



## RTTY SWEEPSTAKES CONTEST

31 Oct. and 1 Nov.

The Fifth Annual RTTY SS Contest will be held starting Friday evening at Six P. M., E.S.T. on the 31st October and run through Saturday, November 1st at Midnight E.S.T. This will allow thirty hours of operating for those who can last that long. Stations will exchange messages consisting of message number, originating stations call, check or RST report of two or three numbers, ARRL Section of originator, local time (0000-2400 preferred), date, and band used. Score one point for a message sent and received for entirely by RTTY, and one point for a message received and acknowledged by RTTY. For final score, multiply the total message points by the number of different ARRL Sections (see page 6 QST) worked. Two stations may exchange messages again on a different band for added points, but the section multiplier does not increase when the same section is worked again on another band. Each foreign country counted by ARRL for DXCC credit is treated as a new section for RTTY multiplier credit. Logs should be mailed to RTTY, 372 Warren Way, Arcadia, California.

In order to be scored, contest entries should be received by RTTY not later than November 15, 1958. Certificates will be awarded to top scorers in each ARRL Section. Best of luck and see you in the contest.

### CONTEST PERIOD

Time	Start	End
EST	1800-31	0000-2
CST	1700-31	2300-1
MST	1600-31	2200-1
PST	1500-31	2100-1
HST	1300-31	1900-1
GMT	2300-31	0500-2

## COVER PHOTO

W6VPC, Oakland  
ELLIOTT S. BUCHANAN  
1067 Mandana Blvd.

Due to the insistence and kindness of Charley Elvin, W6ASJ. Am enclosing a photo he made, which you may use if run short on room.

From left to right, 14 blind reperf. 14 TD, model 19. On floor holding fone, non typing 14 reperf and directly above, 14 typing reperf. To the right, not shown, is desk and operating position containing the usual gear, 75A4, Swan-gates type converter. Patch panel sup-pro, two meter gonset, bc conelrad. bc 221. Viking two xmtr. Rotater for two and six meter beam.—73

—BUCK, W6VPC.

### PREVENTION OF TAPE TANGLING IN PERFORATOR & TRANSMITTER- DISTRIBUTOR ASSEMBLIES

Tape perforators and transmitter-distributor units are often mounted side-by-side on one table, with a hole in the table top between them for slack tape to pass through and on to the floor. The stiffness of perforator tape often prevents the tape from starting through the hole properly, or causes it to become tangled while lying on the floor, either of which may be highly annoying.

Dale Wilson, a real old-timer in the Western Union office at Hope, Arkansas, showed me this simple trick to reduce the tangled tape problem: A metal ring, such as a key ring, is placed over the tape between the perforator and transmitter units and allowed to ride on the tape. The weight of this ring is sufficient to cause the tape to start through its clearance hole properly; and when lying on the floor, causes most of the tangles to clear themselves before starting up toward the transmitter. The ring will function with no further attention, unless the operator tears off the tape.

Of course, you can tear off the tape each time a new one is perforated, and ball it up in press fashion, but it's so nice to be able to run the tape through continuously and not have to worry about which end is the starting end.

## FUN WITH A PANADAPTOR

By BOB WEITBRECHT — W6NRM

Ever since my visit to Bob Unsworth (W6MTJ) in San Francisco some several years ago I have always been fascinated by the application of Panoramic Reception to RTTY work. Seeing Bob tune in RTTY signals with such ease and dispatch just by looking at the "spectrum" displayed on an oscilloscope screen—and noticing how it is possible to "spot" clear channels as well as QRMing stations at a glance—I had a great desire to obtain and possess a pandaptor for routine use in my own amateur station.

