HORSE TRADES

This page of the Bulletin is for use of amateurs who have RTTY EQUIPMENT FOR SALE OR TRADE and those looking for equipment to buy or trade. It is a free service and may be the means of getting someone on the air.

SWISS MERCHANT NAVY

HB 9 XJ / MM

R T T Y

RYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYRYI

NEWS OF AMATEUR RTTY

MARCH 1966
30 Cents
Vol. 14, No. 3

B. A. R. T. G. SPRING RTTY CONTEST - 1966

1. WHEN.

02.00 G.M.T. 12th March, 1966, to 02.00 G.M.T. 14th March, 1966.

2. BANDS.

3.5; 7.0; 14.0; 21.0 and 28.0 mc/s. Amateur Bands.

3. STATIONS.

Stations may not be contacted more than once on any one Band. Additional contacts may be made with the same station if a different Band is used.

4. COUNTRY STATUS.

A.R.R.L. Country list — except that KL7, KH6 and VO to be considered as separate Countries.

5. MESSAGES.

Messages exchanged will consist of : —
(A) Message number.   (C) Time in G.M.T.
(B) Report (R.S.T.)   (D) Country.

6. POINTS.

(A) All two-way RTTY contacts with stations in one's own Country, will earn two points.
(B) All two-way RTTY contacts with stations outside one's own Country, will earn ten points.
(C) All stations will receive a bonus of 200 points per Country, including their own.

7. SCORING.

(A) Two-way exchange points, times total Countries worked.
(B) Total Country points, times number of Continents worked.
(C) Add item (A) and (B) together. This is your total test score.
i.e. *SAMPLE SCORE.*

(A) Exchange points (302) times Countries (10)	= 3,020
(B) Country points (2,000 times Continents (3)	= 6,000
(C) Add item (A) and (B) above	= 9,020
	(total test score)

8. OPERATION.

The Contest will be divided into two parts, single and multiple operating Stations. The transmission of RTTY on more than one frequency at one time will be disallowed.

9. LOGS AND SCORE SHEETS.

Logs and Score Sheets should be received by : —

Hon. Secretary, B.A.R.T.G.,   Moira,
Alan Walmsley, G2HIO,   Nr. Burton-on-Trent,
The Woodlands,   Staffordshire,
Bath Lane,   ENGLAND.

Not later than 1st May, 1966, to qualify.

The Committee of the B.A.R.T.G. acknowledge the help and interest shown on the inception of this Spring Contest last year. No change in the rules has been made.

BRITISH AMATEUR RADIO TELEPRINTER GROUP
Quarter Century Award

The British Amateur Radio Teleprinter Group wish to announce the inception of the Q.C.A. Award.

RULES.

The certificate will be issued to any amateur who satisfies B.A.R.T.G. that he has completed RTTY QSO's with stations in twenty-five different Countries. Country status will be determined by the ARRL list in current use.

Further stickers will be issued for each additional twenty-five Countries contacted.

The cost of the Award will be 7/6d., or one American dollar. This covers the cost of the QSL cards and the certificate to the applicant.

Application for the Award, enclosing QSL cards, should be made to G3CQE, B.A.R.T.G. Certificate Manager, Sea Kiwi, Tower Hill, Williton, Taunton, Somerset.

73's   G2HIO

SOME NOTES ON THE WESTERN UNION 2B SIMPLEX PRINTER

RONALD E. GUENTZLER, W8BBB — 988 Chelston Road, South Euclid, Ohio 44121

Recently several of us purchased Western Union 2B Simplex Printers (Teletype Corp. Model 14 Type Bar Tape Printers) and were faced with several problems with the machines. Frank C. White's "Memorandum" in the Feb. 1966 Issue of RTTY prompted these comments to show one method by which these machines can be made suitable for amateur service.

The three major problems with these machines were: 1. They had DC-powered governor-controlled motors, 2. They required the use of 5/16-inch tape, and 3. They had no margin or end-of-line indication.

1. MOTORS

These machines were equipped with three basic types of motors: DC-powered, governor-controlled; AC-powered, governor-controlled; and AC synchronous motors. There were two nominal speed ratings for the DC motors. The machines we obtained had Nominal 1725 RPM DC governor motors that were made to be operated at approximately 1685 RPM. We chose to use the DC motors rather than to try to obtain synchronous motors and new gear sets. After all, 110 volts DC at 1 ampere is very easy to obtain and a little brush and governor noise can be tolerated.

The electrical noise from the motor brushes and the governor contacts was absolutely frightening! It appeared to be spread uniformly from 80 thru 2 meters. The noise was easily reduced to an acceptable level by means of the circuit shown in Figure 1. This circuit also shows a way to obtain the DC for powering the motor. The noise suppression elements should be mounted at the governor and motor brushes using the shortest leads possible. The inductor L1 was constructed by winding 30 turns of #28 enamel-coated wire on a 180-ohm, 1-watt carbon resistor. Anyone trying this scheme might find that larger capacitors and some other value of resistor will reduce the noise further.

On Western Union machines equipped with governor speed controlled motors there is a 19-spot strobe target on the keyboard-shaft gear. The motor speed can be set correctly by adjusting the governor until the target appears to rotate 6 RPM CCW when illuminated by a neon lamp supplied from a 60 Hz source.

2. TAPE

As Mr. White mentioned, the machines require 5/16-inch wide tape. We chose to modify the tape-handling system to take the more-standard 3/8-inch tape. The tape guides were replaced with new ones made from thin copper sheet stock. The feed roll was modified for the wider tape by removing its rear shoulder (the shoulder on the end opposite from the gear teeth). Since it is made from case-hardened steel the removal was a bit of a chore. Eight slots were cut radially into the shoulder with a now-worthless hacksaw blade. The "pie-shaped" pieces were then removed by tapping gently with a hammer. The job was completed by filing the ragged edges smooth. The feed roll was remounted and a washer serves the place of the removed shoulder.

We found that a gas incinerator does a marvelous job of tape disposal.

3. MARGIN OR END-OF-LINE INDICATION

This was the hardest problem to solve. There are a great many ways to handle it. The one described here gives a mechanically simple and relatively cheap method that has proved very reliable. The circuit developed is shown in Figure 2.

Diode D1 is used to provide the DC required to operate the "counting" circuit and should not be the same diode used to power the motor.

Contact S is mounted on the keyboard base in such a position that it is closed for a few milliseconds by the lockloop cam every time that a character is sent. It was made from a contact spring set taken from an old relay. When S closes it places a small charge on capacitor C1 thru R1 and R2.

