PRICE 15c

Vol. 1 NOVEMBER, 1953 No. 11

RTTY

NEWS OF AMATEUR RTTY

Results of First RTTY Sweepstakes

Twenty-nine stations reported or were worked during the twenty-four hour period from Four P.M. E.S.T., October 31, to the same time November 1, 1953, for the first attempt at a contest using FSK RATT. Somewhat like the Armed Forces Day Message Contest, not as many took part as had been expected.

However, the main purpose of this contest was well served, namely, to acquaint the RTTY operators with the potentials of this type of operation. Among the details which became apparent while working up the logs sent in were these, many amateurs are not familiar with proper message handling, also many operators did not take advantage of the extra points to be gained by working cross band or the relaying of other stations who did not have low frequency equipment. However, on the other hand were to be found the new contacts made for the first time, determination of the capabilities of the transmitting and receiving equipment, and the ease with which many stations can operate on the same frequency when the need arises, tended to offset the above mentioned faults.

Top honors go to Frank White W3PYW with a total score of 440 points. Next came Bob Weitbretch W9TCJ with 189 points, followed by Jack Berman W1BGW with 176 and Merrill Swan W6AEE with 175 points. Other scores are listed together with the above.

(Continued on page 2)

HORSE TRADES

This page of the Bulletin is for use of amateurs who have teletype equipment for sale or trade and for those looking for equipment to buy or trade. It is a free service and may be the means of getting some one on the air.

For Sale—Model 12 with Sync Motor W6LW

For Sale—Sync motor for 14 or will trade W9LKK

For Sale—Model 12 complete, sync motor, A. C., Printer ..... W6KNI or W6EV

Wanted—Model 12 Sync motor and gears W9LKK

Wanted—813, will swap 215A relay or dual vib pack 300v at 150 ma. Or collectors items (Japanese radio equipment) W5ENH

Wanted—Terminal Unit or T. U. Kit W6TQY

Wanted—Keyboard for model 12 and sync motor for model 15 ..... W6DTZ

Wanted—Tape Gear ..... WØCIH

Wanted—AN/FGC-1 Manual W2VDM

Wanted—Keyboard for model 12 ..... W9SPT

Trade—12TT with keyer for 15 printer W6HFK

Wanted—Model 14 Keyboard and Base WØLQH, 1134 Mill St., San Luis Obispo, Cal.

RTTY SOCIETY OF SOUTHERN CALIFORNIA

3769 East Green Street

Pasadena 10, Calif.

Return Postage Guaranteed

RESULTS OF FIRST R T T Y SWEEPSTAKES

(Continued from page 1)

			States	Prov.	Pts.		
W3PYW	Frank White	Silver Springs, Md.	11		40	440	A-B-C
W9TCJ	Bob Weitbretch	Williams Bay, Wisc.	7		27	189	A-B
W1BGW	Jack Berman	Dorchester, Mass.	7	1	22	176	A-B
W6AEE	Merrill Swan	Pasadena, Calif.	7		25	175	-B-C
W6IZJ	Ed Phillips	Sierra Madre, Calif.	4		27	108	-B-C
W9GRW	Ray Morrison	Skokie, Ill.	5		11	77	A
W3LMC	Howard Snyder	Baltimore, Md.	3		7	21	A C
W1AW	Murray Powell	Newington, Conn.	3		6	18	A
W1TWP	T. M. Dale (Bim)	Portsmouth, N. H.	2		4	8	B
W4FJ	T. P. Mathewson	Richmond, Va.	1		2	2	A

A denotes 80 meter operation, B 40 meters, C 2 meters.

Contest exchanges should use this form. Anv. Log W1AW Newington, Connecticut.

Number	Call	Ck	Place	Time	Date	Freq.
Nr1	W6AEE	5-7-9	Pasadena, Calif.	1501	19 Feb. 54	7140 KCS
Nr2	W3PYW	5-6-9	Silver Springs, Md.	1510	19 Feb. 54	7140 KCS

Stations who participated but failed to send in logs:

W1FGL, W2JAV, W2PAU, K3WBE, W4JCV, W5QAN/5, W6CLW, W6FLW, W6GFI, W6PNW, W6SCQ, W6OWP, W6UPY, W7LU, W8BL, W8GRL, W8HP, W9UAU and VE2ATC.

