AS1 AUTO START- Cont.

Continued from page 17

out the space relay dropping out. The time constant of R1 is long enough so that on continuous TTY signals both relays remain closed. The closing of both relays operative R3 which is the power relay which applies current to the TTY machine. An extra set of contacts on R3 also can be used to control what ever "Hold/Print" circuits the T.U. may have.

The selectivity of this circuit depends of course on the selectivity of the Mark and Space filters in the T.U. On the other hand it will be found that the circuit is highly discriminatory to CW and phone or other spurious signals. Tuning a receiver across the band will cause no action from noise or continuous tones but the moment a RTTY signal is tuned so that Mark and Space reversals appear, the relays close and stay closed as long as the TTY signals are on. A steady Mark signal will keep the relays closed; however a steady Space signal will shut the system down within one second. Therefore after a transmission is completed, the sending operator either cuts his signal entirely or sends a steady Space tone for a few seconds. In either case the auto-start shuts down the printer motor.

The only adjustment called for in this circuit is the setting of the 5K and 15K pots in the source legs of Q1 and Q2. With no input to the circuit, a vacuum tube boltmeter is connected from ground to the movable arms of the pots and the pots are adjusted for zero voltage. Because of variations in the FETs, it may be found that one of the pots cannot be set to zero voltage. If this happens it is necessary to try a different value of the fixed resistors in series with the pots.

A simple but satisfactory power supply is shown in the schematic. The voltages must be regulated and the Zener diodes shown are essential.

This circuit has been used now for a couple of years with a high degree of reliability and satisfaction. It is recommended for those who don't have a key to an I.C. factory and who are still not ashamed to use relays!

*****

Address Correction Requested
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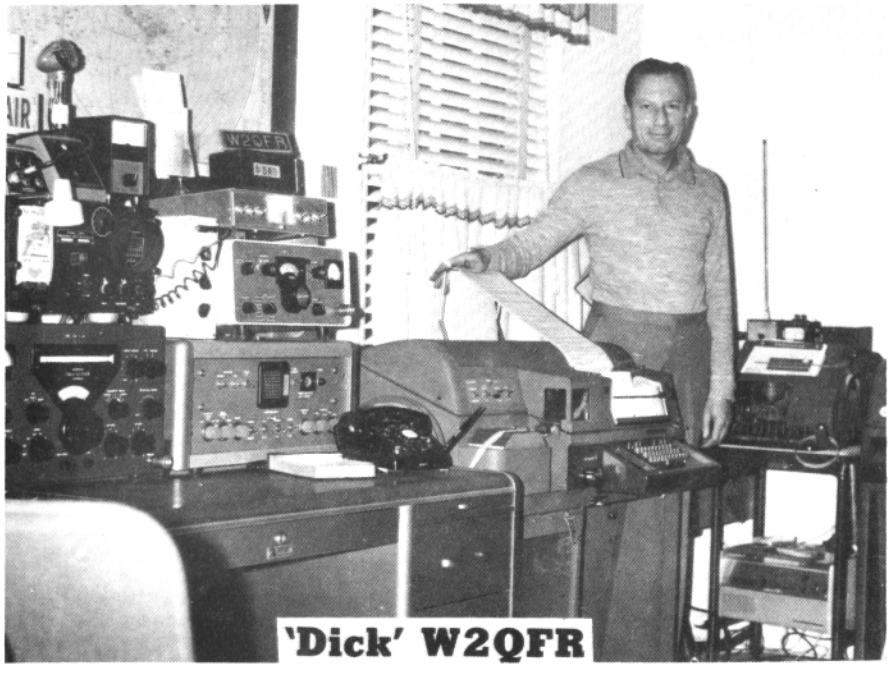
RTTY JOURNAL

July-Aug 1971

EXCLUSIVELY AMATEUR RADIO TELETYPE

Volume 19 No. 7 30 Cents



'Dick' W2QFR

Official ARRL Bulletin Station

CONTENTS:

1st S.A.R.T.G. RTTY World-Wide Contest

Saturday - Sunday - August 21 - 22

1. **Contest period:** 1500GMT Saturday, August 21st, until 1800GMT Sunday, August 22nd, 1971.
2. **Bands:** 3, 5 - 7 - 14 - 21 and 28 MHz
3. **Classes:** a) Single operator. b) Multi operator.
4. **Message:** RST and QSO-number
5. **Points:** QSO with own country counts five (5) points. QSO with other country, but same continent counts ten (10) points. QSO with other continent counts twenty-five (25) points. QSO with Scandinavians counts DOUBLE.
6. **Multipliers:** Each country as by the WAE and DXCC Country lists, and each districts in the following countries: W/K - VE/VO - PY - LU - VK - ZL and JA. The same station may be contacted once each band for additional QSO - points and multipliers.
7. **Final Score:** QSO-points times multipliers.
8. **Logs:** Logs, complete with all informations and a summary sheet, with latest postmark Sept. 20th, 1971, to be sent to: S.A.R.T.G. Contest & Awards Manager, Bo V. Ohlsson - SM4CMG Box 1258 , S-710 41 FELLINGSBRO, Sweden.
9. **Awards:** The two highest scoring stations in each class in each country and call area (Par. 6) will receive certificates.
10. **W.S.R.Y.:** All QSO's with Scandinavians in this contest are valid for the Worked Scandinavian RTTY Award, W S R Y, with no need for extra confirmations. (See WSRY-rules). However, all SARTG Contest participants are requested to confirm each QSO with a QSL card. This voluntary habit is aimed to foster general QSL policy over the world.
11. **World RTTY Championship:** Points and positions achieved will be valid for inclusion in the World RTTY Championship 1971.

On behalf of S.A.R.T.G., The Scandinavian Amateur Radio Teleprinter Group, Bo V. Ohlsson - SM4CMG, SARTG Contest & Awards Manager.

***

RTTY TRAFFIC HANDLING-

We believe that as of 8th, May 71, the Hamilton Amateur Radio Club may have a "first" and if not, our method of handling heavy traffic is worth passing along.

Our Public Service Co-ordinator, Hugh McCully VE3AYR was approached by the local "Miles for Millions" committee to provide some communications for this year's march. He agreed and made the usual arrangements for various links, 75, 2 mobile, etc. One additional link was contemplated, a high density traffic RTTY link, to relay traffic from the finish point to some point that had access to the telephone network in order to arrange for transportation for those who participated. Several methods were discussed and it was arranged that we would take over the headquarters of the local Automobile Club and their switchboard facilities to originate calls home. This was manned (or girled) by 20 volunteers to handle the telephoning. A single channel RTTY was set up to operate on 2 metre AFSK to handle the messages from the finish point some four miles away. All messages were perfed to assure maximum circuit speed.

RTTY is a fabulous method to handle large volumes of traffic. Approximately 400 messages were handled from 1400 to 2200 with the RTTY circuit at about 20% capacity.

The return phone circuit was at capacity and perhaps occasionally beyond. If the RTTY circuit had been loaded to full capacity, the phone circuit could not have handled the returns, etc.

The format from the RTTY machine is ideal, and made it very easy for the operators to learn a new procedure rapidly and handle the job efficiently.

Very low power can be used on two for short haul (10-15 miles) Because of transmitter problems, we had perhaps 1/2 watt into the antenna when we closed down, with landline copy still being received.

A pool of compatible equipment should be assembled and kept ready for projects of this nature or emergency use.

Our next project will use RTTY in both directions, either full duplex manual keyboard or perfed tape.

VE3FHB, Ken Christmas set up and operated the Teletype gear at the finish line. VE3BAD, "Joe" Blanchett was responsible for equipment at the Motor League. Equipment was scrounged from various club members to provide enough VHF and RTTY equipment for the link.

***

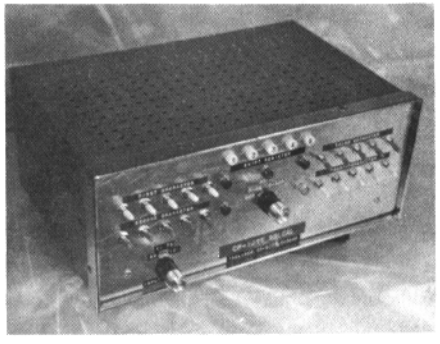
The SELCAL as A SIGNAL ANALYZER--

JAMES J. WENSKUS, Jr. K2BEH
329 Ballard Ave.
Rochester, N. Y. 14626

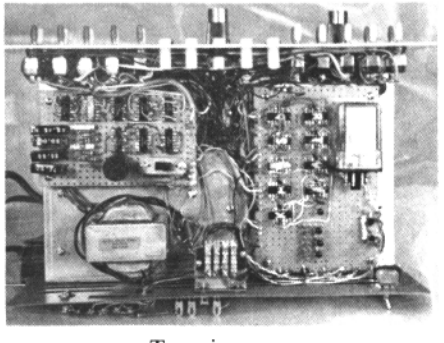
The Selcal, as originally described in the May, 1967 issue of this magazine, was designed for a single purpose, to perform as a RTTY sequential character selecting device. Since the cost of a Selcal is in the range of $75-$100, we should plan to make the greatest possible use of it to insure its economic justification.