C1 must be a high-quality non-electrolytic capacitor; we used a Sprague "Vitamin-Q" capacitor. When the voltage on C1 reaches the proper value, the starter electrode in V1 causes the tube to ionize and conduction begins. The tube is self-rectifying and the DC from it operates relay MG. MG is any small "plate-type" relay having two "make" contacts and a 2000- to 5000-ohm coil requiring about 4 mA for operation. When MG operates it closes its contacts MG1 and MG2. MG1 maintains the necessary voltage on the starter of V1 to continue conduction. Contact MG2 illuminates the end-of-line lamp LP1.

Contact LF is mounted on the Line Feed key on the keyboard. When Line Feed is operated, C1 is discharged thru R4 and the lamp is extinguished.

The margin indication given by this method has been stable within 2 spaces for the last 2 months. One objection to the method de-

scribed here is that it "counts" non-spacing characters such as LTRS, FIGS, and BLANK. This appears to be a minor consideration that could be solved by placing "normally-closed" contacts on those keys; the contacts would be wired in series and inserted into the circuit between the contact S and R2.

Another objection to this circuit is that it can be voltage sensitive. Our AC Mains Supply is stable enough that its effect upon the "count" given has not been noticed. A regulated supply could be used but the regulating circuit could cause more troubles than it would solve; this is because the higher the supply voltage, the better the repeatability of the counting.

The lamp and R2 were mounted on a bracket that came with the machine. This bracket was used in place of the "slip connection guard" and is located to the rear of the keyboard contacts and above the motor and selector magnet connection strip. It originally held a candelabra-screw-base socket and a toggle switch. The remainder of the components were mounted under the keyboard base.

PARTS LIST

C1   5 Mfd 200 V Sprague "Vitamin-Q"
C2   2 Mfd 200 V
C3   1 Mfd 100 V
C4,5,6,7   0.01 Mfd 600 V Disc Ceramic
C8   200 Mfd 200 V Electrolytic
D1   Any 400 PIV Silicon Diode
D2   3 Ampere 400 PIV Silicon Diode
L1   See text
LP1   Any suitable 120-volt Lamp (Neon or Incandescent)
MG   See text
R1   47K 1/2 W Carbon
R2   150K Carbon Pot
R3   2200-ohm 1/2 W Carbon
R4   68-ohm 1/2 W Carbon
R5   100K 1/2 W Carbon
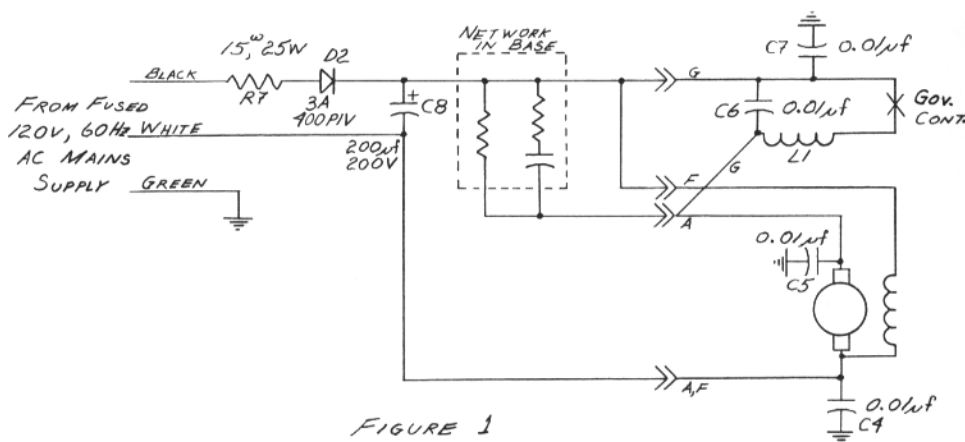R6   1K 1/2 W Carbon
R7   15-ohm 25-watt Wire-wound
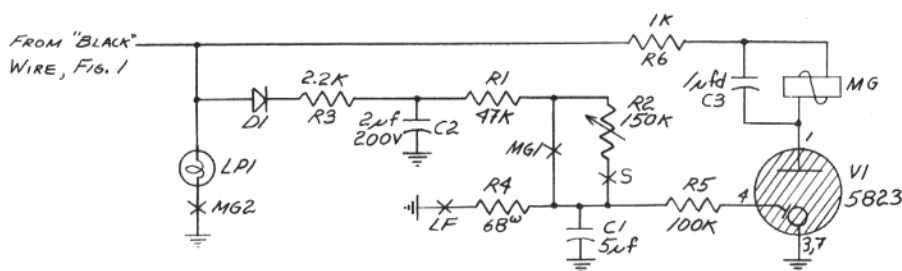V1   5823

FIGURE 1

FIGURE 2

AN ELECTRONIC TELEPRINTER CODE GENERATOR

WILFRED VAN HEDDEGEM, ON4HW — Kortrijkstraat 40, Oudenaarde, Belgium

Generating teleprinter code signals by pure electronic means has several advantages. Unlike its mechanical counterpart it obviously is absolutely silent, it requires no maintenance, the current drain is ridiculously low, it can be set to any imaginable speed by merely turning a knob and it can be built by everyone who knows how to handle a soldering iron.

The author is aware of the fact that the circuit described below is only one of many possible approaches to generate teleprinter code signals. Independent designers will undoubtedly all come to a different result. Back in 1963, the first test carried out had to do with a system incorporating a flip-flop shift register. Later on a simpler circuit has been tried in which cascaded one-shot multivibrators fixed the pulse sequence. The present system however seems to be the most reliable one. It has now been in use for more than two years in ambient temperatures ranging from 0 to 30 degrees centigrade and tests have shown that it continues to work well (apart from a speed change) when the supply voltages are varied between ±50 p.c. of the nominal values.

Fig. 1 shows the block diagram of the code generator.

When pressing a key on the keyboard a pattern of 0's and 1's is placed all at once in the memory circuits consisting of BMV's 1 to 5. The numbering of the flip-flops corresponds to that of the characteristic elements of the teleprinter code. The output levels are 0 for the "mark" state and 1 for the "space" state.