The above listings indicate that all of the RATT frequencies were used. Eighty meters seemed to be fairly good on the East Coast but very poor out on the West Coast. A few stations took advantage of the cross band privilege to acquire additional points. An example of this was W6IZJ's use of W6AEE's automatic relaying facilities. The signal distortion due to re-transmisson did not seem to add additional difficulties, as evidenced by the copy sent in by both W3PYW and W9TCJ. This opens up opportunity for further work along this line. It should prove of great value in handling traffic.

With our first annual RTTY S.S. completed and in the record, we take great pleasure in announcing the Anniversary RTTY Contest. Just one year ago, February 20, we were granted the privilege of operating F-1 on the non-phone portions of eighty, forty, and twenty meters. Many of the RTTY S.S. logs suggested an early contest in 1954, hence the date chosen. The contest period will run from 6:00 P.M. E.S.T. February 19th to 3:01 A.M. February 21st. This will give a little more time during the RTTY S.S. Rules will be the same, which means that cross band contacts can help some of the two-meter operators to make a higher score.

Scoring: Each message sent and acknowledged counts one point. Each message received counts one point. The same station may be worked on additional bands provided that additional equipment (either transmitter or receiver) is used to make the contact. For an example, if W6AEE works W6IZJ two ways on two meters, then works him again on eighty meters additional points can be scored. However, if W6AEE relays W6IZJ from two meters to forty meters, to W3PYW, then W6IZJ would be able to count one point for reception of W3PYW's message on forty and another point for sending message to W3PYW, provided copy was acknowledged. W6AEE would not get credit for this relay.

Reports can be sent in to RTTY using the above form, or printed copy properly identified will be accepted. Reports should be sent in not later than February 27th, 1954. An example of proper form to be used will be found on page 47 of the November, 1953 QST.

Comments regarding rules or other matters in connection with this contest will be welcomed by RTTY.

W6UPY Converter

STAN MAHRIN

Input can be fed thru a band-pass filter. One can be constructed from the numerous data available, or . . . or there are some rather large ones available from Radio Surplus Co., 1229 W. Washington Blvd., Chicago 7, Illinois. They are Thordarson, the stock number is 5897A, price is $8.00, but size is about six inches square. Pass is 1700 to 3300 cycles, and they fit 600 ohm line to 600 ohm line. If room can be found, they are fine.

The audio input transformer is run of the mill.

First tube is ordinary two-stage limiter. Bias is set by the 150K and 750 ohm resistor. For your particular power supply it may be best to haywire in a pot to get exact values, then install fixed resistors for permanent operation. Bias should be set so that an increase from one milliwatt to sixty milliwatts in the input will result only in a one-tenth increase in output voltage at the discriminator output.

Discriminator filter arrangement is W6AEE's layout using BC-733 filters, as outlined in December CQ magazine.

Second stage is just a buffer amplifier. It needs to be balanced by the 400 ohm pot in the cathode circuit. Wirewound, of course. Once set, only necessary to change it when tube is changed. Tie the input terminals together on the discriminator filter, feed in about six volts of 1000 cycle freq., put a vtvm across the discriminator output, and adjust this pot for zero output. It will then be balanced perfectly.

The discriminator itself is acme of simplicity. Two small audio transformers with ratio of 1-1.4 will be suitable. They must be two cores. A push-pull transformer, while it will work, will not deliver the efficiency needed.

Examination of the following "bias-restorer" circuit will disclose that one cathode is always feeding the input condenser, the other is always connected to ground, depending on position of reversing switch. This puts the two 100K cathode resistors, together with their load condensers, in series across the input of the restorer. Don't let this arrangement cause any mental unrest. It is better than grounding the center of the cathodes, and switching from one to the other for restorer input.

If you are a filter "nut," or have a low-pass filter around that has a cutoff at 450-500 cycles, insert it between discriminator output and restorer input. Helps eliminate hi-speed transients that might cause confusion in the flip-flop keyer circuits. Smoothes out things.