The heart of the Selcal, the serial to parallet converter, contains a tremendous potential for the development of additional teletype systems. I found that a considerable amount of signal monitoring information could be obtained from the Selcal at little additional cost by making use of the serial to parallel converter logic. This article describes two relatively simple teletype character monitoring modifications which can be added to greatly increase the utility of the Selcal.

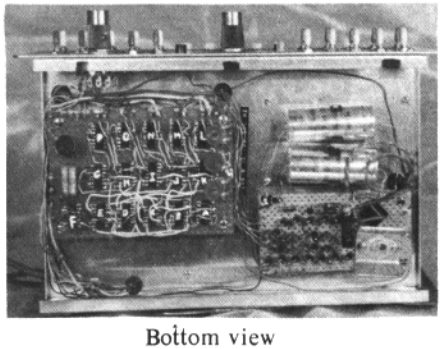
The most worthwhile circuit that can be added is a teletype character synchronized sweep generator. Attempting to learn anything from watching non-synchronized RTTY pulses on a scope is pretty much a lost cause. The Selcal logic, however, recognizes a teletype letter and turns itself on accordingly. We can tap into the logic and use it to generate a sawtooth which will always be in synchronization with the received letter. If you apply a teletype signal from any part of your system to the vertical input of a scope and the sawtooth to the horizontal input, all the pulses which make up the teletype letter appear on the scope in exactly the same position every time a letter is typed. The positions are independent of typing speed. Either hunt and peck or machine speeds always give a completely stable pattern. If you mark up the scope face with a crayon or similar marker and number the positions, each pulse can be readily identified. Pulse bias or splitting can be seen easily. Your magnet current waveforms, if taken across a 47 ohm series resistor in the loop, should make you depressed for days. The distortion effect of adding a reperf in series with your printer shows up magnificently as well as any dirty contacts in your equipment.



General view - in cabinet



Top view



Bottom view

We can also add indicator lights to the serial to parallel converter output buffers to indicate the data pulse makeup of the last received letter. If, when you build the Selcal, you provide it with twenty selector switches for changing sequences, these lights make setting up a breeze. Just place your station in local loop operation and type the first code letter. The

lights will come on indicating which positions contain marks. The "First Character" switches are then set up according to these light positions. This set up procedure is followed for the remaining letters. You can set up a new sequence in a minute or two without having to refer to a coding chart. Indicator lights can also be added to the sequential selector flip-flops. As each code letter is typed, a character selector light turns on. As each new letter is typed, the previous light goes out and the new one comes on. These lights give you a good operational check on the system and let you readily localize any trouble spots.

The sweep generator can be added for a cost of less than $5. The light system will cost about $10-$15 depending on how many you add.

For those who become interested in building a Selcal after reading this article, I have included a few comments. The Selcal printed circuit boards are no longer available and you have to handwire the unit. This is very time consuming but with the hints described, and a fair amount of patience, little difficulty should be encountered.

Sweep Generator Operation

This synchronized sweep generator is my pride and joy. Actually, the only reason I built the Selcal was to verify that a solid state synchronized sweep generator could be built. In an article for 73 magazines, I commented that a Selcal could provide a character synchronized sweep and I felt that I better prove it lest I become overwhelmed by letters asking how.

*"Conversion of the TT-632A to a Teletype Character Synchronized Sweep Generator" accepted in September 1969 but not yet published.

The design approach taken was to charge a capacitor from a constant current source. The constant current source is composed of an inexpensive FET and a series resistor. Using a 1 uf capacitor, it charges up to about 1/2 the supply voltage during a 60 wpm letter. The value of 1 uf for the capacitor was picked so that the charging current would be high enough that the input loading of most common scopes would not affect the linearity appreciably and thus eliminate the need for the usual emitter follower. Any good quality capacitor can be used and can be any value provided the series resistor is changed to compensate for the charging rate difference. It is best, however, to keep the maximum output voltage of this circuit below 75 percent of the supply voltage. The 3.6 V supply is not capable of linearily charging in this circuit, so the higher supply voltage must be used. The filtering of my 12 V line was adequate, but a decoupling filter could be added for additional ripple reduction if so desired.

The sweep is generated by turning off the switching transistor. The switching transistor, which can be any good high gain NPN silicon transistor, normally shorts out the capacitor during intervals

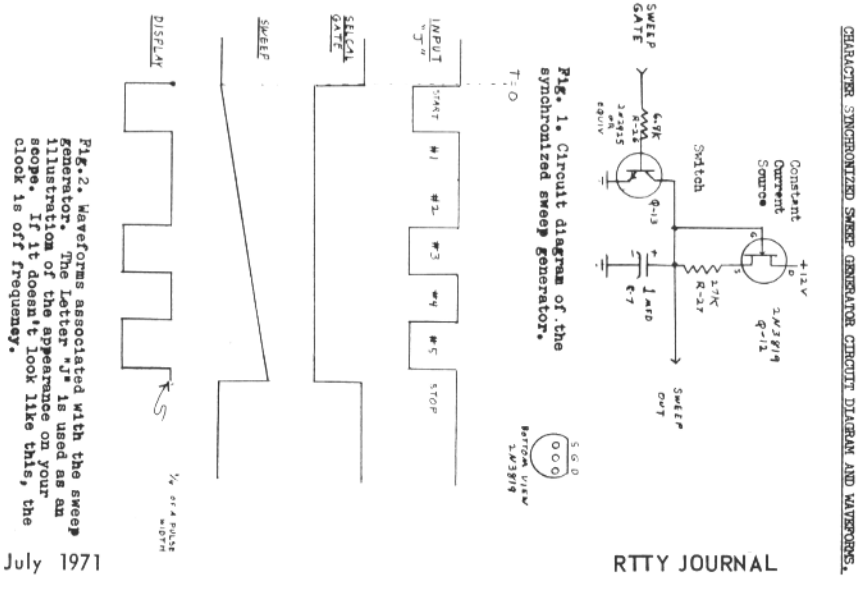


Fig. 1. Circuit diagram of the synchronized sweep generator.

Fig. 2. Waveforms associated with the sweep generator. The letter "J" is used as an illustration of the appearance on your scope. If it doesn't look like this, the clock is off frequency.

when no letters are being received. When an incoming letter trips the Selcal start flip-flop, the input to the sweep switch transistor goes low and it turns off. The capacitor then begins charging in a linear manner and generates the sawtooth which drives the horizontal deflection amplifiers in the scope. When the Selcal start flip-flop is reset at the end of a letter, the sweep switch is turned on and the voltage across the capacitor is discharged.

The Selcal logic signal used to gate the sweep generator is the counter preset line shown in the Fig. 4 logic diagram. This line is positive with no signal and goes low when a letter is being received. This particular preset line is used as it has 7 RTL loading units still available compared to only 4 units on the other line.

Two comments are in order here. This circuit can be used only with a DC scope. AC scopes cannot pass the low frequency components of these signals. The maximum sweep output voltage is time dependent. If you change the clock to a faster speed, the sweep gate duration becomes shorter and the resulting sawtooth does not reach the same peak amplitude. This shortens the display base line. The scope horizontal gain can be readjusted to match the index marks set up for 60 WPM. However, as an alternative, you can compensate by switching series charging resistors as you change clock speeds. This depends on your individual requirements, however.

Precise clock frequency adjustment of the Selcal can now be achieved without any external test instruments, such as a frequency counter, by use of the synchronized sweep generator. Run a teletype signal of know speed into your Selca. Using the Selcal generated synchronized sweep set up your scope to display the incoming waveform. Adjust the clock pot until the scope display looks like that shown in Figure 2. With the Selcal pot, you should be able to shorten and lengthen the last position by about 10 ms. This adjustment shouldn't take more than a minute to do and is as good as that obtained with frequency counter.

Indicator Light Operation

The light indicator circuit shown in Figure 3 is quite conventional. I used 14 volt long life bulbs since a 12 volt capacitor input power supply will give over 15 volts. Any convenient type of light can be used provided the transistor used as the switch can stand the current. The Chicago Molded lights shown in the diagram are currently listed in the Allied Industrial Catalog for approximately $.80 each. They include their own plastic housing and are available in five colors. This makes their cost less than a conventional socket and bulb assembly. The 47 OHM series resistor limits the turn on current surge and protects the transistor. It also extends the useful bulb life.

The lamp drivers are connected to the "O" output of each of the five shift register buffers. The "O" output is high if a mark is in the shift register in that particular position. The indicators on the front panel are numbered to correspond to the shift register positions. The resulting display for the letter J as an example, appears as lights #1, 2 and 4 lit. "J" is Start-M-M-S-M-S-Stop. The numbers are dry transfer types and are given a spray coat of clear plastic to protect them from abrasion.

For the sequential selector readouts, the lamp drivers are connected to the "1" outputs of the appropriate character flip-flops. The last flip-flop already has a status light associated with it so only 3 additional lamp drivers are required to monitor its operation.