My operational RTTY receivers are BC-348-Q units, modified and fitted with circuits that make them "first-line RTTY receivers." One I have owned and used continuously all these years since I purchased it virgin-new from Radio Products Sales Co. back in 1946. And about two years ago I purchased another identical receiver, in like-new condition. Of course this second receiver has received exactly the same modifications as the first, and both function most sweetly as a team when receiving RTTY signals in diversity reception. Needless to say I have obtained much satisfaction out of this gear—being stable, selective, easy to tune, and just right for RTTY work. And I contemplate continued employment of these fine receivers for some years to come. Of course they are somewhat of a compromise but for the price I paid they have truly been a "bargain" for high-quality radioteletype and radiotelegraph reception at my amateur station W6NRM. And Diversity Reception is obtained, too, without too much expense or mismatching.

Returning to Panoramic Reception—there is a slight problem here as pandaptors do not seem to be available for the 915 kc i-f system as used in the BC-348 series. This however is not insurmountable because for instance one could build up a whole pandaptor system from scratch, using say a BC-453 receiver with its 85-kc i-f channel for "video" amplification—together with oscilloscope and reactance modulator circuits plus a few other changes. I merely offer this as a suggestion to any one who may wish to build up a pandaptor using surplus components. I actually started this project about two years ago and had a system of sorts working into my laboratory oscilloscope when this project was shelved in favor of other more important things.

Several months ago a group of us here in Palo Alto got together to purchase a lot of some 15 pandaptors from a Naval Supply Depot surplus disposal sale. There were some eleven 5-inch jobs and four 3-inch instruments—and I acquired one of the latter as I desired to have a compact unit for installation in a rack along with three BC-348's. The instrument I got is type RBW-2M as made by Panoramic Radio Corporation and as it came was designed to accept a 5 mc signal from an external receiver and to scan 1 mc segment thereabouts. Really a bargain, brand new, first class, virgin, pristine condition—with complete sets of manuals all in a sealed box.

To make the new pandaptor accept 915 kc-region signals I performed the following modifications:

1. 85-kc i-f transformers—obtained from an old BC453 receiver—were substituted in place of the original 915-kc video i-f transformers in the pandaptor. (Note: Yes, the RBW-2M in its original state employs 915 kc in its video stage and is not to be confused with the BC-348's i-f.) No particular difficulty was encountered in making this 85-kc channel operate and it yields a resolution of about 1 kc at half-power points—judged adequate and sufficient with just two transformers thus installed.
2. The reactance oscillator circuit (6AC7-6SA7) had its scanning frequency changed from its higher value to around 830 kc. Two resistors were changed in its network, and a new coil was made to be mounted on the rear of the front panel of the instrument. This coil was jumble-wound on a form fitted with an iron core slug adjustable from the front. A shield can was placed around this coil and shielded wires were run therefrom into the reactance modulator oscillator circuit, having disabled its own high-frequency coil. This procedure was followed because it is difficult to modify or rewind the original oscillator coil and also to have the advantage of a panel adjustable center-frequency control on the oscillator itself.
3. The 5 mc bandpass transformers were removed and the "video" 915 kc transformers substituted back into the unit.

The response curve of this now-installed 915 kc input stage were broadened and adjusted using coupling capacitors and resistance-loading on both primary and secondary windings. An extra 6SK7 stage was added, outboard fashion on the rear of the cabinet to give some needed extra gain to enable the BC348 receiver to be operated in its customary low-gain level setting to help it cope with strong local-adjacent channel signals. The panadaptor input circuits were adjusted to give a double humped response characteristic to "equalize" so all signals do not vary too much in amplitude when the BC348 is tuned through its range.

All these modifications resulted in a wonderful and sensitive panoramic-reception setup that accepts 915-kc region signals from any BC348 receiver fitted with a connection to its mixer output circuit through the usual isolating resistor. It is indeed a revelation to tune such a system through, say, the crowded 40-meter phone band. AM phones stand up like pickets in a fence. SSB signals are immediately spotted by groups of pips appearing from nowhere. Falling lower down the band, we tune across the 7140 kc RTTY band noticing perhaps one or two "steady carriers" showing as pips on the screen. If we reduce the sweep width (or expand the resolution so as to speak) we observe that one pip appears to be "shifting" back and forth along the sweep-baseline. Frequency-shift keying!—the badge of RTTY. So we immediately center this FSK signal and tune it in into the RTTY terminal unit and there! we have our machine pouring out "words of wisdom" from some RTTY station.