BIAS REMOVER AND LOCK-UP CKT AT W6UPY

Incoming signal from any discriminator set-up is fed thru the one mike condenser into the diode, connected as ratio detector. At same time signal sidetracks thru a couple of resistors on the keyer that may be in use.

The two resistors in the diode load are purposely unbalanced a trifle, in order to leave the output in a slightly positive state when at rest.

The second tube, a 12AX7, is connected in parallel and is simply an amplifier for the ratio tube.

When sigs are being received, most of the time, especially on weak ones there is a difference in weight between the mark and the space. The above circuit will go a long ways toward removing this biased condition, and maintain an optimum weight of distribution between the two sides. Likewise, when no sig is

(Continued on page 4)

W6UPY CONVERTER

(Continued from page 3)

being received, the circuit locks up the printer loop and keeps things quiet around the shack.

With no sig, the circuit comes to rest with a small positive voltage at the output. This, when fed into the ordinary flip-flop keyer, will produce a mark signal. The level of this signal is adjusted by the operation control potentiometer in the plate circuit of the second tube.

Positive voltage appears at one plate and one cathode of the diode, charging one of the condensers to this voltage. Later . . . thru the two resistors, the other cathode-plate condenser will be charged to the same level. The positive voltage developed here is applied to the second tube, and in connection with the 22K cathode resistor, determines its "at-rest" bias.

Heavy Mark and weak space sigs would ordinarily bias the converter to an unsymmetrical condition. This circuit immediately corrects for an unbalanced condition, and moves the axis to the center of the incoming sigs. Any tendency of incoming sig to move the average away from the center of an ideal balance will be counteracted by a very fast restoration of things to a balanced state. It works beautifully! A scope presentation when the sig is way out of shape and "whopper-jawed" will show the axis drifting back and forth from one side to the center with very little delay.

In other words, lopsided sigs are centered and "repaired" as much as is possible.

Since the incoming transition is delivered to the circuit thru a condenser, only the changes count for anything. As the circuit looks at the input, a mark sig, a space sig, or a "no-sig" . . . all look the same, if they are a steady state, and not changing from one to the other. A mark signal will of course key a mark output, and a space signal will key a space output. A prolonged mark signal will leave the circuit in a mark, or lock-up condition.

The beautiful thing is, that a SPACE SIG WILL START AS A SPACE OUTPUT AND THEN SHIFT OVER TO THE LOCK-UP CONDITION if the space remains in the converter. Likewise, if sig goes off, the circuit merely yawns after a second and returns to the lock-up condition.

The time necessary for the circuit to return to lock-up is adjustable by means of the operating control, and can be ranged from instantaneous to as long as thirty seconds, if there would be any need for that length of "running wild."

The time constant is dependent on all the components in the circuit.

Further, by advancing the control, the circuit can be set at the point where noise will not key, even though the converter-printer is alive and waiting for copy.

KEYER-OSC-CONTROL CIRCUITS

The first tube is half of a 12AX7, because a high-mu is needed here. The output of the restorer will be close to one volt positive or negative, and the high-mu tube raises it to the level necessary to flop the second tube, (half of a low-mu 12AU7) and operate the trigger neon.

A switch is provided to connect the grid of the first tube thru a ten meg resistor to the power supply when tuning. This prevents the keyer from running you crazy when you are tuning in a station. When your scope shows you are "on him," flipping the switch starts the printer magnet going.

The minus thirty-five volts bias can be had by a bias resistor in your power supply, designed to pass enough current for all tubes involved, and causing a 35 volt drop in doing it. At W6UPY an 800 ohm ten watt resistor turns out to be right. It is in negative return of supply. Standard arrangement, bypassed, of course, by twenty mike electrolytic.

When mark sig is coming in, or switch is on "Tune" position, there is about one volt positive on grid of first tube, causing it to conduct, cutting off the second tube. Plate of second tube is therefore at supply potential, and drop across the neon is enough to cause an opposing bias to appear at the grids of the 6AQ5's, nullifying the negative bias normally present there. (Likewise at the grids of the motor-control and retransmit tubes, from the common connection to the keyer bus.) Therefore, the tubes are conducting, and the printer magnet is held closed, in the mark condition.