A modification is made to the power supply to provide the additional lamp current. This change consists of using a 2 amp transformer instead of a 1 amp and adding another 2000 uf filter capacitor to provide additional ripple elimination. The positive supply for the lights could be switched off during unattended operation to keep the heat down and not waste the bulb life.

Selcal Construction Comments

The hand wiring of the Selcal is a painstaking slow process and can't be hurried. It is well worth your while to study it thoroughly before beginning to work on it. I used standard perforated boards for the wiring. I redrew the logic slightly so that the serial to parallel converter and clock circuitry would be complete on one board and could be checked out operationally before proceeding with the sequential selector board. The modified logic diagrams are shown in Figures 4 and 5.

The mounting method used with the IC's is to bend upward all terminals except the two power terminals. These are fastened to two push in type terminals on the board and the power connections made from the underside of the board. Point to point wiring is used to connect the various signal terminals. I recommend that you use a variety of wire colors. It makes it easier to build if you arbitrarily break down the card into functional subsystems and wire each a different color. For example, the clock

oscillator component interconnections could be wired with white, the clock counter with blue, the decoding gates with yellow, etc. It turns out that about one subsystem (or color) is all you can wire at one time before fatigue sets in with a resulting increase in wiring errors.

As a wiring aid, I made up logic clock layouts as illustrated in Figures 6 and 7. Several copies of each are made and marked up, using colored pencil, to form a wiring guide. Only one or two sub-

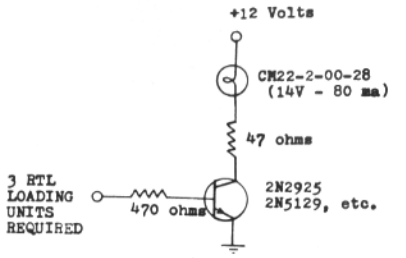


Fig. 3. Circuit diagram of lamp indicator.

Fig. 4. Modified Selcal shift register and clock logic.

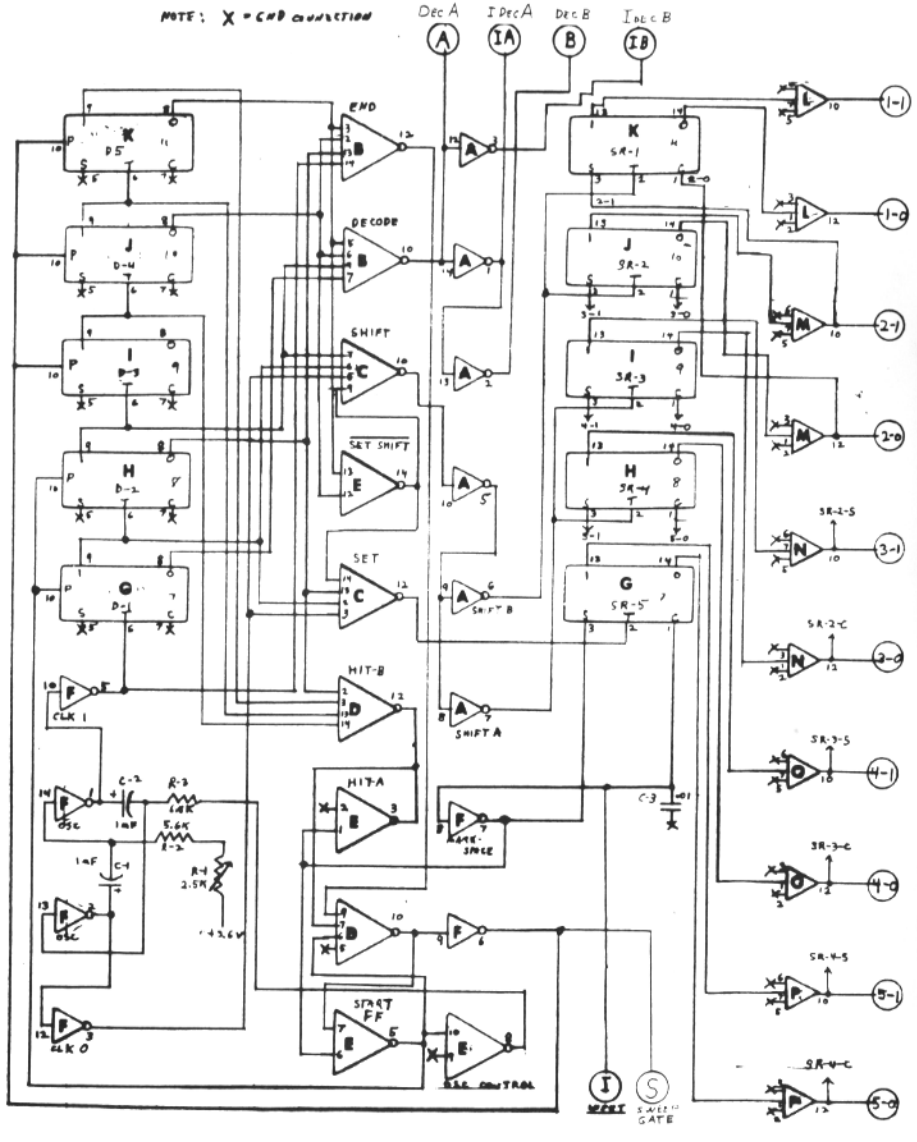
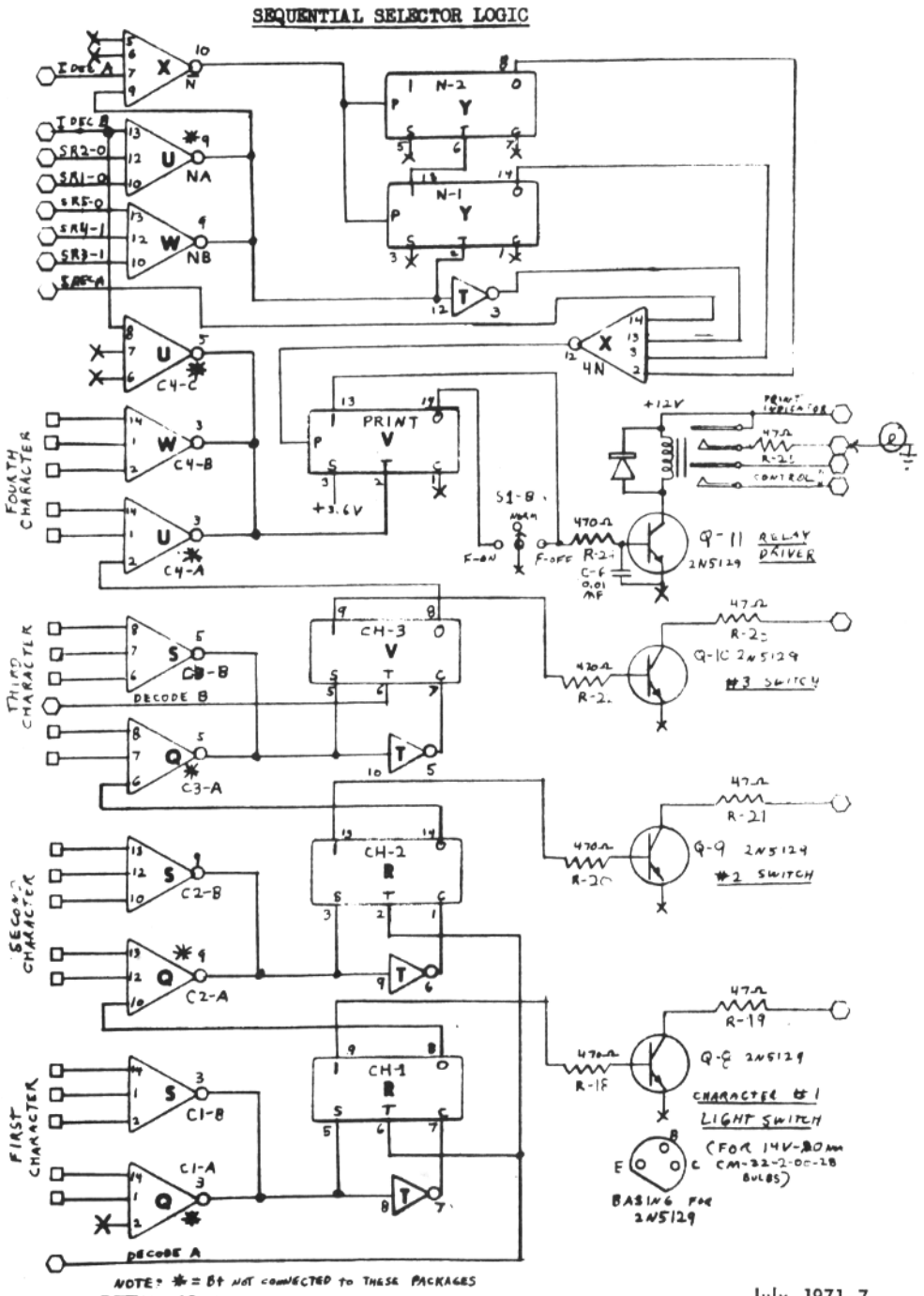


Fig. 5. Modified sequential selector logic.

