



# HAM HUM

Published by  
AK-SAR-BEN RADIO CLUB, INC. - Omaha 1, Nebr.  
Post Office Box 291 - Downtown Station



January 1965

Vol. XV  
No. 1

December 28, 1964

Enclosed are photographs of our '64 Christmas party, courtesy of Erv Heinz, WAØEEM.

I was very pleased to note the increase in reader contribution in the December issue of Ham Hum, so I would urge all members to keep up the good work and be sure to use the postage-free cards which you get in every Ham Hum. Remember, this is your magazine and we welcome your contributions, large or small, even if you don't think you have spectacular writing ability, send your info in anyway. Especially needed are good workable "pet" circuits you might have or perhaps a technical article on any subject from antennas to zener diodes. I wonder if any Omaha ham has done any work with frequency synthesizers? The state of the art on SSB keeps improving all the time and this is one technique for getting superior stability. A few articles have appeared in T.

About the only thing we try to steer clear of are articles or letters of a highly controversial nature - we feel that these things create much dissension among the

amateur ranks and that these discussions are better left to the big 3 ham publications.

I quote from an Office of Civil Defense bulletin dated Nov. 4, 1964, "Members of the Radio Amateur Civil Emergency Service helped organize rescue and relief activities until normal land-line communications were restored." This quote is in reference to the Anchorage, Alaska earthquake. It's nice to know that the radio amateurs are appreciated at the National level.

The new amateur radio commemorative stamps are on sale at most post offices. Be sure to get a supply. Also, now is the time to send in for your call letter auto license plates if you don't already have them. By all means if you have call letter plates on the car, please show good example in your driving. Bob Stratbucker WØHZE, and others back in 1955 went to a lot of work to get this privilege for their fellow hams so it is worth taking advantage of this.

(See photos pages 10 & 11)

John, WØWRT

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



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**AK-SAR-BEN RADIO CLUB, INC.**  
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Omaha 1, Nebraska  
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## HAM OF THE MONTH

Our Ham of the Month is Jim Droege, WØYCP (young crack-pot) his phonetics, not ours, hi! Jim is shown here with his home-brew 6 meter transceiver at the 1963 club picnic.

Jim confines most of his present activity to 6 meters although I first became acquainted with him when we were both working 10 meter mobile around 1956.

Jim works in the mobile communications field with the local Motorola agency and has recently put an old model FM unit on the 2 meter band. Maybe we'll get some interest in 2 meter FM yet!

Unfortunately, Jim has allowed his club membership to lapse, so we're going to use this as a form of coercion to get him signed up again.

73,  
John  
\*\*\*\*\*

**APPLY FOR YOUR HAM LICENSE PLATES NOW IF YOU HAVE NOT ALREADY DONE SO. DON'T FORGET TO TAKE YOUR HAM LICENSE WITH YOU - NOT A PHOTOSTAT.**

2



Dear Dick:

Want to wish you and all members of AK-SAR-BEN Radio Club a very Merry Christmas and a happy New Year! May all your problems be small, (printing and otherwise.)

Thanks for reprinting "Guest Editorial" by W4SDR in your Dec Ham Hum. Am sending issue to W4SDR. Am sure he will be happy to see it also.

73 Andy Clark  
W4IYT, Ed. Fla. Skip  
\*\*\*\*\*

NEW BOARD OF TRUSTEES FOR  
1965

President

Edmond E. Donze, WØYEV  
(1965-66)

Vice President

Frederick Fischer, Jr., WØEGP  
(1965)

Past President

Louis A. Cutler, WØVLI  
(1965)

Executive Council

Ray O. Dappert, Jr., KØKQK  
(1965-66) - Treasurer

Dick L. Eilers, WØYZV  
(1965) - Secretary

Frank Fernald, WØBTE  
(1965-66)

Robert W. Gamble, KØJBS  
(1965)

Alvin H. Hofgaard, KØTUS  
(1965-66)

(Executive Council - continued)

Fred E. Kujawa, KØETA  
(1965-66)

Alan H. McMillan, WØJJK  
(1965)

John W. Orr, WØPHW  
(1965)

At the Board meeting on December 22, 1964, Ray O. Dappert, Jr., KØKQK, was elected Treasurer, and Dick L. Eilers, WØYZV, was re-elected Secretary. Also, the election of Edmond E. Donze, WØYEV, as Club President created a vacancy on the Executive Council and the Board selected Robert W. Gamble, KØJBS, as his replacement, which selection was approved on January 8, 1965 at the membership meeting.

