DX - Cont. -

Continued from Page 11

of shipping something there without a pre-knowledge of custom requirements, etc., etc., as the recipient can go broke just paying the duty. We advise that you get in touch with Sid either on the band or by mail at

Sid May, VP2KH P.O. Box 184
Basseterre St. Kitts W.I.

It was bound to happen sooner or later and, By Golly, it has. We are certainly happy to announce that the "100 DXCC-RTTY" Plaque Nr. 6 goes to our illustrious Editor, Dusty Dunn, W8CQ. Dusty sent the cards here for verification and it was the card from VP8ME that put him over the top.

A new record has been reached with the issuance of indorsements for 110 and 120 RTTY countries confirmed to Arthur, ON4BX, who now actually has 122 confirmed. An amazing record, and we are sure that he has a few more by the time you read this. Close behind Arthur was Bob, ON4CK, with a 110 indorsement (115 confirmed), and W3KV, 110 (with 114 confirmed). The indorsement furnished by the Editor of the RTTY Journal is in the form of a small metallic plate indicating the level

******

We wish to announce that the BARTG will be holding the 2nd RTTY Convention at Meopham, Kent on 30 June.
A station will be set up under the Groups call sign of G4ATG. Operation will concentrate on 14 mhz and will be active from 1000 to 1700 GMT on the day of the Convention.

We were indeed grieved to see listed under Silent Keys in QST the call HK7XI, Hernando Vargas. Hernando was one of the earliest stations active in RTTY from Colombia and indeed, from South America. We shall miss his excellent signal.

DX- **RTTY** August 1963 --

Through the efforts of OZ5JT, Martin, OY7ML has a printer and will be on RTTY shortly (he was, Ed.). W9HJV and W5CME received WAC awards Nr. 31 and 32. W5CME writes to say, "How about some RTTY Society sponsoring a certificate for confirmed contacts with 100 different STATIONS."

Get in the SARTG Contest, August 18-19. There have been some changes See rules on other pages.

Many thanks to K2CY, W2LfL, W3DJZ, K6WZ, K6ZDL, ON4BX, SM4CMG, SM0OY, VP2KH, ZS6BBK, and all.

73 de John

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

FIRST CLASS MAIL

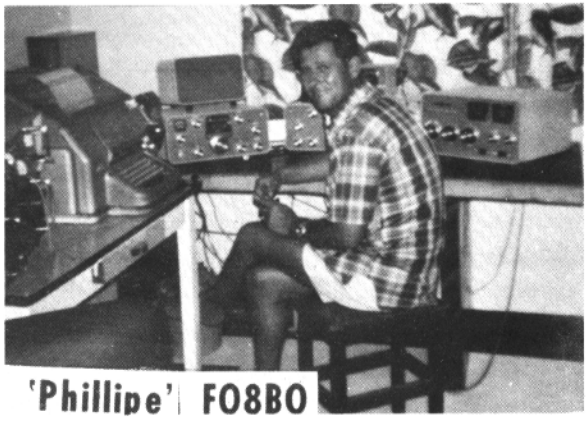
RTTY JOURNAL

July August 1973

EXCLUSIVELY AMATEUR RADIO TELETYPE

VOLUME 21 No 6 30 Cents

'Bill' KZ5BH / HP1XHG



'Phillipe' FO8BO

CONTENTS

S.A.R.T.G. World Wide RTTY Contest-

We have the great pleasure to invite you to join the 3rd WW RTTY contest run by the Scandinavian Amateur Radio Teleprinter Group. Please note a few modifications from the past year; over a weekend, three operating periods have been established, each eight hours in length. There will be an eight hour off-period between each operating period. Somewhat reduced QSO-points and slight changes for the multipliers have also been established.

RULES

1. Contest Periods:
I: 0000-0800 GMT Saturday, August 18
II: 1600-2400 GMT Saturday, August 18
III: 0800-1600 GMT Sunday, August 19

2. Bands:
Use all bands 3, 5 thru 28 MHz. The same station may be worked once on each band for QSO and multiplier credits. Only TWO-WAY RTTY WSO's will count.

3. Classes:
A) Single operator, up to 100 W input
B) Single operator, over 100W input
C) Multi operator, single transmitter (any power)
D) S W L's.

4. Exchange:
RST and QSO-number.

5. Points:
QSO with own country*, five (5) points. Other country in same continent, ten (10) points. Other continent, fifteen (15) points.
*In USA and Canada each call-district will be considered as a separate country.

6. Multiplier:
Each country and each district in W/K and VE/VO. Use the DXCC and WAE countrylists.

7. Scoring:
Sum of QSO-points x sum of multipliers. Sample:

MHz	QSO's	Mult.	Points
3,5	5	3	40
7	5	2	30
14	25	15	300
21	15	10	200
28	5	5	50
Total:	55	35	620

Final Score: 35 x 620 equals **21.700.**

8. S W L's:
Use the same rules for scoring, but based on stations copied.

9. Logs:
Mailing deadline is September 18th, 1973 to: SARTG Contest Mgr., Bo V. Ohlsson
SM4CMG, Box 1258, S-71041
FELLINGSBRO, Sweden.

The logs contain: Band, date/time GMT, call-signs, exchanges sent and rcvd, multipliers and points. Use a separate sheet for each band and enclose a summary sheet showing the scoring, classification, YOUR CALL, NAME and ADDRESS.

10. Awards:
To the top stations in each class, in each country, W/K and VE/VO call-district. In areas with sufficient participation also 2nd and 3rd place certificates, to stations showing a reasonable score.

DE EXTRA

points and positions achieved in the SARTG contest will be included in the 5th WORLD RTTY CHAMPIONSHIP.

If you manage to work all six continents in the SARTG contest, claims for the RTTY WAC AWARD issued by the RTTY JOURNAL, may be made via the SARTG contest manager provided that the logs from the claimed contacts have been rcvd. The WAC award is free of charge but a few IRC's to cover mailing expenses will be appreciated.

All contacts with scandinavians after May 1st, 1970 are valid for the W S R Y-WORKED SCANDINAVIA RTTY AWARD. No QSL's needed. The fee is U.S. $1.00, or 10 IRC's. Contacts with the following number of different scandinavian stations are needed: For Scandinavians: 25, Other EU's: 16, and for DX's: 8. Send your claims and the fee to SARTG Contest Mgr. SM4CMG (See address above).

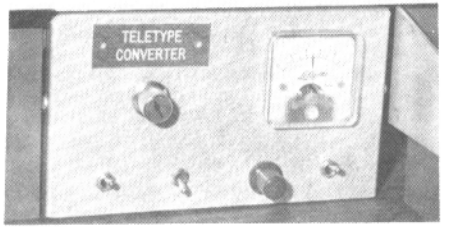
Scandinavian countries: LA-JW-JX-OH-OHØ-OJØ-OX-OY-OZ-SK/SL/SM - TF.