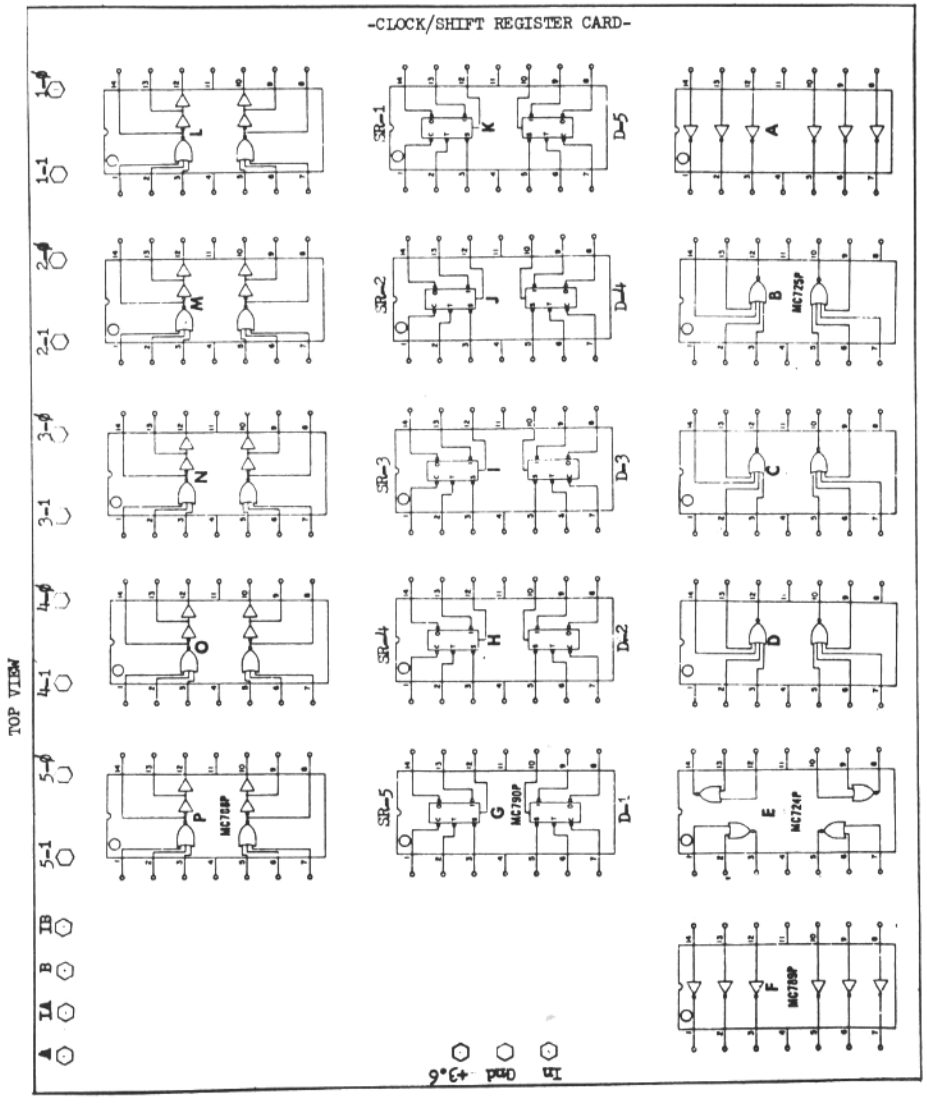


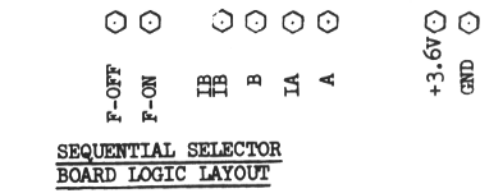
systems are marked up on each copy in order to keep congestion and confusion to a minimum.

If you wish to follow the sequential selector logic schematic shown on page 63 of the May, 1968 issue of 73 magazine, you should correct the error in it. Pin 3 of the 4N gate should go to the I Dec A line and not to the line marked SR1-1. I grounded this terminal in my unit and the Selcal seems to work perfectly well.

The only real problem I had in building the Selcal was in obtaining MC790P flip-flops. Newark and Allied seem to be perpetually out of them. However, MC791P flip-flops which are shown more

Fig. 6. Logic wiring skeleton for the clock/shift register card.





SEQUENTIAL SELECTOR BOARD LOGIC LAYOUT

Fig. 7. Logic wiring skeleton for the sequential selector card.

readily available can be substituted at a slight additional cost. The MC791P logic circuitry and layout is similar to the MC790P and provides greater output. The only place where a MC790P is required is as the print flip-flop in the sequential selector. This is because the MC791P will not change state when an output is grounded as the MC790P does.

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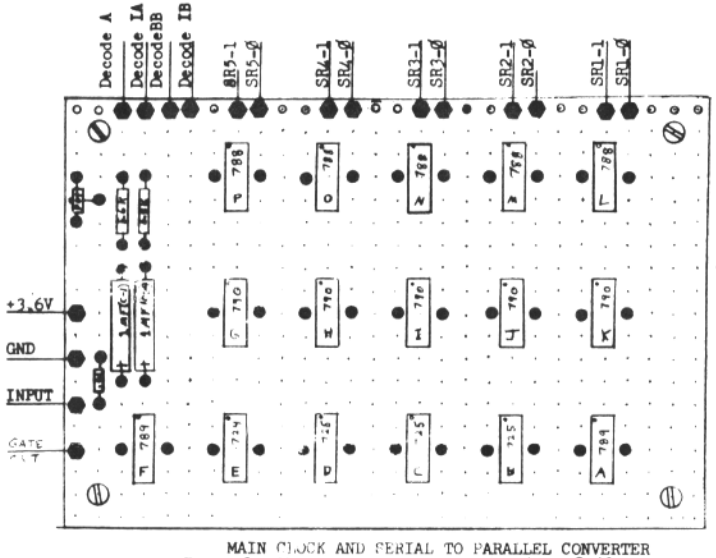
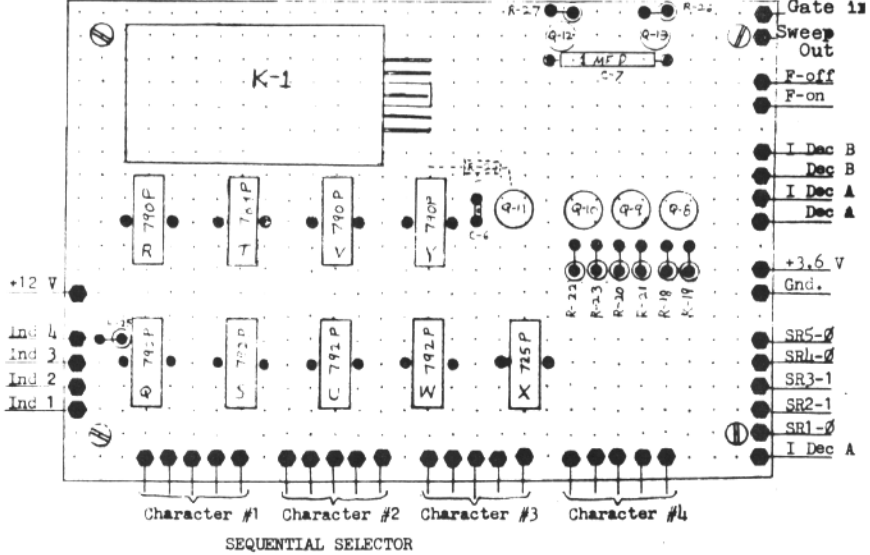


MAIN CLOCK AND SERIAL TO PARALLEL CONVERTER

Fig. 8. Mechanical arrangements of the Selcal cards.



SEQUENTIAL SELECTOR

VHF RTTY NEWS

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

This month we have some interesting letters from others and some (not so interesting?) information from here.

The following letter is from Vladimir Holena, OK1ALV, Public Relations Manager, OK7ULZ VHF, Group, Prague. It was sent to John, W3KV, and was relayed to us by him. The letter is printed as received because it contains some very interesting information:

"In the 42nd Edition of the Radio Amateur Handbook I have found your name and address, where man can obtain further informations on RTTY.

"Several members of our OK7ULZ VHF Group, including me are last time very interested in this form of communication, because several weeks ago we succeeded in getting two Lorenz page-printing machines from postal outlet. Nowadays our club rig consists of TX for 144 and 432 MHz bands, 70 W PEP SSB, CW, A3 with T.U., AFSK 850 Hz shift, and antenna 4 x 10 El Yagi array, designed by OK1DE, 18 db gain, two typing machines, reperforator and G.N.T. punched-tape transmitter.

"RTTY is practically almost unknown in this country, especially on VHF bands. We know, somebody must be first and start with this relatively new, but in abroad wide-world used, technically interesting way of communication. For this reason we are waiting till better propagation conditions during this summer for to make some QSO with another stations from abroad, suitably equipped to make RTTY contacts.

