



HAM HUM

AK-SAR-BEN
RADIO CLUB
INC.

WØEQU

January 1959

P.O. 626

Omaha 1, Nebr.

Vol. IX No. 1

New Officers For 1959

Dave Hollander, WØCJW, President
Max McKinney, WØYVV, Vice President
Jerry Armstrong, WØNKG, Secretary
Lew Tourek, WØPIZ, Treasurer
Ed Gutmann, WØCQX, Past President

BOARD OF TRUSTEES

Elmer Burt, KØDFJ
Cecil DeWitt, WØRMB
Wendy Larsen, WØNPA
* Jerry Armstrong, WØNKG
* Lew Tourek, WØPIZ
* Tom Doll, KØOKS
* John Biodrowski, WØMYO
John Droscher, KØKWB

*Two-year term

Ham Hum

Published by
AK-SAR-BEN RADIO CLUB INC.
Post Office Box 626
Omaha 1, Nebraska

HAM HUM is the official organ of the Ak-Sar-Ben Radio Club of Omaha, Nebraska, Mailed monthly to all members and to others upon request.

EDITORS
Al McMillan, WØJJK
Dick Eilers, WØYZV

NEW OFFICERS FOR 1959

At the December meeting, the annual meeting of our corporation, you elected a new set of officers. Your new president is Dave Hollander, WØCJW; vice president, Max McKinney, WØYVV. The new members of the Board of Trustees elected in the regular election were Jerry Armstrong, WØNKG, Lew Tourek, WØPIZ, Tom Doll, KØOKS, and John Biodrowski, WØMYO.

The election of Dave as president caused a vacancy on the Board of Trustees and the Board selected John Droscher, KØKWB, as a replacement. This was ratified by the Club and he was, therefore, selected to fill the unexpired term of Dave Hollander. Those remaining on the Board for the re-

mainer of their term were Elmer Burt, KØDFJ, Cecil DeWitt, WØRMB, and Wendy Larsen, WØNPA. Ed Gutmann, WØCQX, stays on the Board for one more year as the past president.

In accordance with the by-laws, a secretary and treasurer were selected by the Board for the year 1959. For secretary they selected Jerry Armstrong, WØNKG, and for treasurer Lew Tourek, WØPIZ. At this Board meeting, which was attended by both the new Board and the old Board, a tentative program was mapped out for the year and the various committees were discussed and are presently being formed.

PROGRAM - January 9, 1959

The January meeting will be held in the 4-H Building at Ak-Sar-Ben Field, starting promptly at 8:00 P.M. with your new officers in charge. This is your opportunity to hear from Dave as to the possibilities for the Club in 1959 and it is likewise your opportunity to voice your opinion, make suggestions, and in other ways let your wants and desires be known.

For program there will be a demonstration of a transmitter and a receiver operating almost entirely on transistors, the only tubes being in the transmitter final. In addition to this there will be a discussion of single sideband. After the program will be the usual refreshments and the opportunity for the so-called eyeball QSO.

SILENT KEYS

We were very sorry to learn that Bob Vidlak, WØVKM, who was a member of the Club prior to joining the Air Force, was a passenger in the Air Force plane that crashed in Alaska recently. According to the news at going to press time there were no survivors.

(from the MONITOR, Riverside County A.R.A., via CQ News)
THIS OUGHT TO START A DEBATE!

Investigation at GE of the possible use of SSB in Land Mobile Radio Services for purposes of frequency spectrum-conservation have led to the following conclusions: SSB does not appear to save spectrum space over +2.5 kc fm.

SSB is considerably inferior in the presence of spike noise unless a blanking scheme is used.

SSB can provide longer range but only at poor readability. Closer in, the readability is not as good as that obtained with fm. It will be hard to keep SSB equipment at peak performance with voltage variation and tube aging.

SSB equipment would be 1.7 to 2 times the size and cost of comparable fm equipment.

Since there is basically more "fussing" in producing and receiving an SSB signal, the basic relationship between fm or am and SSB is not likely to change.

(abstracted from a paper "SSB and Similar Systems in Terms of Spectrum, Spikes, Service, Size and \$" by R. P. Gifford, Manager of Engineering, delivered at American Gas Association Meeting.)