Past Presidents of the Club

1945 - N. P. Nelson

1946 - John Leeder

1947 - Art Gaeth

1948 - Herb Curry

1949 - Elmer Stein

1950 - Doc Becker

1951 - Earle Olson

1952 - John Orr

1953 - Ray Strange

1954 - Frank Cooper

1955 - Art Stadler

1956 - Dick Eilers

1957 - Curt Hicks

1958 - Ed Gutmann

1959 - Dave Hollander

1960 - Max McKinney

1961 - John Droescher

1962 - Royal Enders

1963 - Joseph F. Berounsky

1964 - Louis A. Cutler

The President has announced establishment of the following committees and individuals who have agreed to serve:

AREC

Chairman to be appointed

Dick L. Eilers, WØYZV, Advisor

COMMUNITY RELATIONS (TVI)

Lewis J. Tourek, WØPIZ, Chairman

Fred E. Kujawa, KØETA, Advisor

PUBLIC RELATIONS

Hugh L. Tinley, KØGHK, Chairman

Dick L. Eilers, WØYZV, Advisor

## INTERGOVERNMENT RELATIONS

John W. Orr, WØPHW, Chairman

## MOBILE

Jack T. Barnett (Barney), WAØCMK,  
Chairman

Frederick Fischer, Jr., WØEGP,  
Advisor

## PUBLICATIONS

Dick L. Eilers, WØYZV, Chairman

John D. Snyder, WØWRT,  
Vice Chairman

Ervan D. Heinz, WAØEEM,  
Photographer

## TECHNICAL

Joseph F. Berounsky, KØQDB,  
Chairman

Frank Fernald, WØBTE, Advisor

## MEMBERSHIP

Louis A. Cutler, WØVLI, Chairman

Harold E. McClenahan, Jr., WAØDGA  
Edward Gutmann, WØCQX

## PROGRAM

George R. Cherney, Jr., KØMGX,  
Chairman

Alan H. McMillan, WØJJK, Advisor  
Peter C. Trapolino, K2RIT

## ARRANGEMENTS

Lawrence F. Caccomo, WØNMN,  
Chairman

## REFRESHMENTS

Alvin H. Hofgaard, KØTUS,  
Chairman

## CLUB EQUIPMENT

Glen W. Swanson, KØJQX, Chairman  
Dick L. Eilers, WØYZV, Advisor

## FIELD DAY

Frank Fernald, WØBTE, Chairman  
Robert W. Gamble, KØJBS  
Tom Ladd, KØMKT  
R. J. Foster, WØWRE

## PICNIC

Chairman to be appointed

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## NEXT MEETING

Next meeting of the Ak-Sar-Ben Radio Club, Inc. will be held at the 4-H Building, Ak-Sar-Ben Field, at 8:00 P.M. on Friday, February 12.

Through the efforts of our Program Committee, and specifically Peter C. Trapolino, K2RIT, who has recently come from Rochester, New York, we will have a movie prepared by the boys back there on the early days of amateur radio. This movie was specially prepared by a group who has had a long time interest in gathering examples of early transmitters and receivers and who have prepared this specifically for other clubs to use in their meetings. The movie is reputed to be very interesting. You have been reading about the early days in QST and have been seeing the amateur radio stamps commemorating the 50th anniversary of amateur radio. This will be your chance to see the "back in the good old days" type of gear.

Meeting will be followed by the usual eyeball QSO and refreshments.

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Ft. Lauderdale, Fla.

12-15-64

Hi-

A very Merry Christmas to you all from the Broward County Amateur Radio Club. Hope to see Dick Eilers in Miami again this year at the Hamboree. We enjoy Ham friends very much.

Jim Wilson, WA4RXG

Secretary

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## DECEMBER MEETING

We had a good turnout of members, families, and guests at our December meeting. No doubt our mild weather was a contributing factor.

The new Board of Trustees for 1965, elected at the annual meeting, is listed elsewhere in this issue. Outgoing President Cutler introduced the incoming President Donze, the new Vice President Fischer, as well as the new members of the Executive Council.

President Cutler called attention to the fact that October, November and December 1944 were charter member months of our Club and that the December 1964 meeting marked the 20th anniversary meeting. The following charter members are still members of the Club: Arthur R. Gaeth, WØFQB; Edward Gutmann, WØCQX; and Henry E. Velte, WØABI.

John Orr, WØPHW, gave an interesting resume of the Ak-Sar-Ben Radio Club beginning with

January Meeting Photos (more Page 8)



Cutler presents gavel to Donze  
(Photo by WAØEEM)

October 1944 and ending with September 1945.

During the meeting the Junior Ops were entertained by Christmas movies. Following this Santa Claus arrived in the person of Ken Borcher, KØSCE, who presented them with gifts and passed out goodies.

After the meeting was adjourned, entertainment was provided by Fred Crouter, WAØGNT, who performed as a ventriloquist, and in addition Christmas carols were sung to the accompaniment of accordionist, Ron Bauers. The usual exchange of gifts by members and guests was held and refreshments were enjoyed by all.

Sincere thanks to all those who gave of their time and efforts to make this meeting a most enjoyable one.

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Dick Eilers, WØYZV, presents  
plaque to Fred E. Kujawa, KØETA,  
winner of the CQ Ak-Sar-Ben Contest.  
(Photo by WAØEEM)

Jan. 6, 1965

Mr. Dick Eilers,  
Editor, HAM HUM  
Ak-Sar-Ben Radio Club

Dear OM:

I have received a communication from W4ID, Col. A. R. Marcy, USA Ret., 461-3rd Ave., Sea Park, Eau Gallie, Fla., 32937, stating that he is researching the field of amateur radio publications and is compiling an encyclopedia of same. He has approximately 1000 different ones listed, some as far back as 1908 and in this connection has asked for assistance in obtaining copies of or information leading to possible acquisition of copies of the following club papers or bulletins published in Nebraska prior to the war:

CORNHUSKER CATWHISKER - published by W9AJD for the Cornhusker A.R.A. in 1932.