"Milos, OK1MP, who is only one operator using frequently RTTY on HF bands had told me, that you are also issuing an RTTY Bulletin, but we are very sorry, we cannot get it in regular way, because there is neither any possibility for us to pay for it. nor to get IRCs on the P.O. We know also that, for example, the CQ Magazine had issued an RTTY Handbook, but is is also unattainable for those reasons.

"Therefore any further informations either technical or about operating a station, traffic handling or contesting, including some old issues of RTTY Magazines and other operational aids will be highly appreciated. Or if it is for you not possible to help us, please QSP our demand to other ham.

"With cordial greeting from Prague and BEST DX, thanking you in advance for your kind attention to this matter, I remain, Vladimir Holena, Probrezni 54 Praha 8, Czechoslovakia." (I sent about a dozen back issues of RTTY. Anyone have an extra copy of any of the RTTY handbooks? -- RG)

We have another letter from Eskil Hedetun, SM7DMG, parts of which follow:

"In this part of the world "FM" is still not really accepted, mostly due to the fact that very few hams have bothered to get a real FM detector. The great thing seems to be SSB. This is for the more "serious" two-meter work - DX and contests.

"The only real "FM" activity is accomplished by "out-dated" VHF communications equipment. (By the same reason as in the States) this "FM" business is not really accepted by the serious two-meter operator.

"As you probably know, the two-meter band is just 2 MHz wide in Europe, from 144 - 146 MHz. We have a Band-Plan issued by the "Region" and designating 145.300 MHz as the center QRG for RTTY operation. Well this Band-Plan is mostly "accepted" by the hams that start transmitting on one QRG and then "listens the band over". The very few RTTY stations ever heard on this QRG have used AFSK AM, with from my point of view VERY poor results.

"The "FM" activity is on the upper part of the 145.146 MHz band using 50 kHz seperation starting from the top with 145.900 and then down to 145.650. RTTY is here on 145.750 MHz. This "FM" activity is actually concentrated in the "Oretown - Region" (Copenhagen, Malmoe, Elsinore, and Helsingborg) with more than three million people living

around the sound and having more or less water or "flat" country to span the two-meter waves. Repeated traffic not yet allowed, but we are eagerly awaiting permission. By the way, we are able to "talk" into the repeater in Berlin (when the band is open) and get a QSO with the mobiles in motion in Berlin".

Thank you, Eskil.

The following information has been given before in this "column", but it bears repeating because it has been a while since it last appeared. The information is related, principally, to voice FM (40F3 or less) operation on the 2 and 6 meter bands. Until a few years ago, the FCC commercial assignments on the "high band" (above 152 MHz) were on a "channel" spacing basis of 60 kHz. On "low band" (30 to 50 MHz), they were on a 40 KHz basis These spacings reflect state - of - the - art on transmitter and receiver stabilities.

The "assignments" followed by amateurs for FM operation (this was all voluntary) was the same. On two meters, the prime channel was/is 146.940 MHz. The channels were spaced at 60 kHz intervals from 146.940 MHz, down. On six meters, the primary channel was/is 52.525 MHz, with all other channels at even 40 kHz intervals starting at 52.560 MHz and going upward.

Because the channels are so crowded in some areas, the channels have been split to 30 kHz separation on two meters.

RTTY operation with FM (40F2 or less), was assigned to 146.700 MHz and 52.600 MHz. These are still the principle frequencies, with usually one or the other, but not both, used in a given area. Some areas use other than 146.700 MHz because of previous occupancy by others. Milwaukee, for example, uses 146.880 MHz and Detroit uses 146.820 MHz in addition to 146.700 MHz (with some complaints from Cleveland because of a Red Cross repeater on 146.820 MHz in Cleveland.)

Voice repeaters use two principal combinations of frequencies. Apparently, most areas use 146.340 MHz in and 146.940 MHz out. In this part of the country (within a radius of at least 150 miles from Ada), all repeaters use 146.340 MHz in and 146.760 MHz out; this is for the first repeater in a given area. For example, Detroit, Toledo, Ft. Wayne, Cleveland, Columbus, Newcomerstown, and Dayton all use the 34-76 combination. Several of these cities have two or more repeaters. The second repeater usually uses 146.460 MHz in, 146.880 MHz out. Also, there has been some repeater frequency switching. Two that were especially obnoxious because of their output on 146.940 MHz wiping out simplex communication on that frequency have switched to 146.310 MHz in, 146.910 MHz out and 146.370 MHz in, 146.970 MHz out.

That is the frequency use situation for "wide band" FM. The reason for using specific frequencies is that usually both receiver and transmitter are crystal controlled, and crystals demand fixed-frequency use.

That's it for this "month". Lets have some more news.

73 ES CUL, RG

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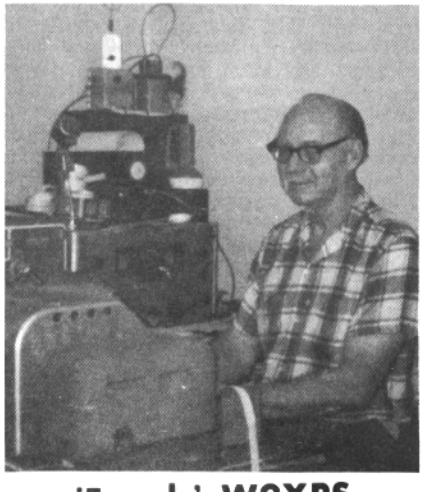
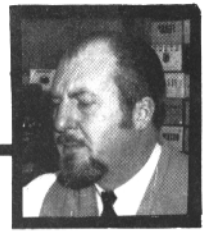
'Mary' W9NCZ



'Frank' W9YPS

RTTY-DX



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

Hello there ....

Those of you that have entered some of the RTTY Contests sponsored by the various International RTTY Groups each year know how you feel after it is all over .... exhausted. If you have made between 100 and 200 contacts you can usually figure that you are in the running. You also know how difficult it is to stick at the keyboard to the bitter end and how in making those relatively few contacts you have expended more energy than you would if you had made several hundred contacts in one of the other modes. Those of you that even come close to the top in one of the RTTY Contests can consider it a job well done. Giovanni, I1KG, came in FIRST in five of the six Contests that were used to determine the "World RTTY Champion of 1971", he was second in the sixth one. Truly a fantastic accomplishment. We all certainly congratulate Giovanni for his outstanding operating ability in RTTY in winning this Award issued yearly by the magazine "CQ ELETTRONICA". The BARTG compiled the date to determine the World Champion this year and a comprehensive report was forwarded by Ted Double. Contest and Awards Manager of the BARTG. A resume will be in the next issue.

Congratulations are also in order for another "FIRST". Ted informs us that Arthur, ON4BX, has qualified for and has been issued the first "100" countries confirmed indorsement for the QCA Award. A hearty "Well Done " to Arthur for his excellent performance in the field of RTTY DX and you no doubt recal l that Arthur was winner of the 1st RTTY World Champion Award last year. So it seems that in the past two months goals that seemed unattainable on RTTY just a year or two ago are now a fact.

While still in a congratulatory mood we cannot overlook the latest recipient of the W A C Award, which this month goes to --

Nr. 158 Lars Ohlund SM5BO

Tino, I1II, did visit the States as mentioned last month and we persuaded him to make a few hours stop-over in Philadelphia while on his way to Washington. A very enjoyable afternoon was spent with Tino and at this time he is again at the keyboard at the Grand Hotel Continental in Milano.

In July Lars, SMØOY will be in New York on a vacation trip and may possiby call on some of the fellows he had contacted on RTTY.

Olle, SMØKV, is now back home after six months as OA3 Y. As you know, Olle is a traveling man and he soon may be active from 4U3ITU and in the near future has hopes of being active from Aland Island (OHØ), a rare catch in any mode.

Dusty, WA3IKK recently had the first QSO on RTTY with Maria, CR6YY, and also reported active was CR6IK so RTTY is really on the increase in Angola. Henry, CR7DB is temporarily QRT after putting Mozambique on RTTY for the first time. For those fortunate to have had a QSO during that first session can QSL to--

Henrique N. Da Costa
P.O. Box 2512
Lourenco Marques, Mozambique

Henry promises to be back as soon as he has another machine available. Thanks to Ed, W1KQY, for the above info. Ed also reports that 9H1BV on Malta has been QRV but pretty hard to find at the moment.

Jerry, K1PLP, Ass't Technical Editor of QST reports that KR6IU should be active at any moment. His name is Jim and he is with the U.S. Navy on Okinawa. In the event of a QSO you can QSL to --

James C. Lofgren
P.O. Box 1922 NSGA Hanza
Okinawa, APO San Francisco 96331

Gin, JA1ACB has been S-9 here on the East coast on Sunday mornings local time. This has been on 15 Meters, and Ted, JA1FFX is usually on that band around the same time. Gin reports that JA1BAR is now HS1AEY and that he will exert every effort to get permission to operate RTTY during his two year stay in Thailand.