A negative signal of one volt or more at the grid of first tube (caused by a spacing signal) cuts the tube off, causing the second tube to conduct, and lowering the voltage at its plate and across the neon. This lets the normal bias on keyer grids take full effect . . . the keyers cut off, and the magnet drops out, making a space condition in the printer.

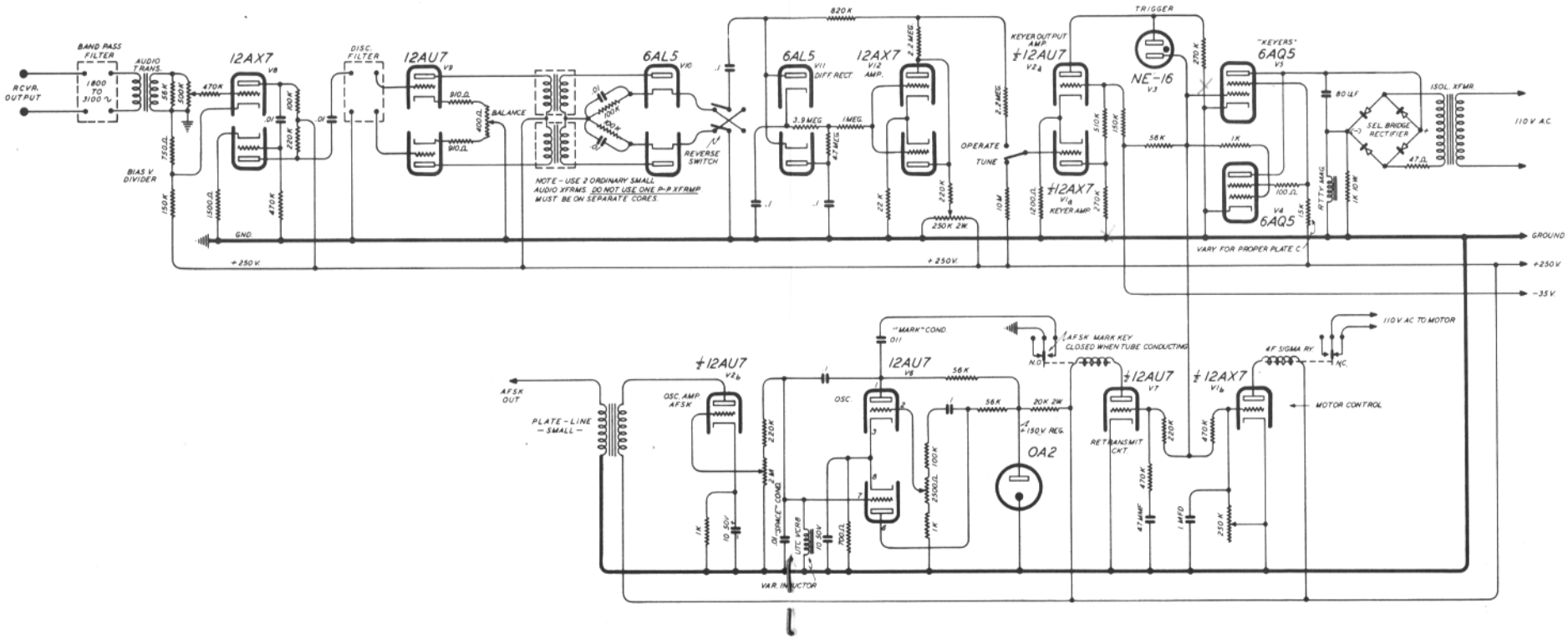
Screen resistor of 15K on the keyer tubes is to start with. Adjust this resistor to a proper value for correct magnet current. Remember that your magnet current may vary quite a bit with power line variations, and it may be best to maintain a variable resistor here, put a meter in the magnet circuit, and adjust each time before you start work. Half of the trouble in printers not working correctly is in the magnet current. We all suffer the common failing of trying to lay it on something else, and tearing the rig apart looking for complicated trouble, when if the magnet current was correct the printer would work perfectly. Especially the holding type of magnet, which is not as sensitive as the pulling type, in the single magnet printers.