At the same time the keyboard delivers a pulse via Q11 to the time base control flip-flop (BMV6) causing it to switch to the "on" position. As a result the time base astable multivibrator (AMV) starts to run, producing a series of pulses (T=22 ms) on its output point 1. These pulses are passed through an "or" gate (G10) to a binary counter consisting of three cascaded flip-flops (BMV's 7 to 9). This counter has 8 discrete positions. The "and" gates G1 to G7 are controlled by the levels at N1, N'1, N2, N'2, N3 and N'3 in such a manner that they open one after another, each during 22 milliseconds. G1 will have an output for each character, representing the "start" element of the code. As to G2 to G6 however this is only true if also the

input points "b" are on level 1 (space elements). The outputs of the gates G1 to G6 are brought together by means of an "or" gate (G9) and the resulting signal is fed through Q25 and Q26 to the output terminals. G7, opening at the 7th AMV pulse (t=132 ms), does not drive G9, so the output level of the latter is always 0 (mark) from that moment on; thus we obtain the "stop" element.

At the end of the "start" element, i.e. at the second AMV pulse, the output point of G1 returns to level 0. This voltage step is passed through Q34 to the keyboard control flip-flop (BMV10) and makes it go to the "off" position. The keyboard is now locked out so that nothing wrong can happen if, for example, during the further formation of the code another key would be pressed.

The voltage step occuring at the output point of G7 at the 7th AMV pulse is passed through Q27 to the time base control flip-flop (BMV6) causing it to turn off. The time base is now suspended as an AMV, but continues a MMV cycle, so that a few milliseconds later, it will deliver another pulse on its output point 2. As N'1, N'2 and N'3 are on level 1 at that moment, G8 will pass this pulse through G10 to the binary counter, which, in this manner, gets an 8th pulse and returns to its initial state.

The output pulse of Q27 is also fed through Q28 and resets the memory flip-flops. Moreover it turns on the monostable multivibrator (MMV), which at the end of its cycle (T= 33 ms), i.e. at t=165 milliseconds, switches the keyboard control flip-flop (BMV10) to the "on" position. From this moment on everything is in the initial state and pressing a key can again result in the generation of a code signal. It is clear that the one-shot multivibrator (MMV) fixes the minimum duration of the "stop" element of the code signal.

Now we can pass to the circuit diagram (Fig. 2). The horizontal lines of the diode matrix (the reader will be able to complete it himself) are connections to the "a" inputs of the memory BMV's. The keys are connected to the vertical lines. No diode is needed for characters having only one space element; indeed, no crosstalk between the matrix lines can occur in that case.

Initially Q3 is bottomed so that it practically represents a short circuit to earth.

ELECTRONIC TELEPRINTER (Continued) ...

When pressing a key, one or more of the matrix lines come to earth potential for a moment, due to charging up of the 0.22 μf capacitor at the contacts. This positive going voltage step is passed through the 0.1 μf capacitors to the corresponding memory BMV's. At the same time this voltage step is passed to Q11 through the "or" gate G11.

Due to the 0.22 μf capacitors, holding down a key cannot cause repetition of the character, which indeed would be unwanted. To be able to send a same character one must release the key for a moment, to discharge the capacitor. Another result of the use of the capacitors is that one needs not release the key of a previously typed character before typing another one. Some keys have an additional contact with which the capacitor is short-circuited if the key is pressed more firmly. This causes repetition of the character, which is useful in in the case of the horizontal line (A upper case), the full-stop (M upper case), Space, Ltrs, K and, not to forget, E). Most electric typewriters have similar features.

The time base is started and stopped as follows. When BMV6 is in its "off" position, Q14 is bottomed. The base of Q15 is then positive biased so that the AMV is in fact a one-shot multivibrator, and cannot work of its own. When BMV6 is "on," Q14 is cut-off and Q15 is negative biased through the 39K resistor from the voltage present at the collector of Q14, which is regulated by the BZ100 (a 4 volts 200 milliwatts zener diode). Thus the conditions for AMV operation are met. P is the speed control. It can be set to 50 as well as 45 bauds. Higher and lower speeds (1000 to 0.1 bauds, to say something) can be obtained by decreasing or increasing the value of the 0.33 μf capacitors. The 0.56 μf capacitor of the MMV can be changed accordingly.

The code signal at the emitter of Q25 is fed through a RC network to the base of Q26. This network smooths out any gap that could exist between succeeding spacing elements of the code signal, as well as short peaks between succeeding marking elements. Q26 limits out any overshoot that could be present in the signal. At the same time it acts as a switch for negative voltages on the output terminal. In the author's station Q26 is in parallel with the keyboard contact of the Creed 7B teleprinter, so that both keyboards can be operated without the need for a changeover switch.

Unlike some other possible circuits this one doesn't require meddling with reset lines after applying the mains voltage. If the AMV happens to be running just after switching on everything will come to the initial state automatically; if it is not running, pressing a key will be sufficient to get things right. The worst case would be if the AMV didn't run while BMV10 is in its "off" position. This however won't occur since the resistor feeding positive bias to the base of Q33 (22 K) is much smaller than that in the base of Q32 (47 K), which results in a marked preference for the "on" position when applying the positive and negative voltages at the same time.

Unless otherwise indicated all diodes are OA70's or any similar small germanium units. The BA100 at the base of Q29 is a general purpose silicon diode; it has been preferred above a germanium diode for better stability with temperature of the MMV time constant. The OA216/6 in the power supply is a 6 volts low power zener diode. The 1N2070's and the 1N703 are probably known in the States.

All transistors are germanium units. All, except Q14, Q15, Q16, Q29 and Q30, are OC71's which are audio transistors having a hFE between 30 and 75. Q14 is an OC75; this is also an audio transistor but its hFE is higher (65 to 130). Q15, Q16, Q29 and Q30 are alloy-diffused transistors AF116; these are more stable with temperature than the OC71's. Silicons would be even better of course, but this would be superfluous luxury.

The keyboard is made of small DPST press-buttons whose contact springs have been slackened considerably. The 0.22 μf capacitors are soldered directly to the terminals of the keys. The press-buttons are too small for easy typing but they were good enough to carry out the necessary test. Micro-switches operated by a normal keyboard would be a good, but not the cheapest solution.

The total cost of the code generator was about 1900 Belgian francs ($38) using new components throughout. It has been built on two phenolic strips, one of 12 x 8 centimeters and the other 12 x 5 centimeters. Everything (the keys and the 0.22 μf capacitors excluded) could be housed in an aluminum box of 12.5 x 8 x 9 centimeters. When using miniature components this size could probably be halved.

The described circuit can be extended for automatic transmission of short standard texts, e.g. a CQ call. To explain the principle let's take the simple case of RYRYR . . . Drive a counter flip-flop with the pulses on the reset line of the memory BMV's; connect two more transistors as follows: the emitters to the "keyboard common," one of the collectors to the upper contact of the R key and the other in the same way to the Y key; drive the bases by the output levels of the flip-flop. For more complicated texts, more flip-flops and a number of "and" gates will be necessary, or a shift register can be used, also driven by the said reset line.