And before we are aware the RTTY station is signing in CW—the pip then bobs up and down like any ordinary CW signal and if the sending is slow, one can watch the pip and "read" the identification. The answering RTTY station comes on maybe several kilocycles higher in frequency. So we merely tune the receiver over to his spot to "center" his pip on our panadaptor screen . . . and so on. We need not listen to a noisy receiver when searching for an RTTY channel, or, for that matter, a clear channel. Clear spots are immediately apparent when displayed on the oscilloscope, and one could set his VFO to such spots. Tuning is entirely visual, and one is enabled to monitor a 20 or 30 KC portion of the band at all times during reception. Sometimes a joker is seen "swishing" his VFO (with transmitter on)—his pip is seen scuttling through the spectrum and finally—slowly and deliberately—settling on our pre-

vious RTTY channel and bothering us (maybe not, either).

Continued use of the panadaptor has brought up other useful "wrinkles." With the receiver on AVC it is easy to spot whether the Receiver's BFO is properly set with respect to its high-selectivity i-f channel when copying RTTY. The Mark and Space pips should be about equal in amplitude. If not, it is a simple matter to adjust both BFO and receiver tuning controls to equalize the pips. Another useful feature is the sweep-control—its adjustable to any frequency from zero up to 100 kc sweep. Normally I operate the instrument on 5 or 10 kc sweep as then there are not too many "signals" and resultant confusion otherwise. All in all, 20 kc is about optimum sweep for general RTTY monitoring. One can reduce the sweep to say 1 kc, and then our FSK signal plainly shows its two pips 850 cycles apart filling most of the screen!

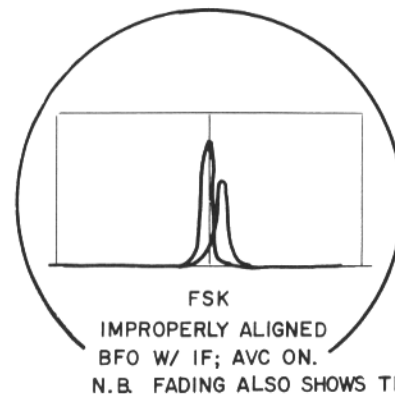
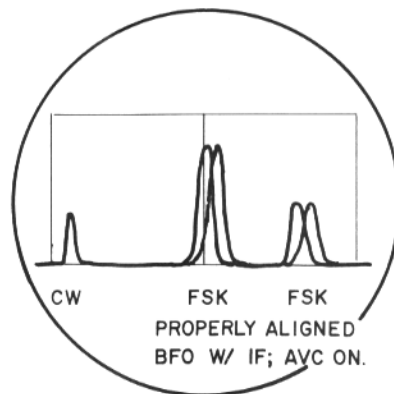
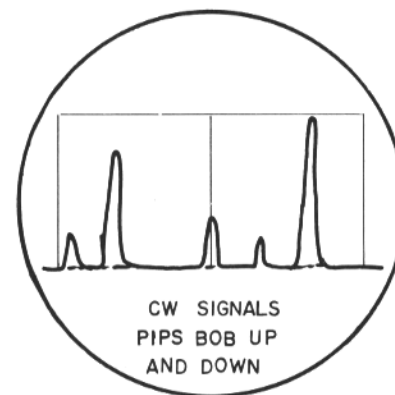
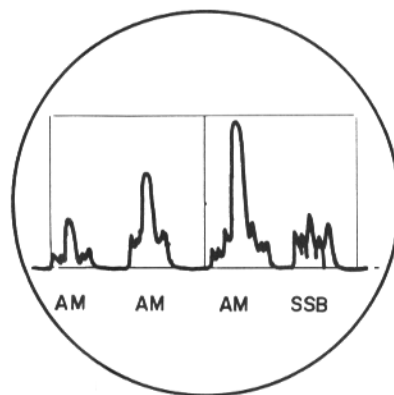
Thus I consider the Panadaptor an important and useful instrument to be employed in communications work. In RTTY work all tuning can be by eye, with no need to listen to a noisy loudspeaker. Adjacent channel monitoring is facilitated. Indeed the panadaptor unit could be used as a "second receiver" simply by centering the other signal, reducing sweep to zero, and feeding its output into another RTTY terminal unit-printer. This will enable you to determine if another QSO is "talking about you," and you could then begin an "argument" with others of the gang!