RESULTS- Giant 'FLASH' Contest

1)ZS3B	138.996	21)i6VGA	14.178
2)LU2ESB	138.645	22)WØNP	13.504
3)VP2KH	87.295	23)DL1VR	13.230
4)i5MPK	45.430	24)DK3MG	11.820
5)WØHAH	43.320	25)iØZAN	11.656
6)WA2YVK	39.774	26)OE5OEL	11.600
7)i1BAY	39.372	27)W1KJL	9.804
8)VK6PG	37.497	28)HA25KDQ	7.748
9)iT9ZWS	36.500	29)OK2OP	7.263
10)G3OZG	35.598	30)i8IOG	6.666
11)WB6RXM	35.450	31)OZ7RD	6.144
12)i3EVK	28.623	32)OK1MP	5.842
13)YA1OS	24.332	33)OZ4FF	4.902
14)i5CW	22.222	34)W7CBY	4.796
15)W7KS	21.140	35)W7BCT	4.644
16)PAØSCH	18.759	36)DL2XP	4.482
17)W4CQI	17.091	37)ZL2ALW	4.400
18)PY1DCB	16.725	38)VK2EG	4.152
19)CE3EX	16.406	39)i2KD	3.390
20)W9AE	15.984	40)SMØKV	3.211

SOLID STATE TU-73 DEMODULATOR

AL HELFRICK, K2BLA
Route 1 Box 87
BOONTON, N.J. 07005



TU-73 in BUD 8x6x3 1/2 minibox

Although T U's have appeared in abundance, each one has its own appeal, its own ideas, advantages and disadvantages. Here is a terminal unit that is simple to build, inexpensive, easy to adjust and simple to operate.

The basic overall operation is very straightforward. An over driven operational amplifier is used as a limiter which drives a conventional LC discriminator. The discriminator output feeds a Schmitt trigger driving the printer through a solid state magnet driver. A mark inserter circuit has been included which inserts a mark signal after 200 ms of no signal or space-only signal condition. This prevents the printer from "free running" if the signal is lost during a space, as could often occur while tuning the receiver.

CIRCUIT DESCRIPTION

The input signal is limited and amplified in the 741C operational amplifier. This circuit operates with a DC gain of 1 while the AC gain is nearly "open loop." This arrangement allows sensitive limiting while avoiding the need for any DC balance adjustment. No protective diodes are included since it is virtually impossible for any normal communications receiver to provide a voltage output high enough to exceed the input voltage limitations.

The limiter output drives a very conventional LC discriminator. The parts values shown are only approximate, as each inductor will require individual tuning. The TU may be tuned for either 850 Hz or 170 Hz shift without difficulty. In either case tune the filters carefully and accurately, and use high quality capacitors.

The discriminator output drives a LM311 voltage comparator, with about 200 mV of hysteresis. This circuit is actually a form of Schmitt trigger, or slicer, as it is often referred to in RTTY circles. The LM 311 is more expensive (about $4.75 from National Semiconductor Co.) than most of the voltage comparators that have appeared on the "surplus" market. Do not be tempted to use a less expensive comparator in this circuit. The LM 311 was chosen for its high input impedance, low offset and bias currents.

The comparator feeds a transistor switch which drives the selector magnet. A constant current source is used instead of the "nigh voltage-big resistor" method. In order to assure complete turn off of the magnet driver transistor the emitter of the transistor is returned to a point slightly less negative than the LM311 negative power supply. This assures complete turn on and turn off and does not require that the loop current be derived from the regulated portion of the power supply.

The operational amplifier A2 serves as a mark insertion circuit. If the LM311 output is in the low state, corresponding to a space output condition, the capacitor C1 begins to discharge. If the steady space condition exists for more than 200 ms the capacitor voltage reaches the threshold of the mark insert Schmitt trigger circuit. If the space condition ends anytime before 200 ms the capacitor is rapidly charged through D1. The output of the Schmitt trigger comprising A2 applies a short pulse to reset the LM311 to a mark condition. If the low output of the LM311 was due to a steady space input signal the attempt to reset the LM311 will cause only a short interrupt of the low output. If, however, there is no signal at the time of attempted reset, the LM311 will return to the high state and remain there.

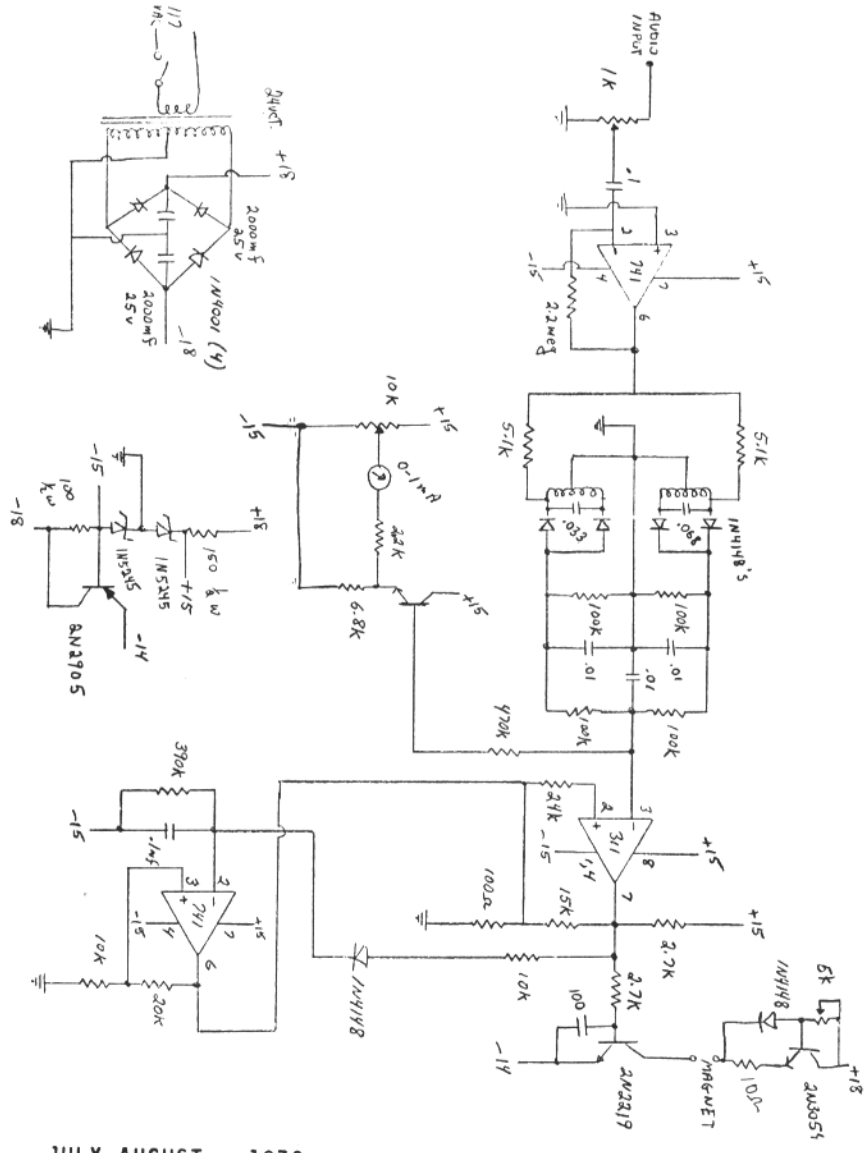
An ordinary left zero milliammeter is used as a zero center meter employing a transistor amplifier to minimize loading on the discriminator output.

The unit is easily constructed on perforated fiber board and it requires no unusual wiring techniques. The adjustments necessary for proper operation are simple and require no special equipment. (It is necessary to tune the discriminator accurately. Methods for

determining the mark and space frequencies precisely have been described in the literature.) After the unit has been wired and checked, connect the printer magnet and a suitable milliammeter. Turn the power on, and if all is operating properly, the milliammeter should read some current. Adjust this current with R1 to 60 mA. With no input signal adjust R2 for a .5 mA reading on the tuning meter. No more adjustments need be made. The T.U. is ready to operate.