NEBRASKA HAMS - published by Roger Hertal in Clay Center, Nebr. in 1931.

The RADIO FORUM - published in Omaha in 1934. He has turned up the Dec. 1934 issue. Needs more.

STATIC - published by W9HDC (Geo. Lahrs) in Dakota City in 1933.

THE RADIOIST - published in Omaha in 1920 by the "International Society of Radioists." Mentioned in QST, but no other information uncovered on it.

In the hope that some information might be possibly uncovered by the readers of HAM HUM, would you please publicize the above information in HAM HUM? Anyone having copies of or information

about the above publications can contact Col. Marcy direct or I will gladly relay it on to him.

Any assistance you can give in this matter will be appreciated.

73's

R. E. Veverka,

WØFBB

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## MEETING DATE

The Board has asked that Club members be canvassed via Ham Hum to determine the preference in regard to a meeting night. For a number of years we have held our Club meetings on the second Friday of each month. It has been suggested by some members that perhaps some other night would be more desirable. Please - right now while you are thinking about it - write your choice of meeting nights on the card enclosed along with any items of a personal nature (about you, your family, your ham shack) and send it to Ham Hum, Post Office Box 291, Omaha, Nebraska 68101.

Items, such as:

Pete Trapolino, K2RIT, is sporting a new Galaxie V;

Hugh Tinley, KØGHK, is going to Honduras in February;

Al McMillan, WØJJK, is cleaning up a teletype machine for use at the Red Cross station;

Fred Fischer, Jr., WØEGP, is on SSB 6 meters and promises to go on 2 meter SSB soon.

Don't make the editor do it the hard way. Send information to Ham Hum now and each month thereafter.

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## NEW ADDITIONS TO ROSTER

Dr. Stanley M. Bach, WAØIIX  
9104 Woolworth Avenue  
Omaha, Nebraska 68124  
Phone: 391-6607

John R. Hunt, WØJAY  
27 Wenwood Circle  
Council Bluffs, Iowa 51501  
Phone: 328-3423

Dr. Stanislaus H. Jaros, WAØJKO  
8739 William Street  
Omaha, Nebraska 68124  
Phone: 391-5568

Royce E. Johnson, WAØKIL  
2424 South 46th Avenue  
Omaha, Nebraska 68106  
Phone: 558-4941

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Hi Dick:

I traded off my Ranger II and purchased a new Galaxy III. Having a ball on both CW and SSB.

By the way, I won a certificate from CQ magazine for being tops in Nebraska during last winter's 160 meter CQ Contest, so it was time to make a change. Hi.

CU some day at Club after I get rid of responsibility of being at Church Board Meetings, which fall on the same night as club meetings.

73

Art G., WØFQB  
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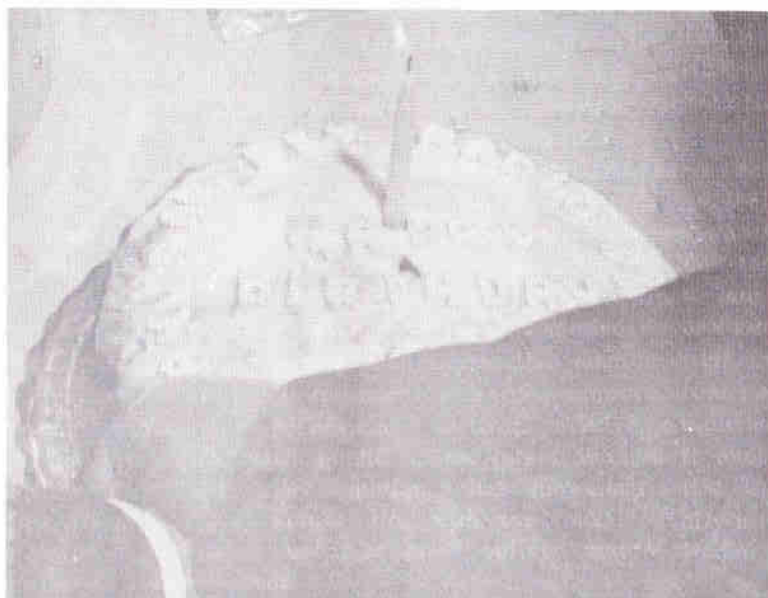
## WANTED

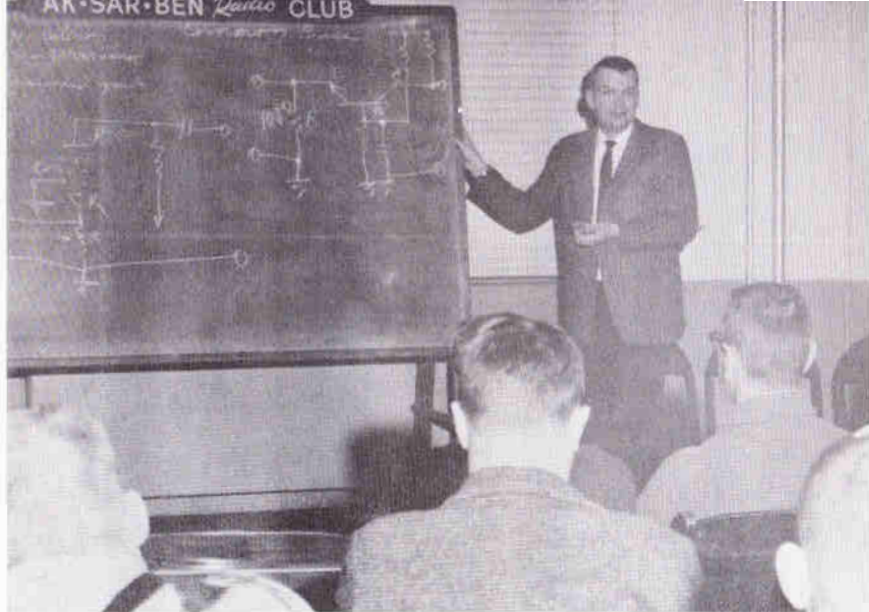
More Personals.