One evening I had a 14 mc RTTY QSO with WOQPP in "La Vallee des Fleurs; Florissant, Missouri." We became aware of a breaking station which turned out to be W61WA, but I sure could not print him due to skip. While time dawdled along as the breaker was having his spiel, I spotted another RTTY signal higher up in the band come on. Upon centering that pip, it turned out to be Geri, KL7AMZ, calling and searching like a lost soul for another RTTY station . . . temptation was too much so I moved my VFO over, centering it over her signal and gave her a blast after she signed . . . lo! we started another fine QSO. Meanwhile Bob at QPP had turned the ball over to some W5 after the W6 finished as I noted on the panadaptor. Geri and I had several quick exchanges and I explained to her that I had deserted another QSO to join up with her—and suggested we both zero in on Bob's frequency to take up the reins when my turn came up. So we all joined in and finally the round-table became too unwieldy and some of us shut

(Continued on Page 6)

### PANORAMIC RECEPTION DISPLAYS

SWEEP 20 KC APPROX



BY W6NRM

N.B. FADING ALSO SHOWS THIS

## A NOTE ON BAND PASS FILTERS FOR SIGNAL CONVERTER INPUT

JAMES HAYNES, K5KIB (W5YM)

Many signal converter designs call for an input filter of approximately 2-3 kc pass-band, followed by a limiter, to reduce adjacent channel interference through the action of the "capture effect." Frequently such a filter is of the pi-section configuration, with parallel resonant circuits across the input and output terminals and a series coupling capacitor between.

Consider the action of such a circuit when fed from a constant-voltage source of variable frequency. Within the pass band, of course, transmission through the filter is maximum and phase shift is minimum. At frequencies above the pass band, the shunt inductors act practically as open circuits, so that the apparent input reactance is capacitive. At frequencies below the pass band, the shunt capacitors are practically not effective, so that the input reactance is inductive. As frequency is decreased, the series coupling capacitor increases in reactance, so that substantially all of the input voltage is applied across the input inductor, resulting in a current flow through that element which increases with decreasing frequency.

In a typical filter under test, it appeared that the high current flow through the input inductor at low frequencies was sufficient to cause distortion to be generated in that inductor as a result of core saturation. Distortion of course generates harmonics which may fall within the pass band of the filter at an amplitude typically 40 db, below pass band response. It appears probable that if the following limiter stage operates over a range of 40 db or more, (60 db is typical) fundamental frequencies which are substantially greater in amplitude at the input to the signal converter than the desired mark and space channel frequencies, and which are sub-multiples of the desired channel frequencies, might cause false mark or space frequencies to appear at the output of the limiter stage.

While on-the-air tests have not yet been made, it seems that input-inductor distortion might impair the weak-signal performance of a signal converter using the input arrangement described above. This distortion might be eliminated by feeding the input filter from a high impedance source (approximating a constant current source), or by using a T configuration for the input filter rather than the usual pi.

—Jim K5KIB (W5YM)

### FUN WITH A PANADAPTOR

(Continued from Page 4)

down for the night. Funny thing, but Bob at QPP was not aware that I had brought in Geri from another frequency while the "net" was busy! Hi. Such is the fun contained in a little black box with a dancing green line showing where the signals are!