Fifteen Meters is a good band fellows and you are missing out on some

good DX by not using it more often. In addition, the noise level is a lot less and the commercial and SSB QRM that plagues Twenty is almost non existent. We recently sent out a CQ on what appeared to be a dead band, and were answered by Ariel, 4X4MR for what was his first QSO on 15. Frank, 9Y4VU also spends a lot of time there, and you can find Uli, DK3CU on the band any week end, a practice he has followed for some years.

We were certainly sorry to hear that Charlie, W5QCH, was "grounded" for a short stay in the hospital and happy to know that he is back in circulation again. During his get-well period he was able to catch up on some of the DX he had been missing and he passes along some hot DX news he picked up while on the bands. You can be looking for some of the Russian boys to show up on RTTY almost anytime now. Promised activity from UW9WR, UA9TT, UH8BO, UM8AP and UK5JAZ is enough to make us all spend some sleepless nights scanning the bands.

Larry, K1LPS, who as you remember set-up KG6NAA or Guam a year or so ago will shortly be on the move again, this time in the other direction. Larry will be in Spain sometime in mid Summer and will be QRV just as soon as he can get set-up. He has also changed his permanent QTH stateside, moving from Vermont to Maine. He can now be reached at --

L.L.Filby, K1LPS
RFD #1, Box 196
Freeport Maine 04032

Since this is the Summer issue we won't be back again until September. Here is hoping you all have a pleasant Summer above the Equator and not too hard a Winter below. We will bring the RTTY-DX Honor Roll up to date in the September issue which means please try to have your latest totals to me by August 1st or sooner.

73 de John

Press time -New arrivals-

9O5BG Guy, VP7NH - Bill.-

*****

PROTESTS Faster Speeds ! !

Honolulu, Hawaii

Dear Mr. FCC:

Please excuse my penmanship since my hands shake quite badly due to a Parkinsons disease affliction.

My reasons for writing is to protest the speed increase of amateur RTTY. You see, I am an old CW (A-1 to you) operator but no longer able to operate due to the shakes.

The senior citizens league recommended that I take up a hobby to occupy my mind. Dancing was out of the question, unless the beat was in sync with my shakes. (I found a record once that sync'd in on a sub-harmonic but the physical exertion put me in bed for ten days). Other hobbies have ended up in similar disasters.

However in my efforts to discover a hobby, I found that I could copy 60 WPM RTTY in my head and it was in perfect sync with my shakes. The up-shift and down-shift were quite exhausting until I converted the jumping up off my chair and re-sitting to a nod of the head. It works beautifully and I have spent many pleasant hours reading the news (60 WPM Press) and listening to the ham band RTTY.

I have checked with my doctor to see if there is a drug available that could increase or decrease the speed of my sync. Some of the drugs have possibilities but they were not legal and that is another story. To date I have been unable to sync in only on 60 WPM stations.

I implore you to maintain at least a few 60 WPM Stations for old timers like me. Sure, you can call it progress but the automobile didn't entirely replace the horse -- I still see a few of them around.

/s/ A. S. Haker

P.S.
Developed a reperf system by installing punches on my teeth. The added weight caused my uppers to keep falling out and the tape almost choked me so had to discontinue that.

P.P.S.
Tell that whipper snapper Irv Hoff that I have a stunt box that will do things he has never heard of.

(Editor's Note) We are not sure of the signature, probably after the effort of writing the letter the shakes were so bad that it was not too legible. Nor did the writer say if he sent out pretty girl QSLs to the stations he could get in sync with.

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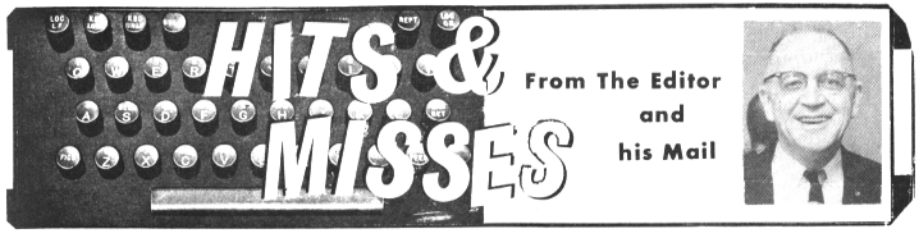

With our usual perfect timing we managed to mail the June issue on the first day of the new postage increase, or maybe it was the post offices perfect timing. In either event it increased our postage charges about $40. per issue.

As we mentioned last month, with our close to the vest operation of publishing the JOURNAL, we have been wondering what action to take to counteract the one third increase in postal expense. We do not want to raise the rates as we feel $3. per year is maximum for such a specialty magazine. Second class mailing is very little less, requires a lot of preparation and would slow down the delivery a great deal.

Being basically lazy we have come up with a lazy mans answer. We will reduce the issues per year to 10 from 11. But -- we will run at least four and possibly more, 20 page issues to make up for the dropped issue. At present we publish about 180 pages during the year. 20 pages can be mailed for the price of the present 16 so in a small way we get even with the post office. With larger issues we can run longer articles without breaking them into two parts which we feel is much better, we save one issue printing costs and for the lazy man we save one month when we are not obligated to get out the magazine.

We have thought a great deal about which issue to combine, the first of the year is the busiest time but also an active time for RTTY so we ruled out the January or February issues, then we thought about our Florida trip and how nice it would be not having to plan it around the time available between the April and May issue and the May issue "bit the dust"

All present subscribers expiring next May will receive the June issue as their last issue, otherwise all subscriptions will expire as marked on the stencil.

This change is on an experimental basis, possibly a better solution or a different month to drop may be found. At present however the April issue will be marked APRIL-MAY and The July Issue JULY-AUGUST as in the past.

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WE have one small problem that still exists. It applies to overseas subscribers sending money orders or bank drafts for subscriptions. In a great many instances the information on the draft does not give the correct name or address of the sender and unless we have received a prior letter from the subscriber with this information, we are stuck. In one case we received a draft for $7.50 (from a bank in the Haque, Netherlands) with no information whatever. A letter to tne Bank in the US has brought no reply and we are still holding the draft uncashed but someone is wondering what happened. Most of the overseas subscribers reading this are having no problems but we would appreciate if they would pass the word around so that future orders will have the correct name and addresses. One other item, we have no set up to bill anyone for subscriptions, if subscribing through an agency please inform them of the subscription price and have them include a draft with a subscription. Taking care of a subscription list of over 2000 keeps us busy and we do make mistakes, we accept your word for our goofs but do have to keep the correspondence and billing to a minimum.

Amateur RTTY operation overseas has been growing like it did in the states some years ago. Availability of printers and government permission for operation of TTY has been two of the main factors. With limited information available several organizations have formed in various countries to spread knowledge and promote teleprinter operation. Canada, Great Britain, and Italy have had groups for some time, Germany and the Scandinavia countries are the latest to form groups and there may be others we have not heard about. The Scandinavian group

already has over 150 members. Oddly enough the United States has no National RTTY group although this is probably not necessary due to the past and present complete coverage given TTY operation in this country by all amateur publications.

In one thing they are ahead of us, the use of narrow shift. A listen on the DX bands will confirm this and as the bands become more crowded it behooves us to keep up with them. Surely our technique and equipment is capable of it. Let US be broad minded and use narrow shift.

***

Journal Binders

$3.00 pp.

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BACK ISSUES---

The only back issues available are listed below. Copies are 30¢ each.

1966 - Aug. - Sept. - Oct. - Nov. - Dec. (5)
1967 - None
1968 - Mar. - May - June - Sept. - (4)
1969 - May - July - Sept. - Oct. - Nov. - Dec. - (6)
1970 - Jan. - Feb. - (2)
1971 - Jan. - Feb. - March - April - May - June - (6)

New subscriptions and classified ads are cash in advance as we have no method of 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. If available, back issues may be ordered at 30¢ each at time of subscription. The Journal is mailed about the 20th of the month preceding the dated month.

RTTY JOURNAL

P.O. Box 837 Royal Oak, Mich. 48068

'DUSTY' DUNN - W8CQ
Editor and Publisher

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RTTY JOURNAL
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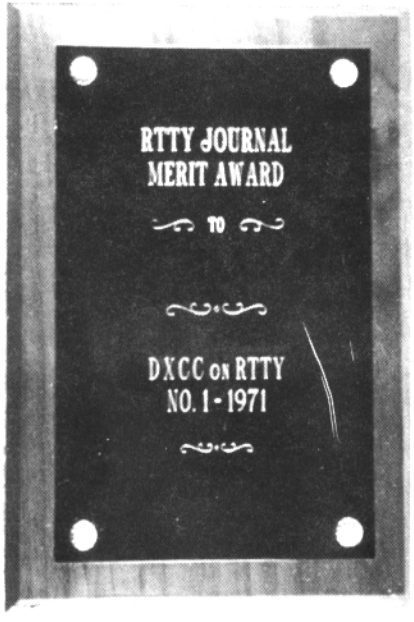
For Any Station Confirming DXCC on RTTY



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'Tino' III

AS-1 Auto Start System -

A. M. HUGES, W1MU
145 Pinckney St.
Boston, Mass. 02114

After reading K5ANS article in November RTTY, I feel moved to add my two cents worth on this subject -- perhaps going from the sublime to the ridiculous. However I mean ridiculously simple and not in performance.