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Thanks to Min Cutler for the Club's birthday cake.

(Photo by WAØEEM)





## JANUARY MEETING

The January meeting of the Ak-Sar-Ben Radio Club, Inc. was held at 8:00 P.M. on January 8, 1965, at the 4-H Building, Ak-Sar-Ben Field.

Our sincere thanks to Clarence Huntley, engineer from Galaxie Electronics, for his talk on transistors. He certainly gave us a better understanding of the use of transistors than most of us had before. He particularly answered some questions that have needed answering for some time for most of us in regard to the differences in the three classes of circuits (common emitter, common collector, and common base) and the reasons for using a particular class. He encouraged us to experiment with

transistors and even showed us how by actually demonstrating the building of an amplifier and showing on a scope the difference in signal as to input and output. At the end of his demonstration he gave each of us a transistor and suggested we take it home and perform similar experiments.

Ham Hum would like to hear from anyone who would care to write up his experiences with the transistor.

Following were approved for membership in the Club and you will find their addresses elsewhere in this issue: Dr. Stanley M. Bach, WAØIIX; John R. Hunt, WØJAY; Dr. Stanislaus H. Jaros, WAØJKO; and Royce E. Johnson, WAØKIL.

(Photos by WAØEEM)





Clarence Huntley

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**OFFICIAL BULLETIN NR 984  
FROM ARRL HEADQUARTERS  
NEWINGTON CONN DEC 17 1964  
TO ALL RADIO AMATEURS  $\overline{BT}$**

A recent CRPL forecast bulletin notes that solar activity will soon be increasing following the sunspot minimum which probably occurred in late summer of 1964. The occurrence of flare producing solar regions will soon be on the increase and associated shortwave fadeouts, SWF, will become a more significant factor in long distance communications. Radio communications may then be abruptly interrupted by sudden large increases in absorption. On the average, communications may be impossible for twenty to thirty minutes after which normal field strength is gradually recovered  $\overline{AR}$

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**OFFICIAL BULLETIN NR 983  
FROM ARRL HEADQUARTERS  
NEWINGTON CONN DEC 11 1964  
TO ALL RADIO AMATEURS  $\overline{BT}$**

The 1964 Sweepstakes has drawn to a close. To date the following high claimed c.w. scores, over 65,000 points, have been received: W4KFC WA4NGO W6KG K4BAI W3FLY W9RQM W3MSR W1JYH W8RSW K0SLD KZ5OP K5RUO W4PTR W9GFF W3GAU K5OCX W6RW K2EIU/5 W3GQF WA5CBL W7TDK K4TEA W2NNL WIBGD WIWPO WIECH W9YT K2ZYR and W3EIS. Claiming over 55,000 points on phone are W7ESK W4KFC W3ZKH K4BAI W9IOP K4LPW K8TIG WA4NGO W7WLL W6KG W7AYY K1DIR K8YCM/5 WA5CBL K1RYT W9RQM K4YYL K9ZBI K0UWZ K8DOC WA0AAD W3PQT WA0ACI K7AQB and W4BVV. High claimed Sweepstakes scores will appear in February QST. Please get your logs in before the December 16th mailing deadline  $\overline{AR}$

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**PERSONALS**

Royal M. Enders, K0LYO, was in the hospital but has now returned home and is on the way to recovery.

Ed Donze, W0YEV, and XYL Maxine became grandparents again with twin grandboys on December 10th.

Frank Ladd, W0BPY, is putting an addition on his building.

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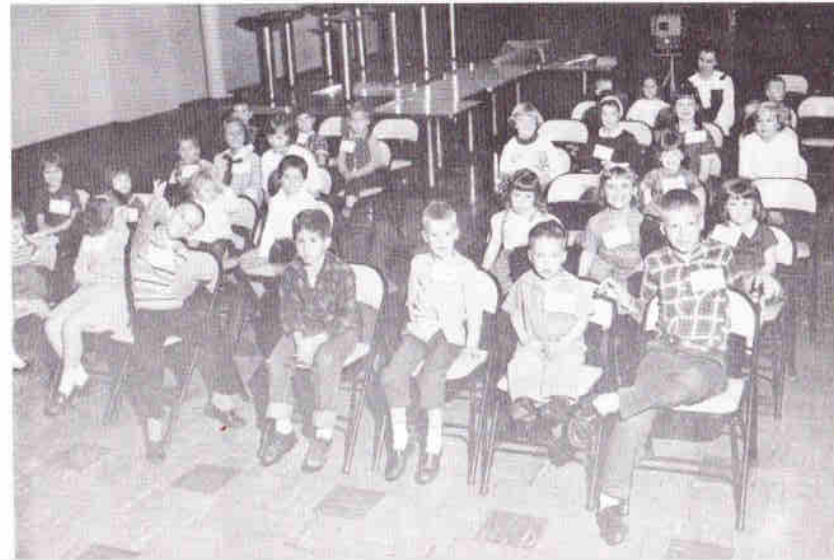