This terminal unit has been in operation at the author's station for some time and compared favorably to a surplus AN/SGC1. Although no 100 wpm printing equipment exists at the author's disposal, tests indicate that the T.U. is capable of converting 100 wpm without modification.

***



RTTY theory & applications.

RON 'RG' GUENTZLER, W8BBB
Route 1 Box 30
ADA OHIO, 45810

RTTY for Beginners- Part 4

MAKING A TELEPRINTER GO

During the past few months we have described some of the principles of printing telegraphy. It seems best, at this point, to show how to connect a teleprinter for obtaining local copy. By doing this, it should be possible for a beginner to "play" with this machine and to illustrate, first hand, some of the things we have discussed.

CONNECTING A MACHINE

The method used to make a printer work for local copy is simple: 1) Supply the motor whatever power its name plate asks for, and 2) Connect in series a DC power supply, a resistor, a millimeter, the keyboard, and the selector magnets. (The power supply should be capable of supplying from 110 to 300 volts when 60 mA is flowing.) Adjust the resistor until 60mA is flowing, turn on the motor, and "hit" a key on the keyboard.

Assuming all works, try proving or illustrating a few of the things we have talked about. For example: Learn where the keys are and just what the LTRS, FIGS, CAR RET, and LF keys do and how they do it. Poke, judiciously, at the machine's innards and discover what a mechanical marvel it is. Try placing a 10-ohm resistor into the loop, connect an oscilloscope across the resistor, and look at the waveforms when various characters are sent.

If any difficulties are experienced perhaps the following will help:

Before continuing, we would like to editorialize: Some "experts" state that the first thing an amateur should do when he obtains a teleprinter is rip out the wiring and, unless the motor is a synchronous motor, throw it away!! We say NONSENSE!! You may have to make some minor modifications in the wiring, but be very cautious. More on this later. As far as the motor goes, if the motor is changed, the gears will probably have to be changed also. This involves quite a bit of work. If, after you have ripped out all the wiring and replaced the motor and gears, what happens if the printer won't work? The first thing to do is determine whether it worked when you obtained it. How can you possibly know if you instantaneously ripped it apart?

THE MOTOR

Look at the name plate on the motor. If the speed is 1800 or 3600 RPM it is probably a synchronous motor. If it says it is, it is. Therefore, if it is a synchronous motor supply it the voltage it requires (probably 120V at 60 Hz). If the printer has a lot of auxiliary apparatus with it, it would probably be best to trace the wiring and carefully isolate the two leads going to the motor, writing down just what leads were disconnected from where. You will probably want to reconnect them later so make sure that you know just what you did disconnect. Our aim at present is just to get the machine printing local copy.

If the machine has an AC governor-controlled motor, there is some auxiliary apparatus such as the governor, resistors, and capacitors that must be left connected to the motor for proper operation. Try to determine where to apply power and apply it.

If the machine has a DC governor-controlled motor, it will also have auxiliary apparatus such as the governor, resistors and capacitors. Trace the wiring and determine where to apply power. If at all possible, build, even if it is only a temporary "hay wired" deal, a power supply to run the motor. (Do not use the supply for the loop to run the motor.) You will need about 110V DC at 1A. This may seem a bother, but it is better to try using the DC motor even if it is for a few minutes of operation, than it is to rip away and possibly foul things up.

For methods suitable for DC motor power see: "Some Notes on the Western Union 2B Simplex Printer", R.E. Guentzler, RTTY, 1966 March, pp. 3-4; and "Teletype-Printer Noise Reduction", R. B. Gold, QST, 1966 August, p. 71.

One further comment about motors: A synchronous motor will run at only

parallel operation is recommended.

Now comes the rub - what type selector do you have and how should you connect the magnet coils? The obvious answer is: Ask someone who knows to look at your machine and tell you what to do. Next choice is to look at someone else's machine and see how his is constructed and connected. Last choice (from an ease of doing something standpoint) is to find out all by yourself.

Trace out the wiring connected to the selector magnets. If the coils are in parallel, you probably have a holding-type selector connected for 60 mA operation. If the coils are in series, try operating the machine with 60 mA in the coils as we described at the beginning (have the motor operating and "type" something). If it operates, and it probably will, slowly decrease the loop current until operation ceases. If it stops at about 30 mA, you have a pulling-type selector and you must use 60 mA with the coils connected as they are. If operation continues down to about 10 mA loop current, you have holding-type selector connected for 20 mA operation; reconnect the magnets so they are in parallel, adjust the loop current for 60 mA, and try operating the machine. If it works, fine; if it does not work, you have phased the coils improperly when you were reconnecting them. Reverse the leads to one magnet and try it again. It should now work.

SPEED

At what speed does your machine operate? A while ago we discussed some of the "standard" operating speeds and also made a strong case for the fact that the transmitting and receiving machines must operate at the same speed. When you are operating your one machine by itself, it is operating at the "proper" speed, regardless of what that speed is, because the keyboard and selector are geared to each other and therefore regardless of the **actual** speed, they are operating at the correct **relative** speed. However, once you try to transmit to or receive from some other machine, you must operate your machine at the proper speed relative to the other machine. Therefore, the actual speed is unimportant when making local copy, but will become vital once you "get on the air".

There are many possible ways to determine the speed of your machine. Some are much better than others; we will mention some of them and let you pick the method best suited to your situation.

1) The keyboard shaft should rotate at 368 RPM and the selector shaft at 420 RPM on a Bell System "60-Speed" machine, and the keyboard shaft should rotate at 389 RPM and the selector shaft at 420 RPM on a Western Union 65-Speed machine. Obtain a Strobotac and measure the speeds.

2) If the machine has a synchronous motor, count the number of teeth on the gears (or gear and pinion) and calculate the speeds of the keyboard and selector shafts.

3) Connect your machine into a local loop with someone else's machine and send back and forth. If both machines can send and receive to/from each other, the speeds are probably correct.

4) Tune in an amateur RTTY signal and see whether you can copy it. (We have not discussed this yet, but if you are that far along, try it.) This is not the best test in the world. If you can copy, fine. If you can't there are many reasons other than improper speed that could be causing the trouble. Try several different amateur RTTY signals. Also try the reversing switch on your TU. Unfortunately, most commercial stations are not 60-speed, but if you look long enough you may find one. However, if you do find a commercial station that you can copy this may not tell you much because they operate at "standard" speeds of 60, 67, 75 and 100 WPM and which are you copying is debatable.

SUMMARY

Connecting a teleprinter for obtaining local copy is relatively simple. Supply power to the motor, and connect in series a DC power supply, the keyboard, the selector magnets, a resistor and a millimeter.

Several possible causes of trouble were discussed. It was recommended that a teleprinter be operated "as received", if possible; this is desirable because, if nothing else, it indicates whether or not the teleprinter was in operating condition when received.

A concise summary of teleprinters was given in this column in the 1971 MAR (p. 8) and 1971 APR (p. 8) issues.