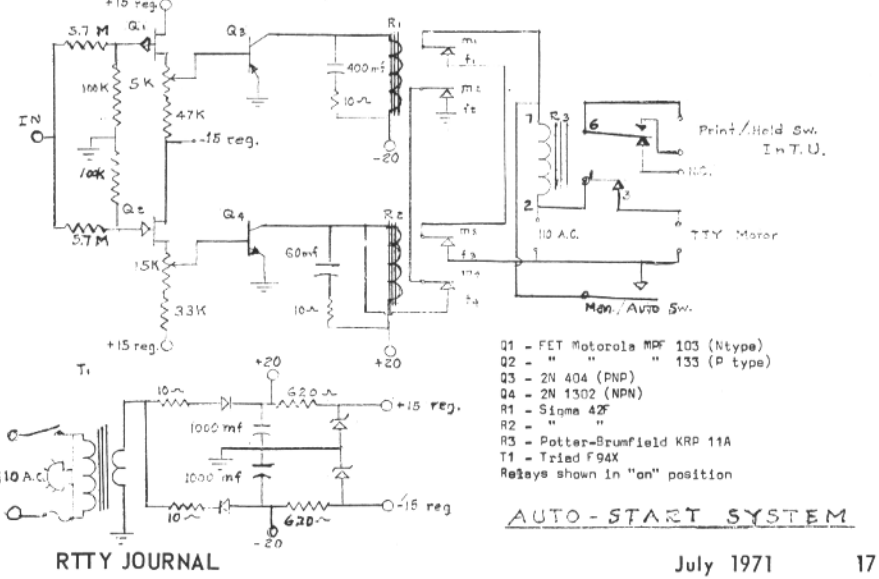
My first attempts with so-called auto-start was with the usual "time constant" approach. I found this very unreliable both because the timing varied widely and also such a system is easily tripped off by non-rtty sitnals.

I then began to consider what was unique about a RTTY signal which perhaps could be used in a recognition system. The answer is of course that it's a binary code which by use of different frequencies permits relatively easy demodulation with selective filters. The essential point though is that you have to have **both.** parts of the binary to provide intelligence. An auto-start system that will respond only to the presence of **both** Mark and Space is what you want.

The attached schematic shows one very simple way to accomplish this end. The point marked 'in' in the diagram is connected to the output of the detector or discriminator in the T.U. All detectors that I have had anything to do with are characterized by the fact that they produce voltages of opposite polarity on Mark and Space. With this thought in mind the schematic becomes almost self explanatory. The "trick" if there is one is to use input amplifers that will respond to different polarities. This is accomplished by using a PNP FET in one leg and a NPN FET in the other. The use of FETs is necessary rather than bipolars because the latter load up the T.U. detector circuit too much. The schematic shows very high values if input resistance to the FETs, which produces excellent isolation. It will be noticed that 100K resistors are connected from the Gates to ground. The value of these resistors will depend on the voltage coming from the T.U. detector output. The voltage level measured at the Gates of the FETs should be about 2.5 volts. The value of 100K was used with a tube type T.U. which produced 100 volts output at the detectors. The circuit has also been used with a solid state T.U. which produces only 12 volts output. In this case the 100K resistors were dispensed with entirely.

Referring again to the schematic, Q1, Q3, and R1 respond to a negative Mark signal from the T.U. The 400 mf capacitor across the coil of R1 produces a time constant of about two seconds. This permits this relay to hold up while the space signal comes in and activates the space relay, namely R2. When R2 closes it is held closed as long as R1 is closed. This permits a switch back to Mark signal with-

Continued on page 20



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

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SPACE-ONE DELUXE RTTY DEMODULATOR, Solid state, choice three shifts 850/170/425 AM/FM operation, famous TT/L-2 loop supply adjustable, mark/space/standby/receive indicator lamps, auto start, motor control, limiter/limiterless operation, meter tuning, can be supplied either in desk top cabinet or rack mounted 7x19 panel. Introductory offer Price $250.00 FOB. J & J Electronics, Canterbury, Ct. 06331

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

TOROID COILS, 88 mh UNCASED. 5 for $2.00 postpaid U.S. H. R. Fasold, PO Box 375, Apple Valley, Cal. 92307

SALE; MODEL 28 TYPING REPERFORATOR, for specific use, it utilizes the 7.00 unit code. Tape data-11/16" W. chadless or fully perforated. Special features; comm. characters, printing in line with feed holes, shielded signal leads, single shaft, type guide, remote non interfering LTRS tape feed out, hand wheel shaft/ with knob, and auxilary mounting. P/OAN/UGC-13. Can be used with model 28ASR, used good, $75. ea. Atlantic Surplus Sales, 580 3rd Ave. Brooklyn, N.Y. 11215

TYPEWRITER RIBBON REINKER, Hand operated model now only $3.50. K575 or K764 Ink available at all National Cash Register Co. stores at 75¢ per tube. Walter Nettles W7ARS-8355 Tanque Verde Rd. Tucson, Ariz. 85715

HEWLETT-PACKARD HP-512A frequency converters, DC to 100 MHz. Use your present 10 MHz. counter (or 1 Mhz. counter with a simple decade divider) to measure frequencies to 100 Mhz. to the nearest cycle or better. Identical to HP-525A plug-in unit except self-contained with own power supply. Rack mount or cabinet (included). Checked out, in very good condition, $75.00 FOB. Berkeley Scientific 1 MHz. EPUT counter (military unit) with 7 DUC's and counting times to 100 seconds. Excellent condition, $125.00 FOB. Write Ronald Ott, 2320 C Parker Street, Berkeley, California 94704

MODEL 28 KSR GEARSHIFT, 60-75-100 MINT. Need some gearshift for Model 28 ASR. Trade or cash buying or selling. Larry Kleber, K9LKA/W9CPD Belvidere, Illinois 61008.

MODEL 19 ASR - Sync motor, TD Table, Power supply, all excellent, $110.00. Model 15 KSR - $60. Model 14 reperf - $40.00 Platen cranks for model 15 or 19 $2.00. Repair parts for model 14, 15, 19, 26 at low prices. Sent part or number. Machine repair at reasonable rates. R. Steele, K6AZE, 6551 Dume Dr., Malibu, CA 90265. Tel 457-2269

FOR SALE: CV89A/URA-8A FREQUENCY Shift converter, audio type, built-in scope. A popular converter, used, good, $90.00 ea. AN/SRR-13A receiver; 2 mHZ to 32mHZ in 5 bands, reception capabilities A1, A2, A3, F2, & F4. Power requirements 115 V AC, 60 and 400 cps, single phase 75 watts, used good, $225.00 each. Atlantic Surplus Sales, 580 3rd Ave., Brooklyn, N.Y. 11215.

EPOXY DIODES - 1000 Volt PIV at 1.5 Amp. 24¢ each ppd. 88 Mhy Centertapped unpotted toroids.$1.50 for 5 ppd. Send stamp for list. M. WEINSCHENKER BOX 353 IRWIN, PA 15642.

MODEL 28 LBXD EXCELLENT 60 WPM. With cover. $90.00 F.O.B. Larry Kleber, K9LKA/W9CPD, Belvidere, Illinois 61008.

SELLING OUT WAREHOUSE FULL of teletype & facsimile machines, parts and equipment. Loads of electronic equipment and computers. No fair and reasonable offer refused. No list or catalog available. Saturday or Sunday by appointment. Week days 10-4. Goodman, 5826 S. Western Ave., Chicago, Ill. 60636. (312) GR 6-8200.

POTTING COMPOUND FOR TOROIDS, etc. 1/2 pint kit includes dispensing tube, actuator, mixing tools. Hardens in a few hours 35¢ per kit. Amplifier Modulator AM879/FRC contains tubes, trans, pots, colis etc. Best buy on the market. Large quantity in stock only $3.00 postpaid. Over 10,000 items in stock, write - all inquiries answered. Bob - Frank Electronics. 407 Ritter Rd., Harrisburg, Pa. 17109

BACK ISSUES - RTTY JOURNAL - Have all issues from Vol. 1, No. 1, will reproduce any issue for $1.00 PP. $1.10 first class. John Isaacs, 3175 Val Verde Ave., Long Beach, Cal. 90808

TOROIDS: LOWEST PRICE ANYWHERE. 40/$10. POSTPAID, (5/$2.00) 44 or 88 mhy center tapped. 32KSR Page printer, reconditioned, perfect; $225. MITE UGC41KSR Page printer, perfect; $250. Mod28 Sprocket to Friction Kit $25. 28LBXD TD $70. 28LPR reperf with gear shift: $170. 33 parity Keyboard with cables, excellent; $38. Model 15KSR, reconditioned: $65. Matching RA87 P.S., Unused; $7. Lorenz 15KSR, newest, many features; $75. Sync motors $7. GEARS for most machines: List for stamp. 14TD $20. DPE tape punch $14. HP200CD Audio Oscillator $95. R390URR receiver $550. 11/16" tape; 40rolls/$10.00. 33ASR, complete, excellent; $700. Stamp for complete listing. Van W2DLT 302R Passaic Stirling, N.J. 07980