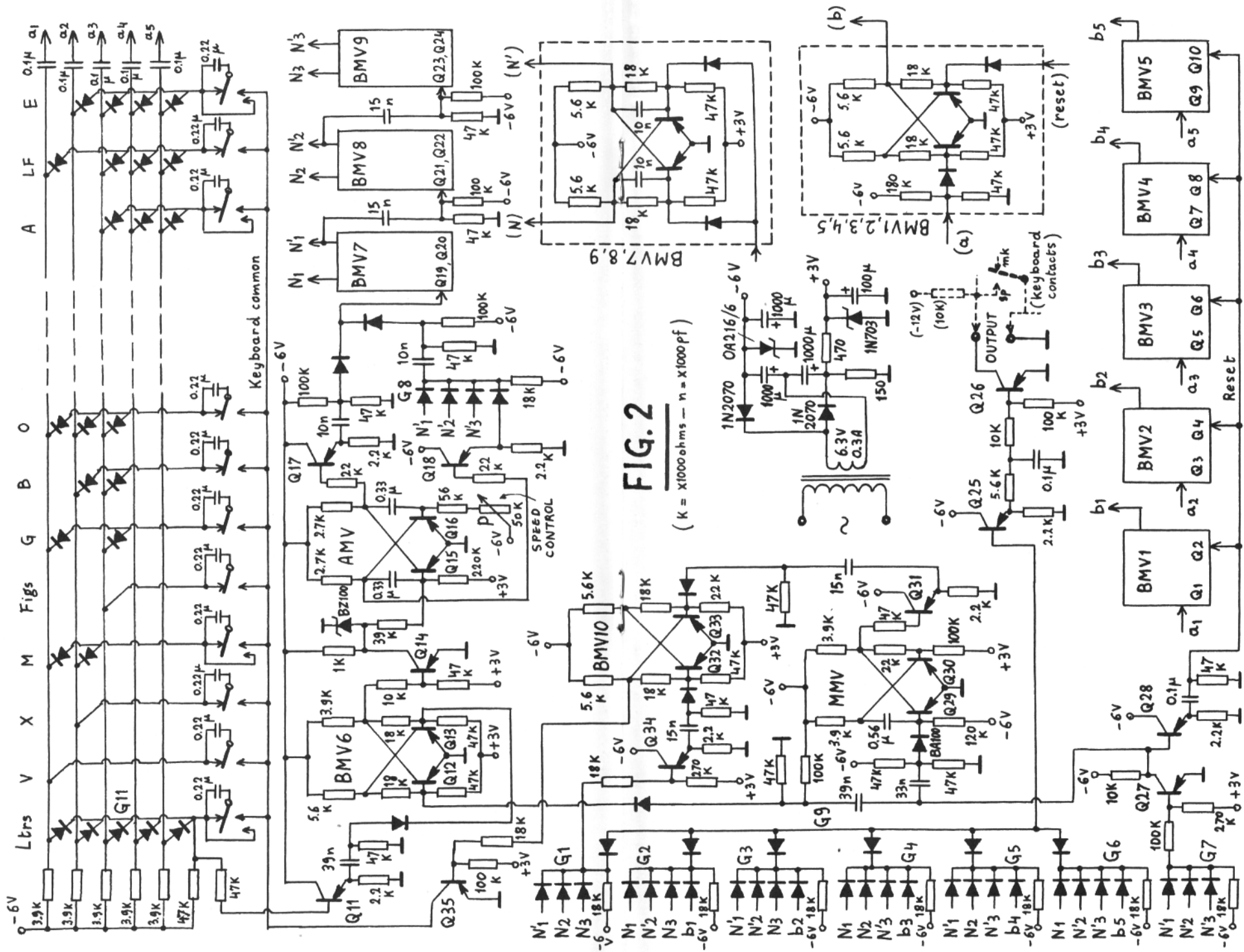Any comments will be highly appreciated.