ADDENDA from original Article

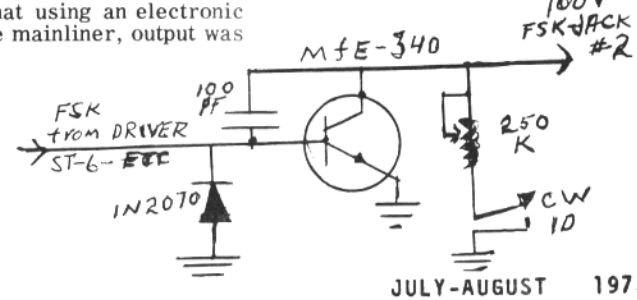
**The newer machines (M32 on up), use a more complicated arrangement for operating the selector magnets. In the older machines (M28 and below), the magnets were inserted directly into the loop as already described. The inductance of the magnets presented bad transient problems that tended to distort the loop current waveform and thus cause errors in copy. The inductance problem could be mitigated by using high voltages in the loop (130 V or higher). The high voltages placed a burden upon solid state devices. Consequently, starting with the M32, the magnets have been designed to operate from about 12 V at 500 mA. They cannot be used directly in a 60 mA loop. The machine comes equipped with a solid state magnet driver (SMD) that requires 60 (or 20) mA at its input. Thus, its input is inserted into a loop in the same manner that the magnets were inserted in the older machines. The output of the SMD drives the 500 mA magnets. Therefore, there are actually three basic types of selectors.

******

Electronic Keying on the 100V exciter.

There are a large number of Central Electronic 100V and 200V exciters still around. They are stable and make an excellent RTTY exciter as the output is broad banded and only the VFO need be set to move around the band. The only catch has been that using an electronic keyer such as the mainliner, output was upside down. The following simple circuit corrects this and also allows for variable shift ID.

The entire circuit can be built on a 3 or 4 point tie strip and installed either in the TU or outside of the 100V. Be sure that a common ground is used to other equipment. Jack #2 is used on the exciter, jack #1 is for polar relay keying - if anyone still uses it.

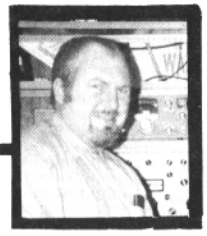


LIST OF COMMERCIAL FREQUENCIES

The following list, furnished by courtesy of Joseph Hanks and the RSGB, of commercial frequencies is fairly complete. For lack of room we have omitted the frequencies above 16250kH. All are 66 WPM transmissions and although some are in English, nothing was stated as to the language used. We will appreciate any additions, corrections or comments on this list.

3766	Weather	England
4013	Weather	France
4443	Weather	
4488	Weather	England
4583	Weather	
4598	Weather	
4610	Weather	England
4613	Weather	
4623	PAP	SOE 26
4813	Weather	
4820	Weather	
4962	PAP	SOE 69
4977	PAP	SOE 79
5224	KCNA	HMN 56
5240	Tanjug	40C2
5328	Weather	
5336	Weather	
5354	Reuters	Beirut
5393	PAP	SOF 33
5450	Tanjug	40D
5741	PAP	SOF 27
5824	Reuters	Beirut
5828	Weather	
5842	[illegible] AP	FTF 84
5888	Weather	
5903	PAP	SOF 29
5907	ANSA	ISY 59
5935	Reuters	GPA 25
6767	CTK	OLH 4
6788	RCA Global	
6835	Weather	England
6845	ANSA	ISY 68
6875	EF	WWG 36
6888	PAP	SOG 48
6894	EF	WWF 56/X
6910	Reuters	ZNX 29
6915	HNA	BGE 65/B
6920	Weather	
6935	AP	WFA 36
6971	Agerpress	Geneva
7015	KCNA	HMF 21
7150	Reuters	WFJ 27
7280	UPI	WF 197
7327	AP	JAE 27
7328	CTK	OLW 4
7351	CTK	3MA32
7530	Tass	RZA 24
7577	CTK	
7580	Tirana	ZAA
7580	MENA	SUA 230
7628	UPI	WF 197
7658	Tanjug	YZD
7686	Weather	
7688	Tass	PAC 27
7693	SEF	WWC 67X9
7698	Praha Radio	
7709	EF	WWF 87X5
7716	Weather	
7720	EF	WWF 77/X
7733	Weather	
7760	UPI	WFA 67
7784	Giai Phong	GPA2/B
7806	Tanjug	YZD 7
7808	Weather	
7847	PAP	SOH 38
7863	PAP	SOH 48B
7880	Weather	England
7890	Weather	
7910	ANSA (New	
7924	EFE	GNU 27
7950	Reuters	GPA 27
7950	ADN	DMV 6
7964	FTM 26	AFP
7974	CV 179	ANSA
7996		Weather
8000	ISY 80	ANSA
8001	SO 120	PAP
8022	FT1-2	AFP
8040	Weather	England
8062	Tass	RRQ 23
8067	ADN	DMV 7/54
8104	Weather	
8163	Weather	France
9135	ANSA	WNA 69
9190	Weather	
9201	Unipress	
9208	Prewiny/IT	WFD 39
9353	CTK	OLX 5
9387	Weather	
9430	Tirana	ATA
9440	KCNA	HMF
9750	KCNA	HMF 17
9875	KCNA	HML 36
9886	Weather	England
9930	Weather	
9985	[illegible] AFP	FTK 94A
10153	PAP	SOK 21
10187	EF	WWF 70
10234	CTK	3MA33
10256	Tanjug	
10258	Tass	RDZ 71
10278	Tanjug	YZA 9
10320	Giai Pho	GPA2/B
10435	Tirana	ZAY
10543	ADN	DMV 54
10550	AFP	FTK 56
10559	AFP	FTK 43
10580	KCNA	HMK 25
10582	AFP	FTK 58
10592	UPI	WFL 30
10596	RCA	TGR 19
10616	AFP	FTS 67
10740	Prewiny/IT	WFK 60
10748	ANSA	WFL 60
10753	Reuters	WFK 80
10756	Reuters	
10785	ADN	DMV 43
10825	Weather	
10865	Tass	RZA 24
10880	ANSA	ISX 88
10890	AP	WFE 40
10893	MENA	SUA 23
10920	ADN	DMV 22
10940	AFP	FTK 94A
10947	Prewiny/	CVN
10980	HNA	BAD 40
11086	Weather	England
11430	KCNA	HMN 51
11456	Reuters	CVM 3
11641	UPI	WFL 71
11643	EFE	WFK 41
11680	HNA	
11835	Reuters	Beirut
12069	Kyodo	Jag 5
12224	Reuters	
12230	KCNA	
12249	Weather	
12251	ADN	DMV 32
12300	KCNA	HMS 48
12719	UNF	ZLS 2
13110	Tass	
13410	Tass	RIF 38
13432	AFP	
13438	DPA	DGN 43
13480	UPI	WER 73
13487	Tass	
13490	Tass	RCG 77
13526	MENA	WFM 73
13529	Weather	
13536	JTA	WFD 49
13560	HNA	BAK 63
13580	KCNA	HMS 19
13585	UPI	GAB 33
13607	SEF	WWH 93
13615	PAP	SON 26
13628	Weather	
13641	Weather	
13647	CTK	OLI 5
13653	MENA	SUA 50
13760	Tass	RTU 43
13770	Reuters	CVM 4
13825	ANSA	WFK 93
13838	ANSA	
13895	ADN	
13907	DPA	GIB 33
13910	AP	GPU 33
13935	JTA	RCG 78
13937	Tass	ISX 19
13974	ANSA	
14335	HNA	CVM 5
14351	Reuters	GPA 34
14352	Reuters	
14354	ANSA	
14356	HNA	DZP 29
14430	AFP	WFK 24
14431	PD	89 WDS
14462	Radio Swi	GPR 34A
14481	Reuters	RNK 36
14490	Tass	
14497	Weather	GPN 34
14515	Reuters	JAF 27
14547	Kyodo	OLM 2
14584	CTK	WFK 54
14635	Prewiny/IT	WFK 54
14639	Reuters	RIC 73
14690	Tass	WFD 34
14710	AP	RWG
14720	Tass	WFD 44
14725	DPA	
14749	Tass	WER 24
14770	UPI	ATP 65
14785	AIR-India	FTO 79A
14795	AFP	9VF97
14804	AFP	
14825	ADN	DMV 25
14835	Weather	England
14882	Weather	
14893	Weather	
14920	HNA	BAD 44
14931	APS	
14960	Tass	RWM 75
15472	ANSA	IRN 24
15480	AP	WFD 55
15495	Tass	
15505	CTK	OLS 2
15508	PAP	SOP 25
15515	HNA	BAK 65
15517	UPI	PCK 45
15580	Tass	REM 58
15602	Weather	
15605	Weather	
15607	UPI	WFK 45
15613	JTA	WFK 65
15637	KCNA	HMH 21
15640	UPI	WFK 85
15650	AFP	FTP 65
15653	MENA	SUA 50
15695	ANSA	ISX 56
15696	PLC	CLW
15700	HNA	BZG 45
15706	Reuters	WFM 75
15724	ANSA	ISX 57
15856	EFE	WFL 85
15865	Tass	RBK 79
15908	Reuters	WEY 35
15914	AP	WEY 45
15930	Tass	RBI 78
15935	MENA	SUA 291
15950	ANSA	CVN 6
16050	Tass	RCE 54
16114	Tass	
16117	PLC	
16156	Tass	RWM 75
16185	AFP	FPQ 8
16190	Tass	RGK 26
16207	AP	WFD 66
16232	UNDP	4UY54