MODEL VHF126 VERY-HIGH-FREQUENCY CONVERTER

A VHF converter with its own power supply, the RME VHF 126 is designed for use with any conventional communication type receiver to extend its range to cover 1 $\frac{1}{4}$, 2 and 6 meters. It is the only tunable VHF converter on the market and works well with any 219.4 to 225.2 mc. With ranges of 48.4 to 54.2 mc. 143.4 to 149.2 mc and 6 meters allows listening to commercials for band openings.

The very-high frequencies are converted by the VHF126 to a fixed frequency of 7 mc.; then fed to the receiver, amplified and detected in a normal manner (double conversion results in the two higher frequency ranges). On all ranges the image response is practically eliminated because the output (50 mc tuner) is 7 mc and the first IF for the fixed crystal-controlled unit is 50 mc. Tuning on the two higher bands is accomplished in the same manner as on the 50 mc band. Overtone series mode crystal oscillators and one doubler are employed in the 220 and 144 mc converter units. The auxiliary controls on the receiver such as the beat frequency oscillator, noise limiter, RF and audio gain plus the S

meter will function in a normal manner. The quality of the converted signal will be controlled by the quality of the associated receiver, excellent performance is provided in association with the RME 4350A receiver.

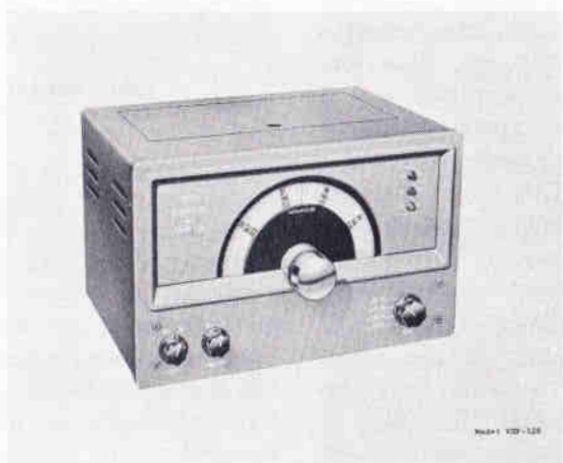
With a heavy steel cabinet and chassis, adequate shielding is given to all RF circuits to prevent leak through from unwanted external signals and to minimize radiation (within FCC limits). An RME dual-speed tuning control is used to provide fast or micrometer tuning. At slow speed (75 to 1) the converter is tuned easily to all frequencies.

Other specifications of the VHF126 include: Noise figure, 2.5 db on 50 mc, 4.0 db on 144 mc, 6.0 db on 220 mc; this excellent noise figure was found in the past only in very expensive astronomy receivers. Sensitivity, $\frac{1}{2}$ microvolt at 15 db signal-to-noise ratio. 30-minute warmup random drift averages a maximum of 500 cycles. Calibration, direct mc, subdivided in 100 kc divisions. Panel controls: Antenna changeover switch, band selector, tuning control, line switch. Tubes: 6BQ7A Cascode RF Amp 50 mc.

6U8 Mixer-verter, two 6BQ7A Osc-Doubler-Fixed Converter, two 6BQ7A Mixer-Followers-Fixed Converter, 5Y3GT Rectifier, OA2 Voltage Reg.

Case finished in gunmetal gray case, coax antenna input

for each band, coax fitting for RG58/U cable. Terminal strip provided for receiver low-frequency antenna. Size: 16½ wide, 10" deep, 10" high. Shipping Weight, 32 lbs.



DX NEWS BY W0NKG

The DX news this month is a trifle short due to the extra activities, etc. during the holidays. Maybe we can get a full column next month. Any DX news you may run into, please get ahold of me, W0NKG, over the air or by landline.

You might listen for JZO from 7:00 to 9:00 P.M., frequency 28.380 to 28.400 mc and 21.200 above and for DU6 around 7:00 P.M. at 28.4 and MP4 after 10:00 P.M. on 14.325 mc.

According to the prognosticators we can expect some

6 meter DX in January during the daytime hours. The supposed times given are Honolulu, 11:00 to 3:00; South America, 8:00 to 12:00; and Japan, 4:00 to 6:00 P.M.

MERRY CHRISTMAS to you the members of the AK-SAR-BEN Amateur Radio Club.

Ron Jacobs
W0UJN

P.S. I will be back on the air in June with HT-32/SX-101-C U then.