Wilf, ON4HW

FIG. 1
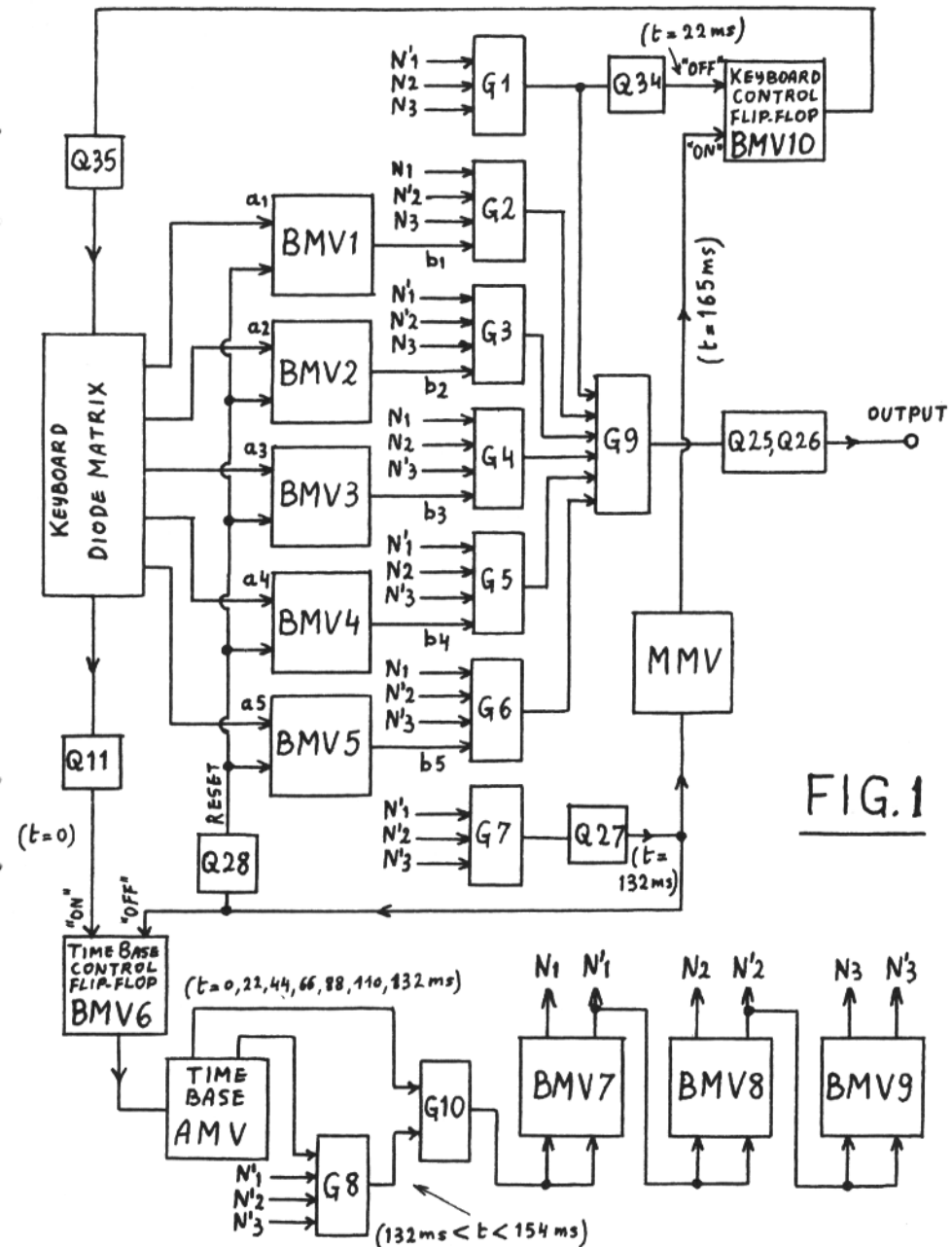
FIG. 2

(K = x1000 ohms — n = x1000 pf)

OF PATCH CORDS AND PATCH PANELS

ROY W. DANCY ETCS, WA4GTA — USS John King DDG-3, c/o FPO NY, NY

After looking at some of the haywire hookups, juryrigging and other methods of interconnecting TTY equipments that RTTY-ers use I want to show what can be done with patch panels. This follows standard Navy practice. I would not be surprised if this is standard commercial practice also. Maybe I am prejudice but after 18 years in the Navy I have not found better. First to show how I use it, and then how it is hooked up aboard ship with notes on shore installation changes.

First let's take a look at the most important item in the system, the SET jack. As used in TTY patches SET is translated as TTY equipment. SET is used to indicate selector magnets, keyboard contacts, both in series, TD contacts, etc. Now look at Fig. 1 which shows a set jack in a local loop. One thing will be noticed at once. The frame of the jack is not connected to anything. This will prevent an accidental shock as the frame is dead without anything plugged in. The voltages in a TTY loop are no joking matter and some of the land lines from Bell Tel and Tel have as much as 450 volts on them. When a plug is in the jack the frame is covered so no shock.

Now lets follow the circuit around the loop. From the negative side of the BATTERY, yes it is called a Battery, thru the current adjusting pot and up to terminal 6 of the jack. In its normal unoperated position 6 is making to 4. Four goes off to one side of the Set. The other side of the Set comes in terminal 1 which is making to terminal 2 and thence to the positive side of the Battery.

The block of insulating material causes 3 to move with 4 without any electrical connection between them.

Now lets push a plug in and see what happens as shown in Fig. 2. The frame of the jack will not be shown from here out as it normally has nothing connected to it. However, there is a conncetion to the sleeve by one of the contacts. Now as we go around the loop the current goes thru the current adjusting pot, in terminal 6, and back out terminal 5 to the other side of the Battery. The TTY machine did not appear in the loop at all! Now back to the jack starting with the tip of the plug. This goes out terminal 4 of the jack to one side of the Set. The other side of the Set comes in terminal 1 which is making to terminal 3 which is strapped to terminal 7 and out the sleeve of the plug. So if you push a patch cord into a Set jack the loop is not disturbed at all and the Set (equipment remember) is now connected to the end of the patch cord in

our hand. This makes the Set available for many things.

Referring to Fig. 3 things have been advanced one more step by adding a couple of LOOP jacks in the circuit. Again a definition. A LOOP jack is a jack that gives access to the loop without disturbing the loop.

Now lets see what we can do with this thing. Take a couple of machines, a 15 and a 19 for example, and connect them in a couple of basic loops, as per Fig. 4. Both machines are completely independent of each other, except for the common Battery. If two copies of what is being typed is wanted, and the 19 has the better keyboard all that must be done is plug into the 15 Set jack and then into one of the 19 Loop jacks. With due chasing around the circuit both machines are in the same loop now. One loop is doing nothing more than dissapating heat in the current adjust pot though.

At this time note that the Set jack is ALWAYS plugged in first. Looking at Fig. 3 again, it is apparent that if a plug is pushed into a Loop jack the other end of the patch cord is HOT. It only takes one slip to bring this to mind very rapidly. Always plug into the Set jack first, as these contacts are cold and do not bite.

As it is apparent that loops can be mixed without shorts, several steps can be made at once as in Fig. 5. Here are 2 Set jacks, and 2 Loop jacks, with a Miscellaneous jack that is not connected in the loop. Going back to the noisy 15 and 19 add a couple of demodulators, a reperf and 2 TD's. The 2 machines are connected with the selector magnets on terminals 1 and 2 of their respective loops. The keyboards are on terminals 3 and 4. The Terminal units on 5 and 6. A new word. Terminal Unit is any devise that handles a TTY signal that is not a machine itself. i.e. Demodular, Converter, Regenator, Terminal Unit etc. Seven and eight go to the battery. Nine and ten are connected to the Misc. jack which is connected to the TD in this case. The reperf is hooked up the same way but the Terminal unit terminals are strapped to complete the circuit. Of course there could be another Terminal unit in the loop. This Misc. jack is connected to the FSK polar relay. If the Mainline system is in use it can be operated by bringing the proper connections to a Misc. jack. If this is arranged in the normal vertical rows it will look like Fig. 6.

Suppose that the 19 page printer is to be driven by the 15 keyboard. First patch the 15 keyboard Set jack, remembering that the Loop jacks are hot. The other end of the

patch cord is then inserted in a 19 Loop jack. At the same time the reperf keyboard could be used to operate the FSK relay, or one of the TD's could be patched into the relay, or an incoming signal on one of the other loops could operate the relay, or take your pick.

With a bit of study the versatility of this system is easy to see. Of course it is nice to have some means of measuring the loop current. Easy enough to add meter shunts and a switched meter.

This is basically the same as the TT-23/U TTY patch panel of which one loop is diagrammed in Fig. 7. Some of these are available on the surplus market and need no converting hi hi. The strap across the 1000 ohm 20 watt resistor may be removed if more resistance is needed in the loop. The EXT-LOCAL switch permits use of either the local battery or an external source in the terminal unit.