Power supply for the keying loop at W6UPY is a simple selenium bridge rect. with 80 mikes of smoothing condenser across it. Cathodes of keyers are at ground, simplifying the printer loop, as one side can be the shield of the cable feeding it. An isolation transformer is important here, to avoid calling in the insurance man at some later date.

The motor control circuit is acme of simplicity. A 470K isolation resistor, a one mike paper condenser paralleled with a 250K pot from grid to ground. A point will be found on the pot where the motor will stay on, on steady "letters" character, but will drop out when steady mark occurs. This is the opposite of ordinary motor control circuits. What's the matter with it? Why have the motor going when the commercial station is resting? Only need it when he gets busy and sends something. For ham use, a manual switch is necessary to keep the

(Continued on page 8)

W6UPY Converter



W6UPY CONVERTER

(Continued from page 5)

motor going, because all of us stop on mark often enough to stop motor frequently. For commercial printing, this circuit will let you go mow the yard, or help the XYL (perish the thought!), and if the guy stops printing your newspaper, the motor will shut down, and not wear out the clutch.

The retransmit circuit is similar, except that it has a transient filter from grid to ground. Both circuits are normally closed relays, operating on back contacts, and tubes are conducting on the mark signal. The afsk relay, of course, keeps the circuit closed on mark, and opens the afsk keying line on space.

A word of caution is in order . . . If you use a bias resistor in the power supply to develop normal bias on the keyers, DO NOT tie the plates of the motor-control and retransmit tubes to the power supply bus. Tie them to the selenium supply. Why? Well, as they cut off and conduct, the current thru the bias resistor in the supply will change, and it will foul up the keyer bias just enough to cause occasional misprints. You will tear everything else up trying to find the trouble elsewhere. Pay close attention to this point. I learned it the hard way at W6UPY.

If the complete converter is built according to the foregoing instructions, the scope can be hooked on at the usual place, discriminator output. At W6UPY a different scope arrangement is used, involving a 2BP1 with one half of a 12AX7 as a vertical amplifier. 60 cycles is used for sweep, and mark caused a trace across the top of the screen. Space shifts the trace to the bottom. The vertical amplifier gain control can be calibrated so as to show the actual shift in cycles when the traces are set at a certain height on the screen. This deal shows up bias, fading, and improper shift at a glance, and is probably no more effective than the cross most of us have used, but it is a honey to tune with.

This about completes the description of the converter circuits, except for the AFSK osc, which is an ordinary feedback oscillator, with the 2500 pot in the first grid set just to the point of oscillation on mark. This produces a very FB output of good wave-shape. A compression mica of several leaves is helpful in tuning up the mark tone to be exactly 850 cycles lower than the space tone. A UTC variable inductor (VCI-8) is used at W6UPY. It costs eight bucks! But, if you ever use one, you will never change. Tune it with an Allen wrench. Terrific! Second tube is simply an audio amplifier, to bring output level up to point needed to modulate the transmitter on AFSK.

The Flexible Unspace Gadget for the Venerable Model 12

Procure a one yard length of monofilament fishing line (get it from some one who does not mess with teletype as he probably still has time to fish).

The piece used here was 6 lb. test. Within limits the strength is of little importance. Open cover of machine and taking the said piece of monofilament line in hand push hand and line back near where bell is found. If no bell put it where bell was. Find small lever type gadget with spring on it that sticks out like sore thumb. You can't miss it. Push machine to upper case by hand, then pull on gadget; if machine drops to lower case. it is the gadget. If not try again on another gadget. After finding the right gadget tie the monofilament line to it. Lead line out of the machine, running it through a convenient hole so that it will have a straight pull on the gadget. Drill hole in case or lead it out the main switch hole. Tie on sinker or something. When you get 274857&—'(9485—'099 65$%— 78—%$"e%79)87— %435— pull on the sinker and then you will get fjgjektx,dlfoelritiddjfnchf most of the time. HI HI IKE. WØNME

Comments from Readers

"Well at last I got a model 12 and working at that. Built the W2PAT converter and it works pretty good. Still have a few bugs to conquer in the machine, but they are coming one by one.—So add my name to the ever growing list as being active on RTTY."