VHF NEWS

After one year and a half of trial between KØBWV and WØYZV on 220 mc, a signal finally went through. On December 21st WØYZV received Orville, KØBWV, from Nebraska City on 220.7 mc. This was a crossband operation with 6 meters. The signal was definitely poor, worth only about a 22 report. This modest success will undoubtedly spur them on and we hope will result in two-way communication with Nebraska City on 220.

Some new stations heard on 6 meters - KØQOT, Al, at Arlington, Nebraska; Curt and Dean, KØQQL and KØRSY, are two new stations on 6 here in Omaha; KØQFB, Gordon, in Omaha and KØRWX, Jan, in Omaha and KØRWY, Bill, in Omaha. No new stations to report on 2 meters. There was a good 6 meter opening on December 6th from W9 land on east to the east coast. The band was open for two hours in the evening. As far as I can find out, there doesn't appear to be any more openings through the rest of the month. Mac, KØMSS, has been handling quite a bit of Omaha traffic on 6 meters from WØVZJ out at Linwood, Nebraska. Frank,

VZJ, gets most of this traffic over 75 meters and relays it to Omaha via 6 meters.

With best wishes for a happy New Year,

73

John Snyder, WØWRT

(from HAMATEUR CHATTER, Milwaukee R.A.C. Inc., via CQ News)

CHICAGO HAS ANTENNA TROUBLE

Attempting to enforce zoning ordinance violations, the Chicago Building Commissioner is ordering radio amateurs to remove their antennae and if this is not done within five days, a fine of \$200 per day is imposed. Jack Doyle, W9GPI, Central Division Director, reports that Fred Roe, Jr., KN9-KBC, is making a test case of this matter and Jack has summoned the league's counsel, Paul N. Segal, who is now working with the Chicago Area Radio Club Council on the action.

FOR SALE:

HQ-150 rcvr and Viki(C) xmtr. Like new or better.

Also a bug; original deluxe. Write: Gary Tighe, ex K2V2N/Ø, 2909 W. Dak St., Sioux Falls, S.D.

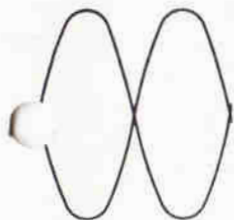
Single Sideband---Part 8

This month you will find in these pages the circuit of the basic exciter portions of the complete SSB transmitter.

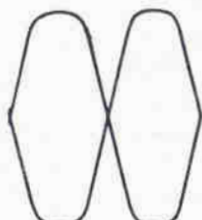
This is the first part of the exciter, the portion where the carrier and one sideband are suppressed. The rest of the unit will appear in Ham Hum in following issues. Following is an explanation of the operation of the circuits presented this month.

A signal is generated in V-5A, the carrier oscillator. A signal of 3 volts, peak to peak, is required at the grid of V-6. If the signal exceeds this value, try increasing the value of C-4. If V-5A will not oscillate, decrease the value of C-4. V-5B is a cathode follower and provides a buffer between the oscillator and the balanced modulator. R-4 is the carrier insertion control, and should be placed on the panel of the transmitter, so that carrier can be inserted for tune-up. The wire which runs from C-6 to R-11 should be shielded, and the shield grounded at both

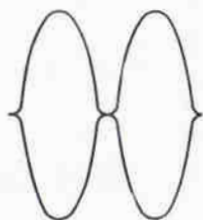
ends. C-6 should be connected to the slider on R-4, and R-11 should be connected to the gridpin of V-7. V-6 is the sheet-beam tube balanced modulator. R-10 is the carrier balance control, and should be adjusted so that an absolute minimum of carrier is left in the signal after the adjustment. This is a chassis control. The mechanical filter, which suppresses one sideband, while passing the other is the next element in the circuit. If at all possible, secure the F455J-31 model. This is the upright style filter, and will take much less chassis space than the older F455D-31 model. V-7 is an I.F. amplifier. It brings the signal output of the filter up to a level which is useful for mixing in the following stage, to be described next month. The control in the cathode of V-7 is a linearity control. After the unit is built, feed an audio signal, at about 1,000 cycles per second, into the mike input, and adjust the carrier insert control until you see a picture like the one below



Oscillogram of a two-tone test signal.