Shore stations use the same basic system but vary the number of Set and Loop jacks depending on local conditions. Shore practive uses jack strips and relay racks with Christmas tree terminal blocks in the back of the relay rack. The wiring between the jack strip and the Christmas tree block is permanent and does not need changing once it is in. If you do this, run the cable of connecting wires down one side of the jack strip, and double back across the back of the jack strip before going to the terminal block. This will allow the removal of the jack strip without any strain on the wires. The Christmas tree terminal block looks like a Christmas tree when it is viewed from the end. These blocks are available in sizes up to 10 by 26 terminals, there being 26 jacks in the length of a jack strip. This way several extra loops can be wired up with nothing connected to them, so that any TTY machines can be hooked in without trouble and no chunks of wire all over the place. Of course a portable machine can be plugged into one of the loop jacks. Good luck and less haywire.
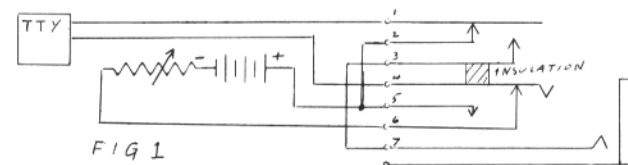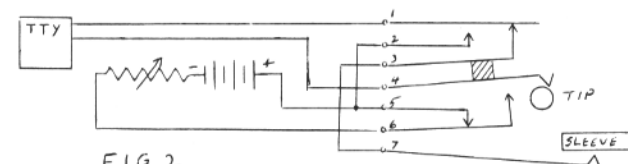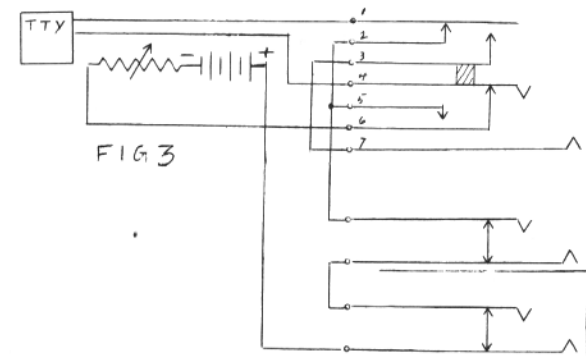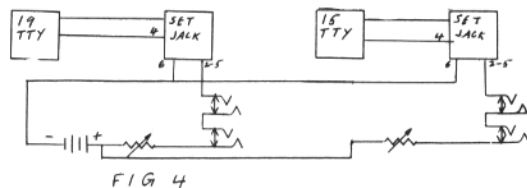

FIG 1

FIG 2

FIG 3

FIG 4

KYBD

SEL MAG

SET L

SET 2

CONV   2500 ~ 25W

BATT 120V DC

TD

LOOP

LOOP

MISC

FIG 5

FIG 6

	15	19	REPERF
SET L	○	○	○
SET 2	○	○	○
LOOP	○	○	○
LOOP	○	○	○
MISC	(TD)	(TD)	(RLY)

BATT   2500 25W   METER SHUNT   100 MA   LOCAL   EXT

MISC

SET

TERMINAL
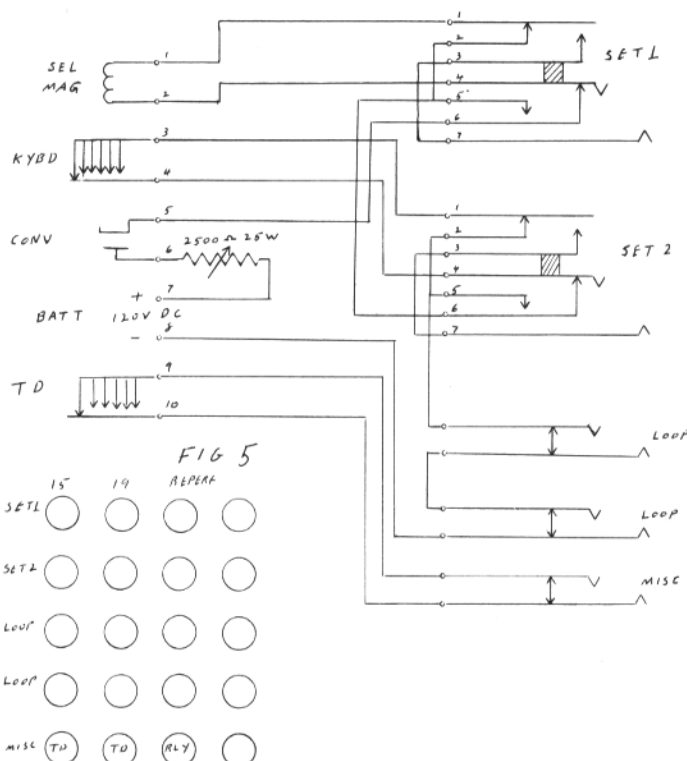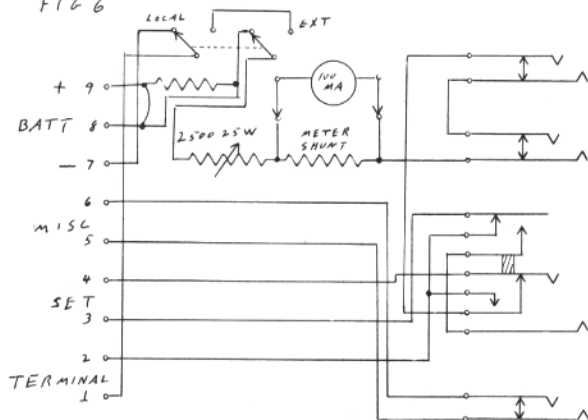
O NO CONN   FIG 7

RTTY-DX

BUD SCHULTZ, W6CG
5226 N. Willmonte Avenue
Temple City, California 91780

Hi DX'ers:

Thanks to all of you who sent in news in answer to my plea in last month's column. Developments are really piling up in the DX business now! As I sit down to grind out this page of rumors — Ed K3GIF and VK2EG are just winding up their 24th consecutive long path RTTY QSO! This surely is an achievement worth some sort of recognition. Incidentally, the DX for the Long Path QSO between VK2EG and W6CG that was reported here last month has been worked out by the VK Communications department as 17,374 statute miles so I'm going to sit back and rest on my laurels until one of you W6 chaps a few miles west of me gets on about 2000 GMT and works Bill. He is still coming thru with good signals so give it a try! While on the "down under" news I should mention that VK3KF is active again with fine signals and managed a real good QSO with a W8 (on CW) on eighty meters. Eric is now looking for some of the gang to give it a try on RTTY so if you have the inclination to operate during the early morning hours this should be an interesting idea for you. VK3KF operates on 40 around 0800 GMT and would be glad to QSY to 80 if you want to give it a fling. Eric also enclosed a complete new set of rules for future RTTY DX contests that are quite revolutionary. We are making copies of these new rules and will send them to various RTTY groups throughout the World for their opinion and possible use in the future. The SCARTS DX Committee is studying Eric's ideas with great interest with a view to possibly incorporating them into the next DX SS Contest. Bruce, ZL1WB, is very much involved in tests with the Oscar IV satellite. His CW and RTTY was heard in Australia on 432 megs via the satellite so Bruce is really celebrating! During the experiments Bruce nearly finished things off by standing on the hi-voltage feeder and touching the metal cabinet containing the gear. Fortunately, a 5 amp. fuse blew and saved him from a permanent trip to that big ham shack in the sky but he did suffer painful burns on his fingers and the bottom of one foot. Again it's time to remember the motto "switch to safety."