I really wished for a second (remote-controlled) transmitter one nite when during a QSO with Eric VK3KF on 15 meters I spotted a big fat signal come up on near 21090 kc—I could see it signing Z L I W B —likewise lonesomely searching and calling CQ. I had not had a QSO yet with Bruce since he got home . . . and there he was coming in! Yikes, but I had to stay with Eric . . . and 15 meters is so unpredictable. Such are some events that have occurred since the installation of that "little black box" in my receiving gear—showing how Panoramic Reception can be useful in routine ham RTTY work. Why don't you fellows give it a try and see how helpful it could be? For some queer reason Panoramic Reception has not caught on with the general "masses," but here it seems to be ideal as an adjunct to an RTTY receiver because all tuning is visual anyhow. We don't listen to a bedlam of sounds from a loud-speaker anymore when printing a station.

## NCARTS JULY MEETING

NCARTS set 7:30 as dinner time on July 25, 1958 but many members met prior to that hour for the usual "tape off the floor" conviviality.

Major F. D. Ivey, K6OUR, was the guest of honor. He is retiring from the army and will be residing at Council Bluffs, Iowa, temporarily, with the possibility that he will go on to Washington, D. C., and may return to the West Coast at some future date. Frank was commended on his activities in Mars where he made many suggestions and offered constructive criticism to the improvement of the Mars setup in the Bay Area. NCARTS prepared a certificate of appreciation and presented it to Frank acknowledging his contribution to Mars and amateur radio.

We were informed that there is a rumor going the rounds to the effect that one of the leading amateur publications, that devotes a special department to RTTY, plans to cut down the space allotted to RTTY. It was suggested that we all write in to the editor protesting this move and requesting more RTTY articles.

Bruce, ZL1WB, was present, virtually on the eve of his departure to "Down Under" land. He entertained us with a recount of his activities since his last meeting with NCARTS two months ago. Bruce expects to be on the air within a few minutes after he reaches home and gave as tentative frequencies of operation: 14091, 14088, 21091, 21088, 29675.

As usual, several RTTY enthusiasts traveled from distant points to be with us—Tim Huntley, W6LIP, and his XYL drove up from Woodland Hills; Frank Ashby, W6AJU, from Pacific Palisades; Bob Wieland, K6KXS, from Altaville.

Many photos were taken by our NCARTS photographer, Charlie Elvin, W6ASJ.

Prizes, too numerous to itemize individually, were won by lucky members—A mobile mike, lots of teletype paper and teletype ribbons, teletype parts, 1 dozen local base tubes, LS3 loud speaker, 6-12V converter, Command receiver and rack, polar relay and socket, 'scope tube, automatic line feed and carriage return, 4X250B with its special socket, FSK, 15 keyboard, and the choice of either a Model 26 or Model 15!

From remarks made during the meeting and since it is indicated that this meeting goes down as one of the best yet. It will be to the advantage of any interested in the furthering of amateur radio teleprinter operation to make an effort to attend all