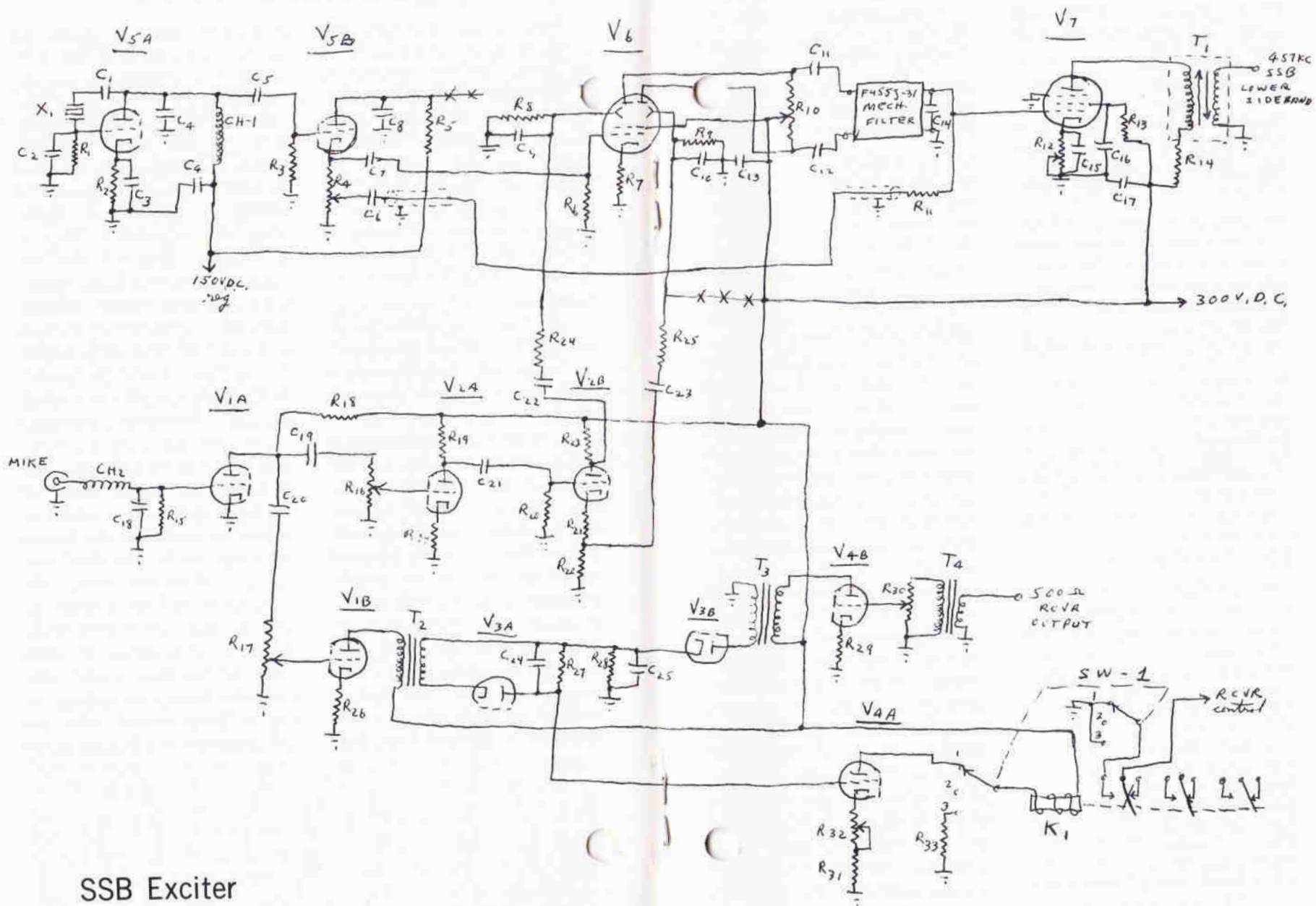


Flattening caused by overdrive.



The distorted pattern obtained when the bias voltage is incorrect.