RTTY-DX



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

Hello there...

For the past couple of months propagation conditions have continued their YO-YO like characteristics and it seems as if "the powers that be" have been keeping them at the low end of the string for longer and longer periods before they let them rise up to the top again. With this business of predictions being somewhat of a science anymore I guess we can resign ourselves to the fact that things are going to get worse before they get better and make the best of it. From a practical standpoint I would think that 10 and 15 are going to be pretty much of a lost cause for the foreseeable future except for brief periods when they will peak up and just as rapidly fade away. Twenty meters should continue to be the best all around band and at this time Forty meters should really come into its own as a RTTY DX band. Activity is still pretty spotty on this band but we think mainly because everyone thinks that there is no one active there so do not venture down to Forty either. If any of the DX stations plan to be active on Forty at specified times please let us know and we will be happy to publish any such information for the benefit of all.

Although we were not around to participate in the WAE Contest reports we have received indicate that band conditions were in pretty poor shape. A redeeming factor for those that kept at it was the activity of HBØP, EL2F, and KG4AN. Carl, HB9P, and his group made a repeat visit to Liechtenstein for the contest period, and of course the signal from EL2F was a welcome return to RTTY after a long absence. It seems that the KG4 prefix always makes the WAE Contest but is rarely heard at other times. Well, mark your calendar for the last week end in April for the WAE, and as the saying goes "things will be better next year".

Most of you should have Northern Ireland logged by this time as in past several weeks there has been activity from Gi3OLV, GI3NEX, and GI3SGR/A, with Alan, GI3OLV being the most active of the lot. QSL's for GI3OLV can go to --

100 DX Confirmed on RTTY

Nr.	1	ON4BX	122	Confirmed
Nr.	4	ON4CK	115	Confirmed
Nr.	2	W3KV	114	Confirmed
Nr.	3	I1KG	100	Confirmed
Nr.	5	W5QCH	100	Confirmed
Nr.	6	W8CQ	100	Confirmed

DX HONOR ROLL

1.	FG7XT	127/116	17.	WA2YVK	78/ 68
2.	G6JF	105/ 94	18.	F9RC	76/ 68
3.	WA3IKK	105/ 91	19.	DL8VX	75/ 68
4.	W4YG	100/ 90	20.	KL7GRF	74/ 66
5.	W5EUN	93/ 90	21.	CR6CA	67/ 65
6.	W2LFL	95/ 88	22.	I1WT	71/ 64
7.	DK3CU	94/ 88	23.	K8QLO	70/ 64
8.	K8YEK	93/ 88	24.	OK1MP	68/ 62
9.	ZS3B	98/ 84	25.	W4CQI	69/ 60
10.	W3DJZ	94/ 81	26.	K4VDM	62/ 58
11.	I1ROL	83/ 76	27.	WAØTLT	66/ 56
12.	W4EGY	82/ 74	28.	SM5BO	60/ 52
13.	W1GKJ	79/ 71	29.	W8JIN	56/ 51
14.	K6WZ	77/ 71	30.	W2PLQ	56/ 50
15.	WA6WGI	73/ 70	31.	SMØOY	54/ 50
16.	DJ8BT	71/ 69			

DX Worked listing.

1.	XEIYJ	58/ 49	14.	ON4CZ	60/ 31
2.	EI5BH	53/ 45	15.	WB6QFE	37/ 31
3.	ZS6BBL	53/ 45	16.	K3SWZ	36/ 31
4.	W9BT	45/ 41	17.	HB9ACQ	40/ 29
5.	I5CLC	61/ 40	18.	W2IDX	50/ 28
6.	EA7PZ	55/ 40	19.	DJ0RR	49/ 28
7.	K2CY	46/ 40	20.	DL0AK	49/ 28
8.	KH6AG	53/ 39	21.	W0HAH	51/ 25
9.	W5TZB	46/ 39	22.	Lu2ESB	52/ 25
10.	9Y4VU	45/ 39	23.	SK4RY	39/ 18
11.	ZL2ALW	48/ 37	24.	W4ZLH	24/ 12
12.	HB9AKA	48/ 36	25.	F5JA	41/ 7
13.	W0MT	43/ 32			

******

Alan Coombes
Carragh House
Kesh. Enniskillen
Co. Fermanagn, No. Ireland

RTTY operation from Greenland finally became a fact on 6 May. Both ON4BX and ON4CK had contact with OX3WH, and in fact already have received his QSL. The operator is Ole and the QTH merely Angissoa Island, Greenland, which we understand is the site of a Loran station. The equipment in use at the time was a Seimans T-1000 with all options, a TU tuned at 400 hz and running at 50 baud. Activity at that time was of brief duration but Ole indicates that he hopes to be active on a more permanent basis soon.

Apparently I5BPD did not make his scheduled trips to YU and FC as reported previously. However, on the weekend 20 May the boys that were on the band were treated to a surprise in the form of YU2CAL on 14 mhz. The operator was Zika. The QTH is listed as --

Radio Club, UY2CAL
TRG Republike 5/1
Cakovec, Yugoslavia

Many beams have had fixed focus on the Central and Western Pacific in recent weeks. The almost daily activity from Johnston Island by KJ6BZ has added a new one to many RTTY-DX scores. Paul and Harvey are the op's and the boys insist that a SASE or IRC's are a must for a return QSL. The QTH is...