—73 John Towse W3FU

"Re September 53 RTTY, you picked the wrong machine, the one I saw not made by Teletype Corp., in fact it has a type basket, mind you, which is as big as an orange in diameter. The coding and decoding is 5 pulse. Either M A B or polar relay although on polar it's better, has no RF within 3 inches of any of the wiring or frame. And has a honey of a receiver code bar or stunt bar. Clutch makes ½ rev. per letter and the drive motor about as big as your fan motor for your car defroster or heater. High speed gears and low speed gears. The tape senser fits into the palm of my hand and weighs about 4-5 ounces bare and 7 ounces with shield and cover. What do you think, I saw them rolling off production line."

—Doane

"W4GXL Bill, W4JGD Bill, W4RTJ Doc, W4EAS Bert, W4GVK Bob, W4WMN Doc, W4SND ?, all of Jacksonville, Florida. Another live RTTY Gang."

"Just a line to thank you for running an ad in the Sept. issue of RTTY for me. I have since sold my model 12 machine, and am typing on a 26. I sure like it."

—Loren Godwin

"Just a note to let you know that W1TWP is now on RTTY, so that you may add it to your list of active RTTY stations. Xmtr 32-V2 Printer model 26."

—Bim

"W8IJV has model 12 working on receiving with W2PAT converter and is building electronic keyboard."

"W4GXL has received reports from W3PYW and W9TCJ that fair copy was made from 80 meter M A B Transmissions from W4GXL. FSK exciter is being made up now."

"W4JGD has been doing fairly good copying with W2PAT converter constructed by W4GVK, however W2PAT converter doesn't seem too hot for ham use. W9TCJ circuit seems final. Roses to W9TCJ."

—Bill, W4GXL

"Seattle's Twenty RATT's (RTTY)."

"W7AVC Gene, W7BA Lloyd, W7CO Don, W7CBE Elwyn, W7DTE Bill, W7EJD Fred, W7FNA Bob, W7GHW Leroy, W7HJC Ted, W7HRC Harold, W7HLU Lyle, W7JNC Bob, W7KBM Stanl W7KV Mike, W7OMQ Chars, W7OYO Bill, W7PWQ Ed, W7QSX Dan, W7RPZ Oren. All have model 26's hence the name Twenty RATTs of Seattle. Listen for them."

"Last night was a big night—after months of work—I finally got things going good and got in a go round with W3PYW, W9TCJ and W1BGW—with excellent results all around. Frank, W3PYW, relayed my signals on 7mc to a station in Cuba, and also VE3RE who also reported good copy on me. He then sent me back a tape of my own transmission which was welcome proof of good signals from here. It was a lot of fun and worth all the troubles and more too. Was using an ART-13 transmitter with FSK Diode modulator as per W2JAV in RTTY."

—Bob, W8AV

"W8IJV made a swap of his extra 26 for some tape gear."

Traffic Net News

EMILE DUVAL, W6FLW

The Southern California Radio Teletype Society Net operates every Tuesday evening at 8:00 p.m. on 147.85 mc.

Any station unable to act as Net Control is requested to get in touch with W6FLW a week before their specified time and Emile will arrange an alternate Net Control. It would be a good idea for each Net Control station to drop Emile a card the preceding week and let him know that they will or will not take Net Control for their evening.

For the sake of smoother operation, it is requested that all stations, having contacts not relating to Net Activities, move to channel "C" (147.75 m.c.) in order to avoid repeats and fills.

While on the subject it may be well to consider the use of channels "A" (146.7 m.c.) or "B" (147.1) for the preliminary stages of getting on the air, and for point to point contacts during Net periods.

OCTOBER 6—W6WYH, N.C.