(Continued on page 10)



SSB Exciter

All capacitors are 600v, and are ceramic, unless otherwise specified
C1, C3, C8, C13, C15, C16, C17,
C19, C20, C21, C22, C23-0.01 MF
C2, C18 - 50 MMF
C4, C5 - 200 MMF
C6 - 1000 MMF
C7 - 250 MMF
C9, C10 - 100 MMF
C11, C12 - 250 MMF silver mica
C14 - 100 MMF silver mica
C24, C25 - 0.1 MF, 200v molded

All resistors $\frac{1}{2}$ watt unless otherwise specified, all carbon composition unless otherwise specified

All controls have a linear taper

R1, R3, R11 - 100 K ohm
R2 - 220 ohm, 1w
R4 - 10K ohm, Carrier insert control, Mallory U-20
R5 - 1000 ohm, 1w
R6 - 8200 ohm
R7 - 390 ohm
R8, R9 - 150K ohm
R10 - 3000 ohm, Carrier balance control, Centralab type AB, with AK-1 shaft
R12 - 1000 ohm, linearity control, Mallory, U-4
R13, R33 - 47K ohm, 2w
R14 - 10 K ohm, 2w
R15 - 10 megohm
R16 - 500 K ohm audio gain control, Centralab type AB, with AK-9 shaft
R17 - 500 K ohm vox gain control, Centralab type JL-504
R18, R19, R20 - 270 K ohm
R21 - 4700 ohm
R22 - 200 K ohm
R23 - 470 K ohm
R24, R25 - 10 K ohm
R26, R31 - 1800 ohm, 2w
R27 - 1.5 megohm
R28 - 2.2 megohm
R29 - 1,500 ohm, 2w
R30 - 250 K ohm, QT gain control, Centralab type JL254
R32 - 2,000 ohm, 5w, vox delay control, Centralab type WN-202
R34 - 3300 ohm

CH1, CH2 - 2.5 mh, RFC

T1 - Miller 12-C2
T2, T3 - Stancor - A63C
T4 - Merit - A2924

SW-1 - Switchcraft 3037L or Cer
lab PA300 and PA-35
K1 - Voice control relay

V1, V2 - 12 AX7
V3 - 6AL5
V4, V5 - 12AV7
V6 - 6AR8
V7 - 6AV6

X1457 KC Crystal

(Continued from page 7)

on an oscilloscope. The scope will be connected to the grid of V-7 then adjust the linearity control until the picture looks the same when the scope is connected to the output of T-1. R-12 is a chassis control, and once set, can be forgotten. V-1A is the first audio amplifier. R-16 is the audio gain control, and is placed on the panel. V-2A is the second audio amplifier, and V-2B is a phase splitter, to provide a push-pull signal for the balanced modulator. V-1B is the voice control amplifier. R-17 is the VOX gain control, and is placed on the chassis. It will have a screwdriver adjustment, as will R-10, R-12, R-30, and R-32. T-2 and T-3 are small interstage transformers. They can be mounted on the same centers, using the same screws, by placing one above and one below the chassis.

V-3A rectifies the VOX signal, the C-24 and R27 form a filter to provide a more steady D.C. voltage. The D.C. output of the VOX rectifier is negative. The 500 ohm output of the receiver is connected to T-4, which is a line to grid transformer, and amplified in V-4B. This receiver signal is then rectified in V-3B, where the output is positive. This combines with the negative output of V-3A, so that when the microphone is NOT spoken into, the sound from the speaker picked up by the mike is amplified, and rectified, and combined with the signal from the anti-trip channel, to produce zero voltage on the grid of the relay control stage, V-4A. When the mike is spoken into, the signal is amplified and rectified, and produces a net negative voltage of the grid of V-4A, so that the relay will drop out, thus turning the exciter on and silencing the receiver. It was decided to have the relay drop out, instead of pull in, to turn the exciter on, because less time is required for the relay to drop out, thus insuring that the exciter turns on in the minimum length of time after the mike is spoken into. R-32 is adjusted so that the relay holds in about $\frac{3}{4}$ of a second after you stop talking. This insures that the unit doesn't turn off between words

and sentences. The switch, SW-1, controls the operation of the relay. Position 1 is normal voice control operation. Position 2 opens the D.C. return circuit of the relay, and causes the relay to drop out, thus turning the exciter on. Position 3 causes the relay to pull in, thus insuring that the relay will remain on standby. The switch is shown wired for receiver control. The line marked for receiver control should be run to the ground end of the R.F. gain control in the receiver. The line will then be opened when the exciter is on, so that the R.F. amplifier will not operate, and will be grounded when the exciter is on standby, so that the R.F. amplifier will operate. This connection is brought out to the octal socket on the back of Hallicrafters models SX-96, SX-100, and SX-101. The author has found this to be an excellent method of controlling the receiver. The other circuits controlled by the relay will be shown in forthcoming articles in this series. Not shown on the diagram are bypass capacitors on the filaments of V-5 and V-6. Capacitors, the same as C-1, should be placed at the socket of each of these tubes. This will prevent carrier feed-through by way of the filament line. The entire circuit shown here should be built on one chassis. A 13" x 17" x 2" main chassis could hold the

(Continued from page 11)

power supply, and serve as a mounting structure for the sub-chassis. All layout will be left up to the individual constructor. Keep in mind, however, that shielding is very important. A shield should be placed directly across the mechanical filter socket.