Amateur Radio KJ6BZ
2194th Comm. Sqdn.
APO San Francisco, Ca. 96305

When conditions are ideal Paul, DU1PT has been filtering through to the West and Mid-West USA and is certainly a good catch on RTTY. He has been copied here in the East on SSB at around 14205 khz at 1200 GMT and will switch modes if requested.

George VK9GG is back in Madang TNG and quite active again after a sojourn in VK land. Also from the same general area but an entirely new country is Mac, VK9MC, Port Moresby, Papua. A letter from Norm, K6ZDL, gives some info on Mac's set up and indicates that he will be his QSL manager. VK9MC expects to be on Papua for about two years, or as Mac says, "unless they throw us out sooner". The RTTY gear is presently a Creed 7B printer, a Creed 65M TD, a solid state TU similar to the ST-6 and operating on 50 baud. Norm expects logs from there about every two weeks, depending upon activity. Mac has been worked on the West coast by K6WZ that we know of but has not filtered through the mountains to the East as yet. QSL's can go via...

N. V. Koch, K6ZDL
P.O. Box 1351 Torrance. Ca. 90505
or direct to...

Mac McCulloch
Box 512
Port Moresby, Papua
(of course SASE or IRC's.)

Contrary to rumors, VS6GA is very much active and "legit". QSL can best go as follows...

Ian Dredge
Senior Rates Mess, HMS Tamar
B.F.P.O. 1 Hong Kong

The QSL's for Jan's trip to A2CAK have been sent out and in a note Jan indicates that the postponed trip to Swaziland, 3D6, would take place either over the week-end of June 9th or June 16th. Of course this has long past by the time you get this so hope that you got the word via the QST tapes we were sending out to alert the gang to this DXpedition.

There is a good possibility that Botswana may have permanent activity soon. We understand that Bob, A2CCY has a Creed 7B and a ST-5 TU coming soon. Those of you that missed Jan should have an opportunity to log this rare spot in the near future.

RTTY activity from Rhodesia by Taffy, ZE1CE is dormant at the moment but by no means dead. He is having difficulties with the Teletype Model 15 and is in dire need of a manual for same. Anyone having a spare lying around can send it to me and will see that he gets it.

We have word that before too long Ethiopia will be active again. The boys at ET3USF are gradually getting the gears and parts assembled so watch for them.

Kagnew Station Radio Club
Box 304, HHC, APO N.Y. 09843

Hams living in the populated urban areas usually have little difficulty in finding the necessary bits and pieces that make up a RTTY station. In a short time one can find all the components at pretty reasonable prices or on a swap deal with other hams. The picture changes rapidly however when you get to the more remote areas of the world. In the jet age nothing is really remote as to distance, but it is surprising how "remote" places can be when it comes to getting the mechanical and electronic requirements to set up a RTTY station. Sid May, VP2KH is presently setting up a RTTY Group for the Caribbean area hoping to generate an interest in RTTY on many of the islands that have not previously been heard from on this mode. He is working on a formal presentation for the proper authorities now but of course lacks the necessary "hardware" required to set up additional stations once this becomes a fact. Any donations of useable machines or TU's are needed but it is not just a question

Continued on Page 16

HITS & MISSES

From The Editor and his Mail

Somehow we were a bad boy - we had a file of pictures - but can't find them now. Those of you that sent us photos, please try again. Pictures can be almost any size and even colored, if sharp and clear.

***

For helpful hints on picture typing, send for the booklet **Art Typing**, $1, available through Pitman Publishing Corporation, Order Dept., 6 East 43rd Street, New York, New York 10017.

***

At Dayton, we had the pleasure of a chat with Ron Cohen, K3ZKO, who is publishing a magazine for SSTV. Called "A-5", the issue we saw had 30 pages. Published 6 times a year, subscription is $2.50 a year. The address is P.O. Box 6512, Philadelphia, PA. 19138.

***

Shortly after we started publishing this magazine we stated here that we did not like to accept subscriptions for more than one year at a time. After six years we have gradually relented this rule and have not returned those multiple year subscriptions received. As the largest amount of work in the magazine is keeping track of subscriptions we have found that a two year subscription is half the work of a single year. Many are not aware of this, however, and we still get suggestions that we accept a longer subscription as it is often easier for the subscriber, also. As we are running on a close margin we cannot offer any discount for a two year subscription and would prefer that it be kept to two years, after all, we are not getting any younger and dislike being obligated for too long in the future. These are the same words we used six years ago in refusing multiple year subscriptions so maybe we are only getting older in years and not optimism.

***

CW ID on RTTY has been getting very sloppy; just how far the FCC will go until new rules are laid down is a guess, but the ID must be legible to an average person and CORRECT CW. Six dots is not a 5; speeds of 50 wpm is not permissible and the shift must be wide enough to be easy copy. Our rules for ID have been eased, let's not spoil it by being careless or individualistic.

***

BACK ISSUES-

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

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

1966-Oct-Nov-Dec- [3]
1967 & 1968 -None.
1969-Oct-Nov- Dec-[3]
1970- None.
1971-Jan-May
1971-May-June-July-Sept-Oct.-Nov-Dec- [7]
1972-Jan-Feb-Apr-May-July-Sep-Oct-Nov-Dec- [9]
1973 Jan-Feb-Mar-Apr-May [5]

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

SUBSCRIPTION RATES

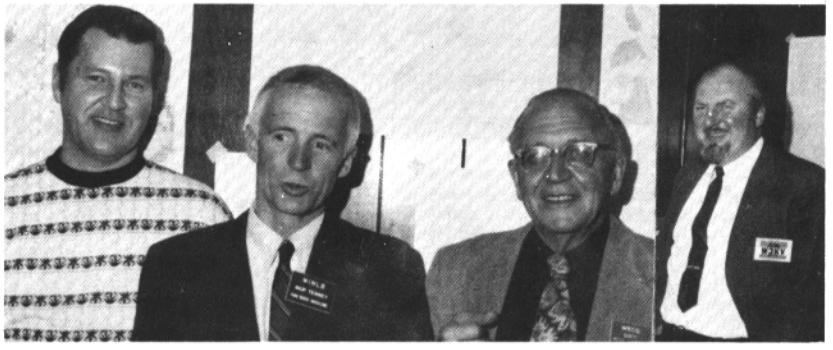
U.S. Canada- Mexico	1st Class	$3.00
	Air Mail	$3.50
Other Countries	Surface Mail	$3.50
AirMail South-Central America		$5.50
Air Mail	All Other Countries	$6.00

DAYTON 73

Another Dayton Hamvention is over and again all records were borken. 6400 paid registration - 630 permits at the flea market and 55 exhibitors using 85 booths. Our hospitality suite had more visitors than ever and 34 showed up for dinner Friday night. Our new location at the Imperial North Motel was a big improvement over past years and the Kool Ade lasted til 4:30 a.m. If you have never been to Dayton, plan now for next year - usually last weekend in April.

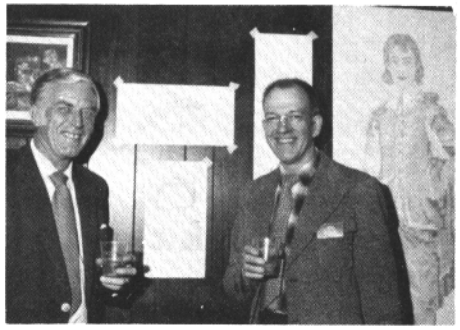
Photos by Ron Monahan, K8IOS.