*Christmas*



*Party*

Photos by WØEEM



## UTILITY 5 WATTER FOR 2 METERS (a standby rig you can afford)

Doug DeMaw, W8HHS  
Comaire Electronics

How many times have you wished you had a low powered 2 meter station which could be "fired up" for periods of time when the "Big Rig" was being repaired or modified? How about that small low powered mobile installation? This little rig has only 2 tubes in the R. F. section and will perform well with low voltage power supplies and standard 8 Mc. crystals. Inexpensive TV type tubes are used throughout, thus keeping cost at a minimum. The average ham "junk drawer" should contain the bulk of the smaller components needed to complete the circuit.

Power input measures 5 watts. Power output measured 3.2 watts into a 50 termination. Distances up to 300 miles have been worked with similar power levels, when used in conjunction with a suitable antenna system. (I have copied signals 400 miles away which were transmitted by a very popular "lunchbox" type commercial transceiver of comparable power.)

The unit described can be readily modified for 12 volt mobile use by re-wiring the filament circuit to series connection. The two 6CX8s are wired in series, the 12AX7 is modified for 12 V connection and a 12AQ5 is substituted for the 6AQ5 shown in the modulator section. A mobile power supply delivering 230-260 volts at 100 ma. can be used.

Wiring procedures are the same as used in all VHF/UHF applications. Keep all leads as short as possible, use low loss steatite or ceramic sockets for both 6CX8 tubes, and use ceramic capacitors for by-passing and coupling in the R.F. section. Keep L-3 and L-4 spaced as far apart as proper layout will permit and mount them at right angles to one another, to prevent instability in the P.A. stage. Capacitor "CN" is added between the plate and grid pins of the P.A. stage, to neutralize the final amplifier. Capacitor "C-2" is a 3-30 uufd. compression trimmer, which is used to "load" the transmitter to the antenna.

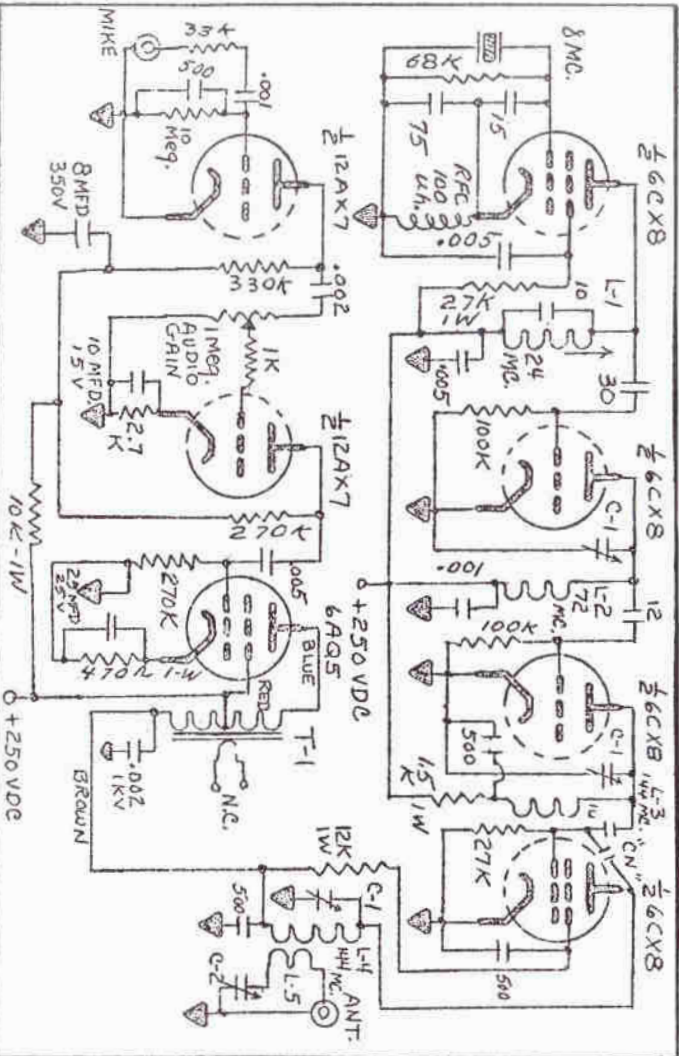
### Adjustment and tune-up

Before "firing-up" the completed transmitter, make certain with a grid-dip meter, that all coils "hit" the frequencies noted on the schematic diagram. Apply plate and filament voltage after attaching the transmitter output to a suitable 50 or 75 ohm dummy load. Tune L-1, L-2, L-3 & L-4 tanks, for maximum output as noted on an SWR bridge, (or for maximum brilliancy, if a pair of paralleled #47 pilot bulbs are used for a dummy load.) The transmitter is now ready to put "on the air." Tune C-2 for best forward power as noted on SWR bridge.