Word comes that FB8XX in the Kerguelen Islands won't be on RTTY until April. This last report was received from Chris, ZS6BCT, who has been working the Kerguelen station on SSB. We should also mention that Chris, ZS6BCT, has been very active on RTTY lately with fine signals into the States. I talked to Orbra, EL2F, last week and he is having his troubles with insulator breakdowns. It seems that they are building a road near his antenna location and the dust settles on his insulators during the day and then at night the soft air deposits a heavy dew on the dusty insulators and by morning things are really in a mess. He has been spending a lot of time on a ladder washing off insulators in the past few weeks.

Ron, KA2RJ, writes that he has just returned from a trip to Korea and is pleased to announce that as of Feb. 1st the HL9 stations will be permitted to use RTTY on all presently assigned bands. Ron advises the gang to look for HL9TM and HL9KG on 14,090 Kcs. He also expects HL9TT to show on FSK soon. Ron points out that he and Dick, KA2LD, are still looking for RTTY contacts on ten meters. He suggests that conditions should improve greatly in March on this band. Ron says to look for the beacon on 29.0 using the call sign JA1IGY (CW) and that he and Dick will be looking for calls on week-end mornings near there. KA2RJ and KA2LD are ardent RTTY'ers who are very anxious to get some contacts with other parts of the World so let's not forget 'em. Take a little of your operating time to monitor ten meters and let's see who is the first to get a QSO with Japan on RTTY.

Max, KP4AQL, sent in the copy of a very fine QSO he had with PY2ON on 15 meters on Jan. 30th. SM7BKZ, Steve, was at the keyboard at PY2ON during the contact and was visiting Jonny during a vacation trip and helped him to get going on RTTY.

Sid, VE3GK, writes to tell of a fine contact he made with HB9XJ/MM. HB9XJ/MM is aboard the M/S Ariana bound from Singapore to Dakar and thence to Rotterdam. The ship board gear includes an HT-32, 51J4 receiver and a CV-57 Converter!

Nice letter from Alan, G2HIO, alerting the gang to the BARTG contest (details elsewhere in this issue). Alan points out that European activity is really on the up swing now and the Spring DX contest should really bring out a lot of new ones. Alan worked F3LL/P on 40 meters for a new wrinkle. Alen enclosed a list of the States that many of the UK group are looking for in order to qualify for the WAS awards. Space doesn't allow printing it this time but will try and squeeze it in next month.

My old buddy and co-founder of this column G3CQE, Bill Brennan, came thru with a real catalogue this month and it ex-

RTTY-DX (Continued) . . .

plains his long absence from the bands. Bill has been very busy traveling around the UK for the BBC and just hasn't had time to get his new QTH completed and his antenna farm started. At present Bill is only at home for a few fleeting hours on weekends and only has a dipole in the "attic" for a skywire. He expects to complete th's traveling deal soon and then we can look forward to seeing his wrinkles on the scope once again. Bill says that so far he has received only five applicants for the GCA RTTY Award. (See last month's column for details). If you have 25 or more countries confirmed on RTTY better apply for this one — it's one of the rarest awards in Ham Radio and really worth having on the wall. The five qual'fiers so far are DL1VR, G3CQE, G2HIO, VE4BJ and W6CG.

Arthur, ON4BX, sends word that he also had a QSO with HB9XJ/MM as well as VK2EG and ZL3HJ so he is really doing a great job on the bauds. He hopes to be on the air shortly with the call ON4BX/P from the Polytechnique de Mons where he is in charge of the electronic instrumentat'on department. Arthur also tells us that 45.5 Bauds is now official in Belgium.

It's time again to write "AR SK" to this column although I still have lots of items we haven't had a chance to touch on but hope to get them all in next time around. Don't forget to get in on the BARTG DX contest this month. If conditions are as good as they have been the past month you are bound to come up with some new ones for your list. Above all—do the UK lads the favor of sending in your log even if you are not a top winner. When you send your log in it lets them know you were interested in their efforts and they appreciate knowing you took the time to do it. Thanks a lot gang.

Thanks also this month to the following for sending in DX news: KP4AQL, G3CQE, K3GIF, ON4BX, KA2RJ, G2HIO, VK3KF, VE3GK, ZS6BCT, FG7XT. Keep it coming, Gang!

I don't want to forget to offer a special salute to Art, W1WL, who generously sent some paid-up subscriptions to several technical magazines (including "RTTY") to Milos and the gang at OK1KUL. This is a fine gesture and surely helps our cause where it does the most good to promote good Ham relations. Nice work, Art!

73 to all

Bud, W6CG

All amateurs are urged to monitor 3,625 kcs at 0400 gmt for traffic for their areas on "RATT NET." The net meets on week nights and all amateurs are invited to QNI. Net Control Monday W6CAL, Tuesday K6CHN, Wednesday WA6WGL, Thursday K6DYX, Friday W6CAL.

WANTED: Back issues of RTTY, Jan. 1964 and most prior issues. Also interested in swapping TTY "pictures." K2AGI, 5 Hansell Road, Murray Hill, N.J. 07971.

WANTED: AMATEURS to take part in the INTRUDERS WATCH program. Write Dick Baldwin, W1IKE care of ARRL, 225 Main Street, Newington, Conn. 06111.

WANTED: An 87.6 VPS tuning fork. Also beg, borrow, buy or steal data or schematic on Northern Radio Type 163 FSK keyer. W7IAN, P.O. Box 32, Ontario, Oregon 97914.

FOR SALE: ¾" ungummed paper tape catalog number P4-W38P 70¢ per roll, 63¢ each in dozen lots. Also available gummed tape, same price, number P4-W38G. 1" perforator tape P4-W1170 $1.00 per roll, 90¢ each in package of 7 rolls. 8" paper, regular printer paper $1.00 per roll or 94¢ each, in dozen lot. HORDER'S, 231 South Jefferson Avenue, Chicago, Illinois 60606. . . . .