A few of the tired group Saturday night, but still happy.



Irv, W6FFC prominent RTTY author with two publishers, Skip Tenny, of Ham Radio (who pays for articles) and Dusty of the RTTY Journal (who doesn't Pay) all being watched by John, W3KV, DX editor of the Journal (who doesn't get paid).

Paul, KH6AG, who made his second trip from Hawaii for the convention, with John, K2AGI, curator of the RTTY picture display. The large pix on the right is 3 sheets wide and took 6 hours to print.



CLASSIFIED ADS- 30 words $1. Additional words- 3¢ ea.

Cash with copy, Deadline 1st of monih.

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

CHICAGO AREA RTTY OPERATORS. Expert repair work performed at reasonable prices. Cleaning any teletype model printer unit alone, $7.50 with keyboard, $10.00. Phone 312-392-2358 -- ask for Neil.

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

BACK ISSUES OF RTTY JOURNAL - I have a complete file of all issues from Vol. 1 No. 1 to date. Will reproduce any issue for $1.10 pp. Add 25¢ for air mail delivery. John Isaacs, 3175 Val Verde Ave., Long Beace, CA. 90808.

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

PC BOARDS AND KITS; Phase locked loop, autostart, RY generator, CW/RTTY identifier, tone burst generator, two tone decoders, two meter preamp and channel scanner. Write for free flyer. Signal Systems, 2650 Durango Dr., Colorado Springs, Colorado 80910.

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

RTTY AND ATV PC BOARDS & MODULES. Send SASE (2 stamps) for catalog and info sheets. P.C. Electronics - W60RG, 2522 S. Paxton Ln., Arcadia, CA. 91006.

HAL COMMUNICATIONS CORP. can provide you with autostart for the ST-5. Adapated from the proven ST-6 circuity, the ST-5 autostart kit contains drilled, plated PC board, relay and all parts for only $15.00 plus shipping. For the best in UHF RTTY order the ST-5A with auto start and AK-1 only $92.50 plus shipping (no cabinet). Available late April or pick up at Dayton. Hal Communications Corp. Box 365, Urbana, ILL. 61801. Phone (217) 359-7373.

WANTED: HIGHEST PRICES PAID for M32 KSR printers and parts in ANY quantity - Prefer within 150 miles - Lee Brody, NY-NJ Phone - TTY for the Deaf, 14-25 Plaza Rd. Fair Lawn, N.J. 07410

FOR SALE: Heath HW-7 QRP with Ni-Cad charger - $70, Model 28LPR 3-speed typing reperf - $75. Hammurlund SP-600-JX17, clean but needs minor work - $125. All FOB. L. L. Filby K1LPS, USNAF - Box 80 - FPO, New York, N.Y. 09520.

KLEINSCHMIDT TT-4A/TG printer, keyboard, used, good, $60.00 with 60-100 gears. Freight $20. east of Miss. $10. west of Miss. Also have ASR, KSR typing punches. Mark/Space Systems Co. 3563 Conquista, Long Beach, CA. 90808. (213) 429-5821.

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.

WANTED: MOBILE SUPPLY FOR GALAXY 3 or 5. State condition and price first letter. Also need communications type for model 15. Jim Lynch, K4GVO, Box 113A, Forest, VA 24551.

HAL COMMUNICATIONS CORP: HEADQUARTERS for MAINLINE Solid State RTTY equipment. You can do no better than the ST-6 demodulator at any price. Screened, punched cabinets for the ST-6 now available. For budget TTY, it's the ST-5 for HF or VHF. And the best in AFSK is provided by the AK-1. Our new model 1550 electronic keyer, or the MKB-1 Morse Keyboard, will automatically identify your RTTY station at the push of a button. The extra values are available from HAL Communications Corp., Box 365RJ, Urbana, IL 61801. Phone 217-359-7373.

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

WESTERN UNION DESK-FAX TELEFAX TRANSCEIVER MANUAL: Complete theory of operation, adjustment, lubrication, preventive maintenance, troubleshooting, parts list. Includes all schematics and mechanical parts drawings. $3.80 postpaid. Bill Johnston, 1808 Pomona Drive, Las Cruces, New Mexico 88001.

R-390A MFGD. BY COLLINS RADIO - $525.00. #28 Receive - only typing reperforator single base, without cover, ready to operate, 100 WPM, $49.00. 60 WPM gears $10.00. LRX Reperforator transmitter, two 3 speed gear shifts, ready to operate $145. Alltronics-Howard Co., Box 19, Boston, Mass. 02101. (617-742-0048).

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

NATIONAL SECURITY AGENCY miniature printer; Teletype #109000; unique, for collector and experimenter. Only $8.98, while they last. Model 28 synch MOTORS, $14.95. 11/16" perf tape, case of 40 rolls only $6.95. Free list. Jim Cooper, W2BVE, POB73, Paramus, NJ 07652.

FOR SALE: 75A4, Have two - serial #1023 and 2119. Also Central Electronics 100V exciter serial #E767V. $800.00 takes all. Will separate, take best offer. Anthony Sperduti, WB2MPZ, 4740 Newton Rd., Hamburg, N.Y. 14075.

FOR SALE: KLEINSMIDT ASR MODEL TT27/FG and TT272/FG combination mounted on table with 16 rolls 7/8th perf tape, 60-75-100 speed gears. $175.00 FOB also model 19 and TD & power supply. $95.00 FOB - or best offer. Charles Ruth, 5106 Lemay Ferry Rd., St. Louis, MO. 63129 WNOFVP.

FOR SALE, MISC. TELETYPE EQUIPMENT - Model 14, 15, 19 printers. FRA converter, CV-57 converter, Bob, WA8MOA, 522 Lakeview Ave., Battle Creek, MI. Phone (616) 963-3716, Zip 49015. Send SASE for list.

11/16 TELETYPEWRITER PERFORATOR TAPE, color red, 10 rolls, $1.50 plus shipping. Approx. shipping weight 12 lbs. Send check including shipping charges to - Alfred Harper, Rte. 2 - Box 86, Ocilla, GA. 31774.

SUPPLIES: Standard 11/16" perforator tape, good unused condition, 10 rolls per box at $3.95 or case of 40 rolls for only $14. Fanfold page paper at $3.75 per box (500 sheets, 4 copy). FREE LIST. BVE Enterprises, POB73, Paramus, N.Y. 07652.

FOR SALE: MODEL 15KSR, power supply, metal table, spare syncronous motor, manual, extra paper $65.00. Pick up only. Jim Troop, 99 Sand Hill Dr. Phone (401) 884-6961, North Kingstown, RI.