NOTE: It is advisable to isolate the audio/modulator section of the circuit, from the R.F. portion, by placing these circuits at opposite ends of the chassis and adding a metal shield divider between the two sections.

de VHFER

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- "CN", 1.5 uufd cer. cap.
- C-1 , 2.7-19.6 uufd. var. (Johnson 160-110)
- C-2 , 3-30 uufd trimmer.
- T-1 5W P.P. output xfmr. (5K plate to plate)
- T 1 10 TS #20 Ea. on 3/8" Dia. Iron slug form. (CW)

- L-2, 8 TS #14 bus 3/8" dia. x 1/2" long (air wound.)
  - L-3, 5 TS #14 bus 3/8" dia. x 1/2" long (air wound.)
  - L-4, 4 TS #12 bus, 1/2" dia. x 1" long (air wound.)
  - L-5, 2 TS ins. wire in cold end of L-4. (3/8" dia.)
- All Res. 1/2W unless otherwise noted.

## THE 6AN5 TUBE (a neglected VHF Gem)

The 6AN5 is a miniature, 7 pin base, beam pentode tube capable of 4.25 watts of R.F. output at 152 Mcs.

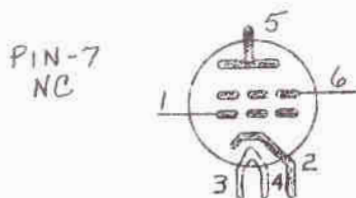
The physical dimensions of the 6AN5 are comparable to the 6AU6, 6BA6 and 6C4 types.

This remarkable tube was designed for R.F. use and has been available for nearly 15 years. My attention was called to this very fine tube while connected with the University of Michigan's Willow Run Research Center in 1951. The 6AN5 was used in many computer applications with which we were working. Due to its being of the miniature species and because of its rugged electrical nature, it was an ideal choice for our missile guidance equipment. Yet, few amateurs are aware of its existence. The 6AN5 has nearly identical base connections to the 6AQ5. Its filament current and voltage are the same. This makes it compatible to the 6AQ5 in series filament hook ups for 12 V mobile use. The 6AQ5 can be used for a modulator and the 6AN5 as an R.F. PA.

These tubes are available through most dealers handling surplus and used tubes. I've seen them listed as low as 90 cents each. The 6AN5 delivers nearly as much output as the larger 5763 type. My experience has shown a longer tube life with the 6AN5, when used at rated voltage and current.

FIL. 6.3 V @ .450 amps.  
PLATE VOLTS 250 VDC Max.  
SCREEN VOLTS 120 VDC  
SCREEN CUR. 11 Ma.  
GRID #1 -45 VDC  
GRID #1 2 ma.  
PLATE CUR. 32 Ma.  
POWER OUT 4.25 Watts

The above are class C ratings.



de Doug DeMaw,  
W8HHS

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OFFICIAL BULLETIN NR 986  
FROM ARRL HEADQUARTERS  
NEWINGTON CONN DEC 31 1964  
TO ALL RADIO AMATEURS BT

With the approach of the ARRL International DX Competition, United States amateurs are again reminded that the following countries object to communications between their amateurs and those of other countries. Cambodia, Indonesia, Viet Nam and Thailand forbid such radio communication. The prefixes to avoid are XU PK JZØ 3W8 and HS. Canadian amateurs additionally may not contact Laos XW8 and Jordan JY AR.

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## NEBRASKA NETS

It might be noted that during any test or actual emergency situation most of these networks will be activated and all Amateurs wishing to help are asked to *stand by* on these frequencies for whatever assistance may be required of them.

3.525 Mc.	Nebr. CW (NEB) Net	Daily	7 pm est
3.782	Nebr. AREC CW (NACN) Net	Tues.-Thurs.-Sat.	6 pm
3.850	Western Nebr. Net	Mon. thru Sat.	8 am
3.982½	4 Nebr. Nets	Daily	7:30 am, 12:30-5:30-6:30 pm
28.600	Sarpy Co. AREC	Wed.-Thurs.	8 pm
50.4	Lancaster Co. AREC	Thurs.	7 pm
50.478	Sarpy Co. AREC	Sun.	7 pm
144.125	Dodge Co. AREC	Mon. & Fri.	9 pm
145.350	Sarpy Co. AREC	Thurs.	9 pm