future NCARTS meetings.  
W6LFF — Virginia Unsworth

### "AMONG THOSE PRESENT"

Call	Name	Address
W6NRM	Bob Weitbrecht,	San Mateo
K6KXS	Bob Wieland,	Altaville
WA6ANG	Keith Gleason,	Sonora
W6TEE	Les Cobb,	Redwood City
K6PYB	Barry Kaufman,	Redwood City
W6CBF	Clyde Sunderland,	Oakland
K6KVZ	F. W. Taylor,	Oakland
XYL	Marion Taylor	Oakland
W6LIP	Tim Huntley,	Woodland Hills
XYL	Tim Huntley,	Woodland Hills
W6LFF	Gin Unsworth	S. F.
W6MTJ	Bob Unsworth,	S. F.
XYL	Pauline Graham,	San Jose
W6NKP	"Doc" Graham,	San Jose
K6IXS	Hank Davis,	San Carlos
W6FYM	E. Howard Hale,	Belmont
W6MXJ	Art Sloper,	S. S. F.
XYL	Eleanore Sloper,	S. S. F.
XYL	Myrtle Browne,	S. F.
	Richard Browne,	S. F.
W6AHH	Bob Browne,	S. F.
W6JWF	Frank Johnson,	S. F.
W6WIS	Ken Moore,	Millbrae
W6AJU	Frank Ashby,	Pacific Palisades
W6EFT	Roger Bunce,	Burlingame
	Call Name Address	
W6FZC	C. T. Nichols,	El Cerrito
W6UQ	Chas. Thompson,	Hillsborough
XYL	Kathleen Thompson,	Hillsborough
K6OFH	Eddie Lando,	Mill Valley
XYL	Eddie Lando,	Mill Valley
K6OFI	Mike Lando,	Mill Valley
K6IZY	Jim Wren,	Oakland
XYL	"Joe" Wren,	Oakland
VE2AGF/6	Tom Lott,	San Mateo
W6CQI/6	Dick Segerstrom,	Palo Alto
ZL1WB	Bruce Rowlings,	New Zealand
W6VVF	Nick,	S. F.
XYL	Isabel,	S. F.
K6OUR	Frank Ivey,	S. F.
XYL	Frank Ivey,	S. F.
W6VPC	Buck Buchanan,	Oakland
XYL	Maribel Buchanan,	Oakland
W6ASJ	Chas. Elvin,	Piedmont
XYL	Irene Elvin,	Piedmont
W6YO	David Walker,	Oakland
XYL	Ruth Walker,	Oakland
K6ZBL	Russ Stedinger,	Oakland
XYL	Vivian Stedinger,	Oakland
W6ACN	Archie Waring,	Oakland
W7GHW/6	Leroy Nelson,	San Carlos
W6CQK	Jack Pitts,	Redwood City
W6PHS	Chuck Bey,	S. S. F.

## NCARTS July Meeting



This is the story of the Three Teletypers of West Allis, Wisconsin and their misadventures during the 1958 Field Day.

The three of us, Norm W9SKF, Fred W9GRK and Harry K9KNJ had gathered for an evening of intellectual discussion. "This beer should be a mite colder," burped Fred. "It's beer, ain't it?", commented Norm, who at the moment was wrestling the cap off a full bottle with a dull pair of side-cutters. Harry, with a rather concerned look on his face, blurted out, "Hey—I been thinking." But when the laughter had died down, both Norm and Fred were willing to hear Harry out—or was it to throw-----.

Aniway, the outcome was to provide an RTTY station for Field Day. Gad! Many more intellectual discussions took place in the following weeks to determine who had the most stable receiver, best terminal unit, easily portable transmitter(s) for 80 & 40 meters, who's to bring table, chairs and how we should split for a case of beer.

Technical problems were ironed out, also. Wiring hookups arranged for the difference in T.U.'s and receivers, transmitters and transmit/receive functions. The type of antenna and tuner were resolved along with the most important problem of all-----how to keep cool, one case of beer!

Field Day morn arrived along with the oddest sight the neighbors and passers-by had ever seen! We had decided to start off from Norm's home and proceed to the FD location. What a sight! Fred drove his station wagon with Harry's two-wheeled trailer hooked behind. Norm followed in his Rambler.

But it was the two-wheeled trailer that attracted most attention. The thing was arranged with an operating position, two teleprinters and a 300 watt gasoline driven generator. The rest of the stuff was in cartons.

Harry decided that he had better ride the trailer in order to prevent the load from shifting and to keep track of the 26's. This he did with much fanfare, sitting on a stool with earphones on his head, holding onto the printers. What with the public hearing about sputniks, etc. we must have been quite a sight!