NOTE: Due to an error of omission, the listing of the Potter and Brumfield model KCPI4 relay was not listed last month. This relay might be easier to obtain than some of the others mentioned.

NEXT MONTH: The sideband selecting oscillator and mixer, and the Power supply.

(from CQ CHESTER COUNTY,
Chester County E.C.N., via
CQ News)

TALL TALES

TVI - Down Wilmington way there once was a ham with TVI problems. Although he explained to his neighbor as nicely as he knew how, the proper procedure for curing the condition, she continued to complain. One night while the ham was on the air, his mother received a phone call from the irate neighbor. "You tell your son he doesn't need to use a phony name to try and fool me. He can call himself William Charlie Yoke all he wants to, but I know who it is!"

OFFICIAL BULLETIN NR 679 FROM ARRL HEADQUARTERS WEST HARTFORD CONN NOVEMBER 13 1958 TO RADIO AMATEURS BT

Many requests for schedules of stations sending on the air code practice have been received at ARRL. All amateurs transmitting plain language practice material are requested to file information with the ARRL Communications Department indicating frequency, days of the week, speed range, and times so this can be passed along. In setting up schedules care is suggested to avoid conflict with net frequencies and times. To indicate your schedule ask for Form CD 62 which will be sent free on request AR.

Editor, HAM HUM:

I use the JAN-CCB phonetic list.

Thanks for sending copies of HAM HUM. It is one of the really outstanding club papers in the U. S. Keep up the good work.

73,
Lighthouse Larry
General Electric
Bldg. 267
Schenectady, N. Y.

(from ETHER ECHOES, B&F
R.C., via CQ News)

THE HISTORY OF RADIO: by J. Boardman

Radio has a long and interesting history, and every man should know a little about it. In 1827, a man by the name of Savary found that a steel needle could be magnetized by discharged from a jar (a Mason jar of course). In 1837, ten years later, a patent was taken out by Cooke and Wheatstone, both of London, for the electric telegraph. Also, for the same thing, by Morse of the U.S. In London, Henery produced the first high frequency oscillations. In 1867 Maxwell wrote an article for the Royal Society of London about his theory of electromagnetism, which in the following six years developed more fully. His theory is being used in all phases of radio to this day (good old Max).

In 1887 Hertz proved his theory that magnetic waves and the waves of light and sound operate in unison. His theory also is used in radio today.

It was December 12, 1901, when the late Marconi received, near St. Johns, Newfoundland the first radio signal ever transmitted without wires. This experiment represented six years of hard work. It was transmitted from Polhu, England where Marconi had another station set up.

On March 30, 1903, the first radiogram ever to be sent across the ocean was published in the Times of London. A little later De Forest patented the first rectifier tube. Radios on boats at this time were highly recommended. When the radioless Titanic was sunk, and all of the 1572 people aboard were killed, it became a necessity.

The World Wars stimulated people to find more uses for radio, and up to now radio has been advancing very rapidly. What will be the future uses of radio? Well, only time can answer that question.

OFFICIAL BULLETIN NR 681 FROM ARRL HEADQUARTERS WEST HARTFORD CONN DECEMBER 4 1958 TO ALL RADIO AMATEURS BT

On League request for cw segments at the low ends of the 50 and 144 Mc bands, the Federal Communications Commission has taken action granting 100 kc exclusively cw segments but locating them at 50.9 through 51.0 Mc and 147.9 through 148.0 Mc. These subbands are restricted to cw operation effective January ten. AR

Much prefer ICAO alphabet. It is hard to learn and the words are difficult to say. None of the words will go together in these nice little phrases the phonetic kids love so well thus eliminates phonetics unless necessary to maintain communications. With everyone using the same identical words and the words being so distinctive that you can understand them even if you only hear part of the word it is possible to copy traffic when the stuff is ruff, even if you have to take it one letter at a time. Didn't mean to write a book, but you were wondering if anyone reads your stuff, and I do. CUL SGD