Thank you

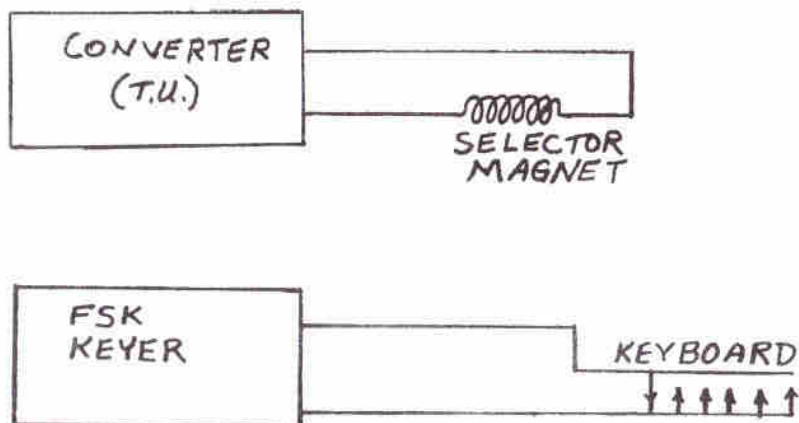
Larry L. Abbott KØJXN/WØHYD, Nebr. SEC

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## TECHNICAL DEPARTMENT

by Lin Holmes, WØMDL

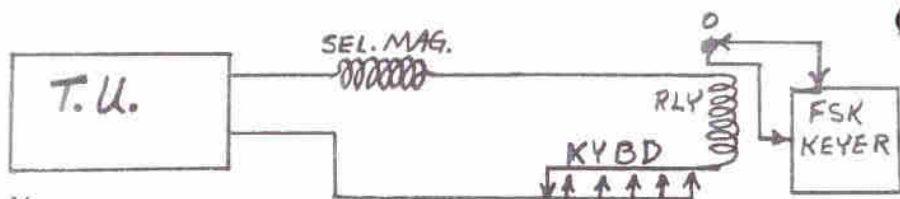
Following are a couple of ways to tie your equipment into a simple trans-receive setup which is easy to operate. Follows the most simple system.



This is the simplest form of station control. It requires no switching when going from transmit to receive and vice-versa. It also requires no extra relays or other parts. However for all this simplicity you must pay for in extra effort. In this case the extra effort comes in that your local copy (seeing what you are saying) comes from tuning your receiver to your transmitting frequency and

monitoring yourself. This is fine if you and the other fellow are on the same freq, but if the frequencies are different by more than a hundred cycles you must re-tune when going to transmit and back. It has one advantage over some other types tho, in that you can be sure that you are actually sending and not putting out just a plain carrier.

### A MORE SOPHISTICATED CONTROL.



The main difference in the two circuits is the method of keying the selector magnets for local copy. Instead of relying on the T U to give local copy we now get it by directly keying the current to the selector magnet with the keyboard. This is fine except a method of operating or keying the FSK keyer must be obtained. One way to do this is to hook another relay in the circuit so that it is keyed at the same time. Then we take the contacts of this relay and key the diode keyer with them. This way we get local copy direct and still are able to key the transmitter.

There are a couple of things now that must be watched in this circuit that weren't in the other one.

The first is that the relay that is used to key the FSK keyer must be a fast operating one and must be capable of going back to the un-operated side quickly with no power. An ordinary relay just won't work here.

The other factor to watch for is that the converter or T U must stay in the mark condition during the transmit position in order to supply a current to operate the selector magnet and relay. Any interruption of the current by the converter will add errors to the system. Normally this condition of mark will be obtained if the receiver is muted fully during transmit.

I realize that the above descriptions are brief, but it is difficult to thoroughly describe the circuits without going into

many pages of description. At this time I feel that those of you who are quite interested in RTTY to buy a copy of "The New RTTY Handbook" which is now available locally. Another very good publication that is a monthly is the "RTTY" which can be obtained by sending \$3.00 for a year's subscription to "RTTY, Inc." 372 West Warren Way, Arcadia, California. Here's hoping that the RTTY articles have been of some help and interest.

73, Lin.

de Splatter, Minneapolis

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**OFFICIAL BULLETIN NR 988  
FROM ARRL HEADQUARTERS  
NEWINGTON CONN JAN 14 1965  
TO ALL RADIO AMATEURS BT**

February presents an excellent opportunity for every amateur to test his frequency measuring skills by taking part in an ARRL Frequency Measuring Test. WIAW will transmit signals for measurement on February 12 at 0230 and 0530 GMT. This will be the evening of February 11 at 2130 EST on approximately 3510 7047 and 14,137 kc. A second series of test signals will be transmitted three hours later on about 3522 7055 and 14,059 kc. Each participant will receive an individual report comparing the accuracy of his measurements with those of a professional frequency measuring laboratory. Further FMT details will appear on page 86 of February QST AR

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## SWR vs HARMONIC ENERGY

by  
Saxton Products, Inc.  
Bronx, New York

A number of amateur radio operators, in their search for a theoretically ideal 1:1 standing wave ratio, have tried every practical means to achieve this condition. Yet, all efforts tried, ended in failure. SWR readings as high as 2.5 to 1 (or greater) have still remained, even though a perfect match was secured at the antenna feed point and between transmitter and line. Where then must we look for the solution to this commonly experienced problem?

No doubt your first impulse would be to replace the feedline, due to the false assumption that it was defective. Or, maybe your SWR bridge is the culprit! The latter condition could in rare circumstances be true. Do not overlook the possibility of improper balance in your SWR bridge pick-up circuitry. Some home constructed bridge units do not balance properly, due to non-symmetry of the physical assembly, or because of poor matching between termination resistors and/or detecting diodes. Commercially built units seldom produce faulty readings.

But let us assume that all instrumentation is functioning as it should. Assume further that we have matched our antenna to the feedline, in the best possible manner. Similarly, we have matched the transmitter output circuit to the coaxial or balanced feeder

system. We have now done all that is commonly necessary to achieve the much sought after 1:1 match. Instead, we have a hypothetical reflected power level which reads 2.3:1 on our bridge. At this point we must consider the energy which we are taking from our transmitter and feeding to the antenna system. Is this energy completely of the fundamental nature as we have assumed it to be? The answer is probably, "no." Even though a TVI problem does not exist, harmonic energy could be present in such quantity, that it is showing up as reflected power on our SWR bridge indicator.