TOTAL CHECK-INS—THIRTEEN

W6EV	W6AEE
W6RL	W6UPY
W6SCQ	W6NAT
W6CAP	W6KNI
W6IZJ	W6DNK
W6NAT	W6NMW
W6WYH	

OCTOBER 13—W6FLW, N.C.

TOTAL CHECK-INS—NINE

W6CLW	W6CYR
W6EV	W6NMW
W6NAT	W6GFI
W6RL	W6FLW
W6SCQ	

OCTOBER 20—W6AEE, N.C.

TOTAL CHECK-INS—ELEVEN

W6AEE	W6SCQ
W6CYR	W6CLW
W6EV	W6DEO
W6FLW	W6RL
W6IZJ	W6NWM
W6NAT	

OCTOBER 27—NO REPORTS

RTTY is the Official Publication of the

RTTY Society of Southern California

and is published for the benefit of all RTTY Amateurs and Experimenters.

Permission to copy is granted provided credit is given.

For Information regarding the Society contact the following:
W6CLW—Ed Simmons
W6AEE—Merrill Swan
W6SCQ—Lewis Rogerson

For Traffic Net Information:
W6FLW W6IZJ

For "RTTY" Information:
W6CL W6CLW
W6DEO W6AEE

. . . W6PFF over here in Rosemead is drilling holes and throwing solder all over Los Angeles county getting his converter going so we may have a big blast from a local source soon. W6UPY and gang de W6DMK KKKK.

* * * *

. . . And sorry Jack, took off my panadapter with the thousand kilocycle sweep so didn't see you way up near the fone band. Hi. If you want to break in, you could at least get on the same band we're on . . . de W6UPY.

* * * *

. . . Again let me tell you how sorry I am that I messed up your QSO. I was cleaning up the shack and hit the transmitt switch by mistake and couldn't figure out who had a mark tone on for so long. All the time it was me.

* * * *

. . . "Yea, verily, this stuff doth print, but I say unto thee that the dern relay doth yet refuse to open properly at certain unspecified times" unquote . . . Guess it is a bit erratic, and since you appear to be the only sucker who will fall for my wiles and remain up till the wee hours . . . Guess I will have to donate a Sigma 4F to the good of the cause . . . de W6UPY.

* * * *

. . . W6WYH W6WYH This is W6KNI in Alhambra calling. What do you see in the xtal ball now Ted?

* * * *

. . . We've had a little rain down here the past week. Looks like winter is on its way. Hw up Portland way? W7LU de W6OWP KN.

* * * *

. . . Well Merrill I did copy you and W6PNW you were solid and PNW fair. Am using the 32-V-3 tonight as I am rebuilding the KW. Was using the KW the other night when I broke you boys . . . de W8BL Detroit, Mich. KN.

* * * *

. . . As you probably know I am with phone company here—saw one of the new 28 type machines yesterday—what a sweet item, they had it on local copy test and running one hundred words per minute. Great stuff. W6AEE de W7LU Portland KN.

* * * *

. . . RTTY is fine and congratulations. Keep up the good work. Finished my automatic frequency control for the low frequency bands and it works like a charm. Zeros everyone in on the same frequency and hold them there O.K. Merrill and thanks for giving me a shout, will see you at the next meeting, I hope. 73 de W6NSS.

* * * *

. . . Am out for this evening, my carriage is stuck. W6AEE/W6UPY de W6SCK SK.

* * * *

. . . W6RL/W6PNW de W6CLW having troubles with the relay hi also have a station on forty so will pass this turn copy is fine here Ray with the present position of the beam so ga. Shorty.

* * * *

. . . Sorry that I couldn't get on last night I heard several of you but I was worn out and so I hit the hay also I am not too good on those round tables yet, Hi. Contest over? anything more on the 26's yet what say Merrill? de W$\emptyset$NME.

* * * *

. . . Fine business Merrill and on last three fourths of that transmission could give a QRK 5. Thanks a lot for the holler and will be seeing you on this spot again soon. And if I get in trouble with some of this stuff will give you a call here. CW Hi. So best 73 for tonight and CUL—de W5RJG. K K K.