J & J ELECTRONICS. Solid State Demodulator (850 and 170 shift) this unit is the same as the ST-5, but with autostart, motor control and tuning meter added. $95.00. C.M. Barrick, W6CP, 5177 Oak Meadow Dr., Santa Rosa, Calif. 95401

SELLING OUR: Package Deal, Model 23 KSR Mark III in Skin-tight cab, exc cond: ST-6, 850/170, AK-1 factory wired, like new: Price of $600. includes Mdl 14 TD & Reperf with keyboard, tables, Teletype Manuals, extra tape, tape winder & all connecting cables. Pick-up deal ONLY. John W. Vonderschmitt K9MAJ R.R. #3 Box 35 Washington, Ind. 47501 or (812) 254-1770

HAL COMMUNICATIONS CORP. announces the new new RVD-1005 Visual Display Unit, with the features of the proven RVD-1002 and some new features to boot, such as: Automatic CR-LF on space after 36th character (prevents splitting of short words), and speed indicator circuitry which times the incoming signal and causes an LED to light to show which speed switch to select. Loop and low level inputs for compatibility with any TU. Combine the RVD-1005 with the DKB-2010 or the RKB-1 for the ultimate in noiseless, reliable, reception and transmission of Baudot coded TTY. Bank Americard and Master Charge accepted. HAL Communications Corp., Box 365RJ, Urbana, Illinois 61801. Phone 217-359-7373.

WANTED: PEACE ON EARTH AND GOOD WILL TOWARDS ALL MEN. Merry Christmas and Happy New Year from W7KGV, Lynn Noyes and Family. 3346 W. Montecito, Phoenix, Az. 85017

MODEL 28s - 2 28KSR table top units, $225.00 each; 1 - 28KSR floor model. $250.00; 1 -Hammarlund SP600JX, $185.00. All excellent condition, little use. All FOB. Sorry, can't ship floor model 28. Paul Beavin, WB9PEL, 3540 Deerfield Pl. Columbus, IN. 47201. (812) 379-9628.

SELLING ALL RTTY GEAR: 28ASR with perf (less TD and reperf. $400.00. (Pick up only). TT/L-2 terminal unit with 170 and 850 filters and tuning eye - top condition, $180.00. Collins R388 general coverage receiver, very stable, mint condition, $300.00. Heath Apache transmitter - $175.00. 750 Watt constant voltage transformer - $25.00. Two model 19 TTY units, incomplete, make offer. (Pick up only). Model 14 Typing reperf - make offer. Call or write for details. Peter Van Wie, W3DUD, 6527 Edgerton Dr. Lanham, MD. 20801. (301) 552-2452.

FOR SALE: MITE RO from Typetronics, have not used. D. Boone, 912 Magnolia, Hubbard, Texas 76648

OA-5 SOLID-STATE TU. See February and September issues of "RTTY Journal." Drilled and plated boards, $15.00; board with parts, $100.00; complete unit, ready for air, $210.00. FOB. WA8ETX, Ken Simpson, 3700 Mountview, Alliance, Ohio 44601.