Energy which can not be absorbed and radiated by the antenna system, will be reflected back down the line and create this false standing wave indication. Due to the fact that the antenna is cut for a specific frequency, any energy (harmonic or sub-harmonic) removed from the antenna's point of useful resonance, will not be accepted by the antenna system.

The solution: Reduce the harmonic content of the transmitter's output with a suitable harmonic filter of good design. Even expensive, commercially built transmitters have been guilty of high harmonic output. Your problem may not be in your antenna. You could be the victim of harmonic energy.

de VHFer

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## ONE SIXTY METERS

Dave Hayden W4WHK

For a long time Florida amateurs had no 1.8 Mc. band. There are some who will complain that we still have practically no band, what with the narrow 25 kc. segments, power limitations, QRN problems, LORAN noise, and other factors. However, there is a band down below that 80 meter spot, and an interesting one at that. Short haul QSO'S for traffic or ragchewing perhaps up to 300 miles are almost always reliable during the nighttime hours. Something you won't find every evening this time of year on 75 or 80 meters. In addition there is long skip - long, that is, for this band, sometimes in excess of 1000 miles. You can also find DX, perhaps not as easily as you do on the higher frequencies, but it's still there, and it can be worked. Don, K4FMA, in Miami, worked across the pond a couple of times last year. Some of the countries in Europe have a power limitation of only 10 watts, so you see, we're QRO here with our big 25!

As a relative neophyte on this band, with the 1963 winter season as my first, several things were apparent:

(1) Transmitting gear is relatively easy to build or convert. My first attempt at a transmitter for 160 is a bit of a mess, but at least there are no worries about short leads like there are on two meters! I have worked several hams who have plus ARC-5 transmitters, which are simple to modify, accurate and stable. It also seems to me that other home-brew, surplus or kit gear can be modified to work on this band without too much trouble.

(2) Receivers aren't an insurmountable problem. The general coverage types do a good job, and the ones that do not cover 160 can be fixed up with a simple converter. I used a borrowed 75A2 last year, but finally converted my 2.5 - 20 Mc. Super Pro to 160 with little difficulty. More sophisticated circuits, such as those for LORAN noise reduction, can be used by those so inclined.

(3) Antennas are a real problem, and this may be one of the major drawbacks to operation on this band. A quarter wave here runs about 133 feet, and is no small matter to the average city-lot ham. However, it is surprising what will work effectively. My first attempt at an antenna was a chunk of nr. 30 wire about 80 feet long fed against ground, run in random fashion up a tree, and it did work. Usually, if the ham has a place for an 80 meter antenna, something can be arranged for 160. I intend to elaborate on antennas in my next column.

I will be glad to schedule anyone. I can be reached on QFN 3650 at 0300Z, or at home, 630 River Road, Orange Park. WAFC - 160 anyone? 73,

de Florida Skip

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**OFFICIAL BULLETIN NR 987  
FROM ARRL HEADQUARTERS  
NEWINGTON CONN JAN 7 1965  
TO ALL RADIO AMATEURS BT**

The Department of Transport has changed the rules for Canadian amateurs to permit only c.w. in the lower 100 kc. of the six and two meter bands. The changes, effective immediately, are intended to protect stations involved in weak signal work, such as moonbounce, auroral reflection, and the like, and particularly in connection with the Oscar III repeater which is scheduled to operate in the two meter band after launch sometime this year AR

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**OFFICIAL BULLETIN NR 975  
FROM ARRL HEADQUARTERS  
NEWINGTON CONN OCT 22 1964  
TO ALL RADIO AMATEURS BT**

Once again ARRL reminds League Affiliated Clubs and their members of the continuing availability of training aids designed to enhance club education and interest. The Training Aids Library includes technical films, film strips and slide collections as well as quizzes and tape recordings on many phases of amateur radio technique, operation and history. ARRL Affiliated Club officers should request training aids well in advance of the date required. Full information is available from the ARRL Communications Department, 225 Main Street, Newington Connecticut 06111 AR

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**OFFICIAL BULLETIN NR 985  
FROM ARRL HEADQUARTERS  
NEWINGTON CONN DEC 23 1964  
TO ALL RADIO AMATEURS BT**

All amateurs in the ARRL Field Organization are urged to take part in the 1965 Novice Round-up to be held February 6 through 21. The leading Novice in each ARRL section will be awarded a certificate of achievement. Page 65 of January QST has all the details on how to participate. Free log forms and a WAS map are available from the ARRL Communications Department, 225 Main Street, Newington Connecticut 06111 AR

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**OFFICIAL BULLETIN NR 982  
FROM ARRL HEADQUARTERS  
NEWINGTON CONN DEC 4 1964  
TO ALL RADIO AMATEURS BT**

All amateurs planning participation in the 18th ARRL VHF Sweepstakes, January 9 and 10, are reminded that convenient free log forms are available free on request from the ARRL Communications Department, 225 Main Street, Newington, Connecticut 06111. Please specify the number of reporting sheets desired. Page 105 of December QST gives full details on this top VHF operating event. Be sure you are ready to help your club's standing for the engraved gavel in the VHF Sweepstakes, January 9 and 10 AR

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