Shortly before entering the FD area, Harry decided to fire up the generator and run the receiver on the operating position. Norm suggested that it might be fun to have the setup copying RTTY on the way into the FD site.

And so it was — RTTY mobile. We sure made an entrance!

Finally the gear was up and working just before the 4 P.M. starting time. What with all the RTTY signals we had heard on forty, we figured we'd have us a ball. And a bawl we had. After 4 P.M., not an RTTY signal was to be heard. In fact, NO teleprinter signal was heard right up to the close of FD festivities. Not on the ham bands anihow.

But we did have some fun. The Three Teletypers and their setup did create a lot of interest and attention. Despite the disappointment, us three chads made the TV Newsreel of a local video station. Sure seemed strange to have yourself staring out at you from the peek-a-boo box.

Not only that, but the rest of the FD gang of the West Allis Radio Amateur Club learned from us the most posing technical problem of all — how to keep cool, one case of beer.

Norm Krohne, W9SKF

Do you know of anyone using a Lysco 600 on TTY? Sure would appreciate any info that anyone can give me.

As you may have heard, W6OWP and I have been retransmitting each other in a semi-and-full conference hookup, and so sending tapes of NCARTS on several frequencies. Now beginning this weekend Bart will retransmit W6ASJ on 21090 and I shall continue retransmitting W6ASJ on 14340 kc . . . we have had so much success in this deal that we feel it should be made as permanent a feature as possible — this retransmittal of NCARTS bulletins. Now we are planning a three station seriesed retransmit loop, and as soon as we can wangle W6ASJ into installation of a full conference hookup system, we can operate conference on three separate freqs with three stations all in series. Hmmmm. I better turn to and write an article on that deal — I promised you that writeup awfully long time ago . . . !

W6PHS, W6FYM, W6CQI and boy, and I all saw Bruce Rowlings ZLIWBi off for home aboard a Connie plane . . . stop over in Fiji to see VR2AC and home presumably by now . . . Might get to hear Bruce tonite on 27000 kc or 21090 . . .

73, Bob W6NRM/6

All listeners are invited to copy the message to follow and to submit the transcribed copy to Armed Forces Day contest, room BE1000, the Pentagon, Washington 25, D.C. Listeners who submit perfect copy will receive special armed forces day certificates of merit for copying proficiency. Only the message text is required and it should be submitted exactly as transmitted.

The contributions to the communication art made by those radio amateurs developing amateur radio teletypewriter facilities are a source of great pride to the communications services of the armed forces of the United States.

Your efforts in pioneering new techniques and in promoting this new and more efficient medium are in the finest tradition of the amateur art.

On this armed forces day 1958, your comrades in the armed forces communications organizations extend their warmest congratulations to the progressive amateurs who have used their equipment and talents in developing amateur radio teletypewriter services.

Neil McElroy

I was just thinking—this is a year of anniversaries. Teletype just got over its 50th, and here it is RTTY's 5th. Why don't you make December an anniversary issue. Looking over the 53 issues, I was really impressed with how far it has come in the past 5 years. Would be a good issue to reprint some of the memorable articles of past years; things about 12's and 21a's, how the magazine came to be published, first permission to use FSK, selected "tape off the floor," early list of active stations, first introduction of some well-known people, etc. Might even print it in blue ink again, too. It would be good to remind a lot of us young squirts some of those things so easily forgotten.

—JIM( W54M)

Made my RTTY debut last Sunday — W6CG, K60WQ, KR6AK, W60WP, W6FYM. Copied ZLIWB & VK3KF..

Am using 5896A (sub miniature double diode) mounted on  $\frac{3}{8}$ " x  $1\frac{1}{2}$ " x  $\frac{1}{2}$ " high chassis with 3-30 UUF trimmer inside the Ranger VFO. Works real well.

—JACK REICH, KL7AUV

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## W6KUY/MM S. S. PACIFIC TRANSPORT



## W5ESV TULSA, OKLAHOMA