WØOFW

**OFFICIAL BULLETIN NR 682
FROM ARRL HEADQUARTERS
WEST HARTFORD CONN
DECEMBER 18 1958 TO ALL
RADIO AMATEURS BT**

FCC has amended amateur rules effective January 30 authorizing U S amateurs to operate maritime mobile on any band between 7 and 148 Mc while located within boundaries of Region Two as defined in international regulations. See page 60 April 1958 QST for text of rules now made final and specific boundaries for Region Two. In general terms Region Two in-

(Continued in next column)

cludes North and South America and adjacent waters. The 21 and 28 Mc bands continue available for maritime mobile operation in other areas AR

Here is one vote to keep Harlan's articles on SSB continuing. They are tops.

Hope to build a SSB Xmitter with info furnished by his articles.

Ed Gutmann

WØCQX

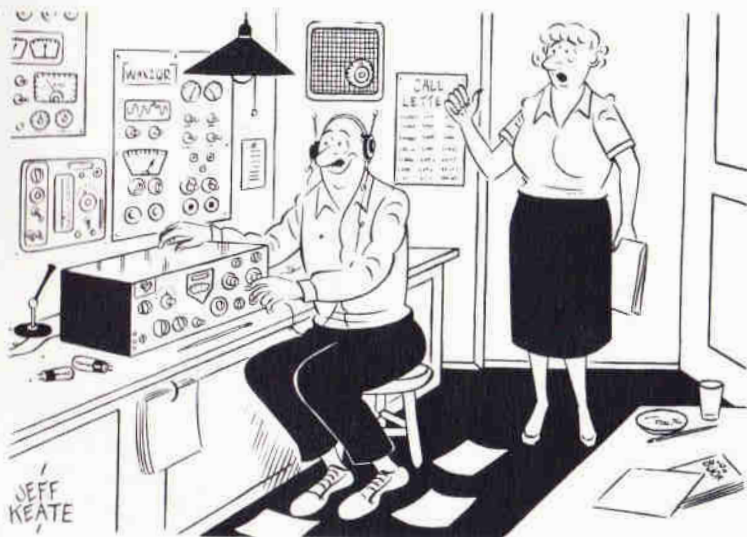
**OFFICIAL BULLETIN NR 682
FROM ARRL HEADQUARTERS
WEST HARTFORD CONN
DECEMBER 11 1958 TO ALL
RADIO AMATEURS BT**

All amateurs who can work 50 Mc or higher bands are invited to participate in the Twelfth Annual ARRL VHF Sweepstakes to be held January 10 and 11. Certificates are offered to the leader in each ARRL Section and to winning operators in clubs with three or more individual entries. A gavel will be presented to the club whose members post the top aggregate score. Special awards may be earned by Novice and Technician licensees. See page 66 of December QST for complete 1959 VHF Sweepstakes rules AR

RESULTS - CQ 10¢ CONTEST

Standing	No. QSO's	Name	Publication Subscribed to -
*1	185	Andre Myron K7BRE	ETHER ECHOES
2	164	Dorris "Butch" Singer K91XD	Editor, BISON
3	128	Thomas Stogdill W9YHE/9	BISON
4	109	Arnold I. Robinson K3ANV	SHORT SKIP R.C. BULLETIN
5	90	C. A. Rhines W7VIU	RAGCHEW
6	47	Clarence Kropinak VE6UP	RF
7	45	D. Buckingham VE6VI	RF
8	37	Wayne Brown W2TPX	CHIRPY

* - unconfirmed winner. There you have the top 8 scores. Others too low to include. If you had more than 185 QSO's in Oct./58, and didn't enter the contest, kick yourself, 'cause you might have been the winner of a 1 year CQ subscription.



"You haven't picked up a space satellite, Ed... that constant beep you hear is some fellow honking for daughter to hurry up!"

AK-SAR- BEN RADIO CLUB INC.
P. O. BOX 626
OMAHA, NEBRASKA

NEXT MEETING
AK-SAR-BEN 4-H BUILDING
AK-SAR-BEN FIELD
JANUARY 9, 1959
8:00 P. M. SHARP