CLASSIFIED ADS-

DOVETRON TELEPRINTER SPEED CONTROLLER - The DOVETRON TSC-1000 Teleprinter Speed Controller is an all electronic, solid-state motor controller that functions as an electronic gear shift. for any teleprinter equipped with 100 WPM gears and a 50/60 Hz synchronous motor. Speed control is accomplished by varying both the frequency and amplitude of the power supplied to the motor. A five position front panel switch allows selection of 60-67-75-90-100 WPM operation. The keyboard automatically sends at the same speed as the receiving speed of the typing unit. No buffer storage is required and printer maintenance is reduced to a minimum, because the teleprinter runs only as fast as the received signal. A front panel Range control permits copy of any speed between 50 and 110 WPM with no loss of mechanical range. Copy is greatly improved on weak DX-type signals, and under severe conditions of selective fading, multi-path propagation and keyboard distortion by "synching" to the incoming signal. This Range control also permits answering a station running at a non-standard speed, giving him better copy of your signals. The AUTOSTART circuit provides remote turn-on/turn-off capability and current limiting protection for the terminal unit's autostart components. May be used with any character unit code (7.0, 7.42, 8.0, etc.). Operates directly from 110vac ±10%, 40 to 400 Hz. Since the output of the TSC is not affected by line frequency variations at the input, stable speed control is provided for Field Day and other locations where portable or emergency power supplies exhibit line frequency instability under changing load. Attractively packaged in an 8 x 8 x 11 inch custom enclosure. 15 pounds. (21 pounds shipping). $129.50 FOB. (Calif. residents: $6.50 sales tax). DOVETRON, 1015 Fremont Avenue (PO Box 267), South Pasadena, Calif., 91030. 213-682-3705.

ST-5A BOARD ONLY $5.25. Parts kit $54.00. Mod. kit for ST-5 $9.00 (Makes ST-5 into ST-5A). ST-5 Board only $5.25, parts kit $47.50. ST-6 boards only $18.00. Parts kit, $128.00. All P.C. boards G10 glass-epoxy 2 oz. Copper drilled and solder plated. All items shipped pre-paid. PEMCO, 422 18th N.E. Salem, Oregon, 97301, (503) 585-1641.

RTTY TEST GEAR: DXD STROBE & FOX generator, any speed, $100; TDA-2 distortion-reading 'scope $50; T.E. Co. TSA-2FT teletype signal analyzer 'scope, 5-6-7-8-9-10 unit code, Baudot or ASCII, $65; Polar relay test set, $10; Digitech relay test set, rack mount, $45; Digitech distortion set and word generator (2 solid-state units) $150; Stelma DAC-V units: WANTED, racks 'scope and power supply, swap distortion meter, time base, or character generator. TS-660 distortion set $25; **LSS-200 'strobe, poor condition, needs parts, $20;** rack-mount 5" 'scope, $30; **Acton Labs 462S late-model line distortion unit, $100; TCCorp. open line detector module for #28 LESU, $5;** T.M.C. Freq. Shift Simulator, rack-mount, $30.00; TTCorp. message numbering module, $10; OCT-3 FSK tuning monitor, reads shift from received covering 1 - 26 mc, $35. G. White, Box 3067, Alexandria, Va. 22302.

WANTED: INFORMATION ON FULL & part-time teletype repairman or organization able to work on subcontract basis. Contact Terminal Systems, Inc., 11300 Hartland St., North Hollywood, CA 91605 (213) 769-6772.

FOR SALE OR TRADE - MODEL 30 machine, ST-3 demodulator and Viking Valiant. Mint condition with instruction manuals. W5BSU, 1210 So. 93rd East, Tulsa, OK. 74112.

R390A-ULTIMATE RECEIVER FOR RTTY-mint condition - $850.00.M28 ASR (3 speed) with dome reperf (3 speed). Professional condition - $1,200.00 - Phone evenings - 201 - 796-5414. Will deliver within NYC area.

HAL COMMUNICATIONS CORP: Announced the revolutionary new RVD-1002 and RKB-1 solid state RTTY system. Provides the ultimate in noiseless, reliable reception and transmission of Baudot coded TTY. The RVD-1002 visual display system receives demodulated TTY pulses from the ST-6 and provides video output to a video monitor, or modified TV set. One thousand (1000) characters are displayed in a 20 line, 50 character per line format, at 60, 75, and 100 WPM if your TU will copy it. The RKB-1 combines reliable TTL circuitry, a high quality commercial keyboard, and a rugged case to provide the best Baudot TTY keyboard available. The electronics is arranged so that you type as if you were using a typewriter. See them on display at Radio-Expo 7/8, Turkey Run 7/29, Hamfesters 8/12 and Warren 8/19. Get the details from HAL Communications Corp., Box 365RJ, Urbana, Il 61801. Phone 217 - 359-7373.

FOR SALE: 28 TABLE TOP TD WITH COVER, set up at 60 speed, $100.00. HW16 transceiver set up for RTTY 3637.5 in rack mounted panel, $75.00 IB Heath kit frequency counter in rack mounted panel, $100.00. 19 paper winder $25.00, 28 paper winder, $50.00. 6 foot rack cabinet, deluxe trim, $75.00. Truman Boerkoel, K8JUG, 2715 Edwin Dr. Xenia, OH. 45385 -- (513) 429-0589.

SALE: SYNCHRONOUS MOTOR FOR MITE teleprinter, 115 VAC, 60Hz, $9.00 ea. Model 28 transdistributor type TT334/UG code LXB-8, high speed, 8 level, excellent $17.50 ea. Reader, Feranti, high speed 8 level model II or III, used, excellent $15.00 ea. Model 28 typing reperf TT315/UG code LPR-35 or TT317/UG code LPR-37 used excellent, $17.50 ea. Typing reperf, Kleinschmidt, TT107/FG 60 - 75 or 100 wpm, used, excellent $28.00 ea. Pinion gear 80166 for model 14 TD unused, or pinion gear 78510 for model 14 typing reperf, unused, $2.00 (minimum order of 3) Send us your requirements for teletype equipment. Atlantic Surplus Sales, 580 3rd Ave., Brooklyn, N.Y. 11215.

FOR SALE: ONE MODEL 28 ASR with upper reperf, 60/75/100 WPM gears, non-chad, auto carriage/line feed, two TD's, stunt box, spare motor, three spare type boxes, spare parts and schematics. One Model 28 Rec. Only Unit. Both Typing Units just overhauled and cleaned. One KY463A Converter. Asking $1000 for all, F.O.B. Laurel, Maryland. Also one R-390A/URR receiver. For more info write: Dave Nixon, Box 304 HHC, APO, N.Y. 09843.

FOR SALE: CENTRAL ELECTRONICS 100V with solid-state, plug-in rectifiers, mint condition with manual: $250.00; Central Electronics 200V. also mint with manual; $300.00 Hank W6SKC, 1015 Fremont Avenue, South Pasadena, California, 91030 (213-799-5886 or 682-3705)

TU, AFSK, AUTO START, one set of modules all solid state wired and tested plus parts for 28VDC power supply. Older models from P.C. Electronics but never used. All for $75.00. PP. W6ORG, 2522 Paxson Ln., Arcadia, CA 91006.

CIRCUIT BOARDS. Receiver, December Ham Radio and September Journal, $10. Auto line feed, January '73 Ham Radio $7. TTL AFSK, September '72 Journal, $8 PP. G10 expoxy, plated, with clear photo. Bert Kelley, K4EEU, 2307 S. Clark Ave., Tampa, Florida 33609

YOUR CHOICE - $2.00 ea. postpaid, while they last. Parts catalog #1169B - 28ASR. -- Adjustment manual 28 perf - trans. #250B. -- Parts Cat. Model 32-33 #1184B--Parts Cat. model 28 typing reperf #1167B -- Parts cat. model 35, #1187B. -- Tech. manual model 35 #287B -- Adjustment manual model 28 #217B -- Parts cat. 28KSR #1149B -- Parts cat. 28TD. "LAXD" #251B -- -- Dusty, PO Box 837, Royal Oak, MI 48067.