FOR SALE: Teletype paper, new standard size 12 roll case, $8.00. Teledeltos Electro Sensitive (FAX) Chart Recorder Paper, 12" x 5" roll, $1.00. Model 15 machines in good operating shape, $75. Model 14 Tee Dee's, $40. Model 26, $55. Model 14 Typing Reperfs — sync motor — $50. HQ129X receiver — $70. Clegg 99er $85. DX35, $35. Twoer with DC supply, $45. Tubes — much more — write for list, W2DLT, 348R Essex St., Stirling, N.J. 07980.

FOR SALE: RTTY's, July, December 1961. February, April, June, September, October, December 1962. October, December 1964. All 1965. 30¢ each. Wanted, May 1953. Bill Gates, 8224 Lindley Avenue, Reseda, California 91335. . . .

REPORT NON-AMATEUR INTERCEPT ON CD-36

In the course of your keeping a watchful eye on the Amateur Service to keep brother operators out of FCC/DOT trouble you will run across some INTRUDERS in our bands. Where (in Reg. I and III especially) the non-amateur signals have a legal basis for sharing non-exclusive band sectors, there is no point in reporting them. But ARRL works constantly with FCC and through our government and international channels to rid our frequencies of stations improperly working there. Request form CD-36 if you can use them. (For more on "intruders" see page 64 Sept. '63 QST, and Intruder Watch, page 26 March 1964 QST. The information in Geneva Report, Mar. '60 QST also is a good basic reference.)

————O————

DAYTON HAMVENTION APRIL 16, 1966

The Dayton Amateur Radio Association is again sponsoring the 15th DAYTON HAMVENTION to be held at Wampler's Arena Center. We invite you to attend the RTTY session, also MARS, VHF, SSB, DX and the big banquet at 7 PM. Last year 2500 amateurs enjoyed this outstanding event. Don't miss it this year. For program brochure, write DAYTON HAMVENTION, Dept. RT, P. O. Box 44, Dayton, Ohio 45401.

HORSE TRADES

FOR SALE: 2125 and 2975 CPS dual tuning fork assembly $33.00, .05% stability, 68 to 86°F. Transistor forl drive circuit kit $10.00; assembled circuit $16.00. Data available. RIVERBANK LABORATORIES, Box 65, Geneva, Illinois 60134.

FOR SALE: Northern Radio, Model 107, dual converter $75.00 with book. Northern Radio Model 105 Frequency shift keyer $100.00 with book. Military model 15, sync motor, recently overhauled $75.00. 4 bay console, folding table top,pneumatic caster $150.00. General Radio, Model 869A pulse generator, as is, works $20.00. General Radio Model 617-C, interpolation oscillator, as is, works, $30.00 with book. 6 ft. relay rack $20.00. 18" relay rack cabinets $5.00 each. 100 kc frequency counter, as is, works. $50.00. Black Widow transceiver, $50.00. K6OPJ, 12695-3rd, Chino, California 91710.

FOR SALE: Cleaning out shack, WE 255x polar relays, $2.00. Socket for WE 255, $1.00. 500 kc filter chassis (new) for 51J4 with two transformers and tuning capacitors $5.00. 100 kc marker generator on PC board with 100 kc xtal, $5.00. Send SASE for list of other items. W0IKQ, 603-29th Street, N.E. Cedar Rapids, Iowa 52402.

FOR SALE: Model 15 complete. Model 150 Kleinschmidt 60 and 100 WPM. See May 65 cover RTTY. All machines like new. Want Collins slow speed tuning dial. K6PZT, 9337 Gotham Street, Downey, California Phone TOpaz 9-3292.

FOR SALE: 88 mhy toroids, 44 mhy toroids, many model Teleprinters and Teletype. Send SASE for list. W6VPC, 1067 Mandana Blvd., Oakland, California 94610.

TRADE: Printers, Reperfs, TD's for 16mm sound films, or cameras, projectors or anything for 16mm including automatic processors, printers, sound film readers, etc. Describe fully what you have. W4AIS, 7 Artillery Road, Taylors, South Carolina 29687.

FOR SALE: 88mhy, uncased toroids 5/$2.50 postpaid, WA6FKN, P.O. Box 34, Dixon, Calif. 95620.

FOR SALE: Teletype paper and tape, send SASE for information. WA2TEK, 33 Roosevelt Street, Pequannock, N.J. 07440.

WANTED: Teletype Bulletin 1143, Parts, Sequential Selector (BS). WB6INV, 2409 Wilson Avenue, Venice, California 90291.

FOR SALE: Brand new CV-57 frequency shift converter. Copies any shift between 10 and 1,000 cycles. Complete with all plugs, cables and manuals, accessories. $125.00. Will ship. Unfinished transistorized two-tone converter. Parts cost me over $70.00. Sell for $50.00. Jack Hardman, 33 Laurel Place, Upper Montclair, N.J. 07043. Phone 201-759-3700 days.

WANTED: Manual or circuit information on Detectron Corp Frequency Counter Model DS-660. W4MGT, 334 Grosvenor Avenue, Lexington, Ky. 40508.

WANTED: B&W LPA-1 or L 1000A linear with or without power supply, WB6DBD, 4538 Camino Molinero, Santa Barbara, California 96105.

FOR SALE: 104986 120 VPS Tuning Fork for Model 28, $3.00 PP. 153440 uncoded function bar, six for $5.00 PP. John Riley, 914 North Cordova, Burbank, California 91505. Phone 213-845-3880.

TRADE: (Or swap) New Tubes—eight 813, four 4-250A, eight 4X150A for model 19. Will consider Model 15, K4HHX, P.O. Box 907, Fort Walton Beach, Florida 32548.

FOR SALE: Model 15 completely overhauled and in excellent condition, refinished, W6-RCM, 2303 Fairgreen Street, Monrovia, California.

WANTED: Good, working, homebrew or inexpensive commercial or surplus audio TU for a struggling college student. WB2-PBI, Washington University, Box 1811, 6515 Wydown, St. Louis, Mo. 63105.

FOR SALE: 11/16" perforator tape, 25¢ roll, 10 rolls for $2.25. FSA type frequency shift keyer, $35.00. CV-89 converter $165.00. M-14 typing reperfs $40.00. Tested OK $55.00. M-14 TD like new $65.00. Standard 3 ply page paper, case of 12 rolls $7.00. Free list for SASE. All F.O.B. W2BVE, 834 Palmer Avenue, Maywood, N.J. 07607.