SALE: TELETYPE SPROCKET WRENCH size 5/16" x 12 inches, long steel unused $1.00 ea. 60 WPM set of gears (2) for model 14 TD, unused $6.00 set. 60 WPM set of gears for model 14 typing repeft (pinion unused) $6.00 set. "Here Is" answer back keyboard for model 15 teletypwriter with attachments to set up identifications, 21 characters, complete with keytops, springs and gear, used, excellent, $12 ea. Atlantic Surplus Sales, 580 3rd Ave. Brooklyn, NY 11215

MODEL 28 TDs, 5 level code, adaptable to 8 level, less motor and connecting gears, $30. ea. LBAC 243-WD. Cabinets, $50. ea. Model 28 typing reperforator, 5 level code, less motor and connecting gears, $35. ea. BRPE high speed tape punch, 60Hz, $50. ea. Model 15 printer covers, navy gray, $2. ea. Fan fold paper 8-1/2 wide $10. per case. Teletype paper, 3 copy, $3. per case. TDs, $10. ea. Model 28 motors for reperforators, $20. ea. Many other parts available. D & B Electronics, 151 East Lomita Blvd. Carson, CA. 90744

SELL RCA CV-71. 50 k.c. version of CV-57. Perfect. Cables, manual, parts, etc. Must sell. Name price. Bill Handel, K8SSY, 95 Murwood Drive, Chagrin Falls, Ohio, 44022 (216) 247-6130.

Additional Classified on Page 19

CLASSIFIED cont. from page 18

WANTED LESU -11 or 28-C Electrical Service Unit; cash or trade. TM 11-2216 on Model 19, $10. TM 11-2222 on 14 TD, $6. TM 11-352 on Model 15. $4.25. Navships 93241 on 28KSR, $7.50. SASE for list of other TTY and radio manuals. Small, light weight, 130VDC, 200 MA loop supply, $6.50. 103628 tuning fork, 87.6VPS, new, $7. postpaid, Large SASE for list of TTY parts, etc., for sale - wanted - swap. W4NZY, 119 North Birchwood Ave., Louisville, Kentucky. 40206 502-895-3275.

FOR SALE: FREDERICK Model 660 TTY tape to CW converter-adjustable from 5 to 75 WPM. $150. Collins 51J4 (not military) $450.00. Collins 51J3 with 353E-adaptor $350.00. Both have product detectors and three mechanical filters (1.4-3.1-and 6.0 KhZ, R.R. Leland, W8DLT, 736 Great Oaks, Rochester, Mi. 48063 Phone 313-652-0233.

NEED MODEL 28 AUXILIARY REPERF for dome of ASR. With or without mounting kit. Wanted model 28 ASR tape bin with motor. Wanted model 28 LXD TD with on-off lever switch. For ASR, Larry Kleber, K9LKA/W9CPD, Belvidere, Ill. 61008

TWO MODEL 19's, 85.00 and 75.00 ea. including TTY, TD and Table. Three Model 14's, typing reperforator, $40.00 ea. Three projection TTY, $48.00. ea. contains 2 TTY's. lenses, cabinet, etc. SASE for complete list. Paul Davis, 1830 Toepfer Rd., Akron, Ohio 44312.

SALE: MODIFICATION KIT - MAINTENANCE of re-inker. For model 15 and 19, consists of one case, plastic, one bracket for teletype ribbon, two inkwells, one teletype ribbon nylon black, one plastic bottle ink-2 oz. one plastic tool, one stainless steel tool. 24 pads felt, unused, excellent, $1.50 per kit. Distributor - Block Assy. Kleinschmidt KL 58602A, unused excellent $3.50 ea. Tuning Fork; 120 VPS, F.S.N. 5815-412-9066, unused excellent $3.00 ea. Atlantic Surplus Sales, 580 3rd Ave., Brooklyn, N.Y. 11215

WANTED MODEL 28 "MOUSE" machine for immediate use on the air. Will pick up within one day drive. Bill Handel, K8SSY, 95 Murwood Drive, Chagrin, Falls, Ohio, 44022(216) 247-6130.

SELL: 2 METER FM RCA CMV1-D 12 vt. $25.00. 10 meter FM 29.6 mc ET6-ER-6 110 vt AC 150 watts $50.00. T.U. I.F. 450-570 kc. New CV 31D/TRA7 $100.00. K9MLD, 2036 Erie St., Racine, Wisc. 53402

FOR SALE. BOEHME 5C Frequency shift converter, $40. Shipping collect. Ameco CN-50 six meter converter $25. Clovis Womack, 11510 North Oaks. Austin, Texas 78753.

FOR SALE: MODEL 28KSR, mint condition, solid state selector magnet driver, manuals & gears for all three speeds - $300 FOB. L . L. Filby K1LPS RFD#1 - Box 196, Freeport, Maine 04032

COLLINS 618S-1 frequency synthesized HF transceiver without control head, unchecked but appears to be in very good to excellent condition, $225.00. FOB; Technical Material Corp. CV-591/URR SSB converters for R-274/URR, R-390/URR series or any receiver with 455 KHz. IF without a product detector, checked out and in very good condition, $95.00 FOB. Want Amperex 8116 tube and manuals for AN/URC-35 transceiver - amplifier. Write Ronald Ott, 2320 C Parker Street, Berkeley, California 94704

MODEL 19 WITH AUTO CARRIAGE & Line feed, Excellent condition, $90.00. Your pick-up Bob Pinder, K8NTE, 1277 Cricklewood S.W. Grand Rapids, MI.49509

BACK ISSUES RTTY JOURNAL 1953 except Feb. thru May & Nov.; 1954 ex. Oct; 1955 thru 1957; 1959 (ex. Nov.) Thru March 1971. W4UPE, 3127 Oriole Dr., Louisville, Ky. 40213.

TTL/2 FACTORY BUILT by J & J Electronics Canterbury, Connecticut. Oscilloscopic tuning display and dual switch selected shifts. $200.00 J. H. Hardman K2MVR, 50 Mountain Rd., Verona, N.J. 07044. (201) 751-3000 days.

WANTED: M28ASR, ALL GEARS. Cash, pick-up in S.W. Division area. Sell, trade, M15, 14 reperf, 14TD, W2JAV-type TU, if M28 found. Powell W7VFT, 2447 N. 20th Ave., Phoenix, Ariz. 85009. 602-252-7856.

MODEL 28 TD, EXCELLENT $60.00. 32ASR Excellent $200 - 28 RO less cabinet $60.00 - Many parts and units available - WA2HWJ, 133 William Rd., North Massapequa, N.Y. 11758

MODEL 28 KSR, EXCELLENT CONDITION, table top cabinet, LESU, three speed gear shift, automatic carriage return line feed, best offer. Will ship, you pay freight. Wanted, ST-6 converter; ham FM transmitter/receiver, Drake, etc.; TH6DXX beam; rotator; 5-6 element 20 meter beam. W1BRJ, 7 Pickwick Road, Marblehead, Mass. 01945.

SALE: RL216/UG REELING MACHINE - tape motor driven, has model 28 sync motor, teletype part #173937, model 5KH14FG57BMHP, 35. 60-50 Hz 1 ph. 1725/1425 RPM. Triple reels, used excellent, $75.00. ea. Atlantic Surplus Sales. 580 3rd Ave., Brooklyn, N.Y. 11215

TRADE: GARRARD SL-95 stereo turntable with new dust cover and base, and new N-75E stylis, for a CV-89 TU or other TTY gear. WB9BDZ 331 Saratoga St., Chilton, Wisc. 53014

28 KSR, $225.00 or TRADE. Chuck Barrows, K7BUT, 5541 S.W. Miles Ct., Portland OR 97219, phone 503-244-4967.

FOR SALE: MODEL RTTE-4 TUCK converter, pre-amp and AFSK keyer for Collins equipment, KWM-2 /Sline. $200. Mrs. Harry Fishel, 1531 Ricardo, Ft. Meyers, Fla. phone 813-334-6803.

Closing date for Classified

- 1st. of month-

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RTTY Computer Book-

William Neill, of 5628 Anita St., Dallas Texas. 75206 writes --

I purchased a book yesterday which may be of some interest to your readers since it covers subject matter related to telecommunications practices and principals.

The title is: TELECOMMUNICATIONS and the COMPUTER. written by James Martin and published by Prentice-Hall in 1969. The cost is $14.50 and while this may seem steep, the material covered is such that to assemble the same items from other publications would result in greater expense. Topics covered range from an explanation of what a teletypewriter is and how it functions to the principle of troposcatter and long range HF radio transmissions with the data and teletype signals, multiplexing to modulation and demodulation of data signals from a carrier, capabilities of computer date blanks, line conditioning and countless other subjects of related nature.

While not written for the amateur it should be of great interest to the person interested in the technical whys and wherefores of teletype line characteristics, computers and the machines themselves. All facets of data communications are covered quite well and the book is an excellent reference piece.

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