



# HAM HUM

AK-SAR-BEN  
RADIO CLUB  
INC.

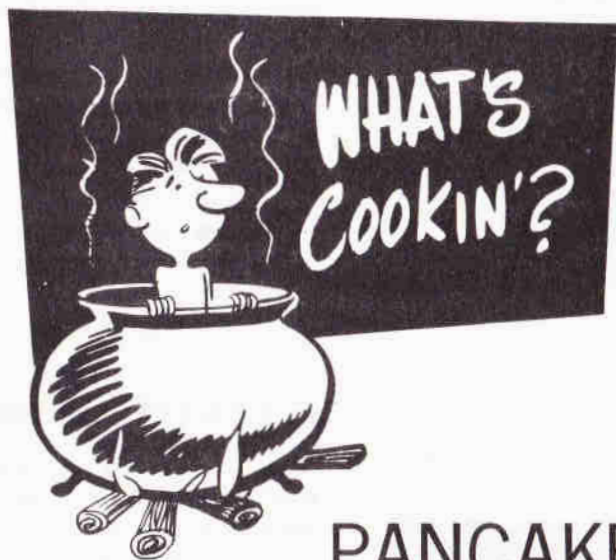
WØEQU

February 1960

P.O. 626

Omaha 1, Nebr.

Vol. X No. 2



## PANCAKES!!!

SEE 'YA AT THE PANCAKE SUPPER  
FRIDAY, FEBRUARY 12 - 6:30 PM  
MILLER PARK PAVILION

# 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, W0JJK  
Dick Eilers, W0YZV

## MEETING PLACE CHANGED FOR FEBRUARY

Please note that the meeting on February 12th will be held at the Miller Park pavilion. Your officers wanted to try something new and have come up with a fancy one. A pancake supper for members, families and guests in addition to the regular meeting. We hope you like the idea.

The pancake supper will begin at 6:30 with pancakes, butter, syrup, bacon, coffee (milk for the kids). This will be an opportunity for a real get together. The only cost to you will be whatever you desire to put in the kitty.

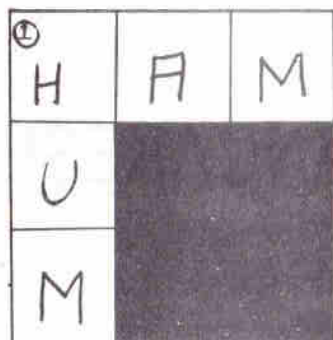
For the benefit of those of you who do not want to come to the pancake supper, the regular meeting will begin at 8:00 o'clock as usual. We will have a fine program for you.

We have a double barrel program lined up for February.

First - A talk on "Diode Generators and Transistor Regulators" will be presented by Royal Enders KØLYO.

The talk will be followed by a complete movie of our So. Dakota DX pedition.

The films were taken by Jerry Armstrong WØNKG and Ed Nelson WØMKP.



## A CONTEST WINNER!

Here is my entry in your new Ham Hum contest. (contest?) Hope I win.

Tom Hillman  
(member paid-up)  
5109 S. 83 St.  
Ralston, Nebr.  
KØSBW

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## DX NOTES SWEEPSTAKES

Bob Gamble has a new S line in operation. So far has got a 2N2, 4X4, HC8, and several South Americans. He also says DX seems to be very good on 20 meters. Bob reports HC8 expedition active as of Jan. 29.

John Droescher while sick this month worked an FB8 on 10 meters and several European QSO's.

Jerry Armstrong, sick, worked a YU and also has noticed that the South Americans are staying in longer on 15 meters at night.

Mac reports that he is hearing the Africans better this month.

Lowell Burt has a new HT37 barefoot and has been on 40 meters, working both coasts with ease. The way he likes to talk, he has the right type of equipment.

Lynn Thompson has a new KWM2. Works very nice Stateside but not trying for DX.

Movies of South Dakota will be shown at the February meeting. The QSL cards have slowed down. All that have come in have been taken care of.

Yours truly has been doing his DXing by installing a ceiling in the Ham shack recreation room in the basement. If anyone has 75¢ to put in, please contact me.

73,

Jerry, WQNKG

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## ADMIRAL CERTIFICATE

The first two requests for an Admiral's Certificate have been received. However, we will withhold the names of the applicants until we process the requests. We have heard of quite a bit of interest generated in this contest. Don't forget to tell them as you talk to them that you are a member of the Ak-Sar-Ben Radio Club.

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## FLASH

We have just received word that a small group of fellows is at work designing and constructing a new six meter transceiver to cost complete \$50.00. The big problem that has been solved is the obtaining of a universal power supply for 6, 12 and 117 volts at a price which will permit the low total cost. This \$50.00, incidentally, includes a ceramic mike, push to talk, and one crystal. If you wish to find out more about the progress on this project suggest you might see Ed Gutmann, WQCQX, at the February meeting.

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New address is:  
5328 Mary St., Omaha 12, Nebr.  
Will sell a 65B Globe Scout for \$60.00. KE-6517.

Bob Downing

WQNAG

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Long Beach Calif.  
January 26, 1960

Hi Everybody!

Just received a tape from a 10 meter round table that Elmer Burt, KØDFJ sent me and I really got a kick out of it - sorry you are having so much snow - taking more pictures at Disneyland - the submarine and Monorail rides and oh boy, that toboggan slide down the Matterhorn. Best regards to everybody but have had trouble to hear Omaha via my mobile. Visited Geo. Hladik and Jim Noland last Sunday, had lots of nice Omaha contacts from there.

73,  
Fay, WØISV

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Yes there are some chess players out West. KØBBC Warren, KØPEU Bob, and KØAKR Joe. Would like to see how many replies you get. Maybe Carlos can set up a sheet.

Joe Robertson  
KØAKR

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FOR SALE:

SX-99 RCVR EXELEN  
CONOX, make offer call  
WA-0647

Thank you.

Joe Berounsky - KØQDB  
3227 Seward Sr.  
Omaha 11, Nebr.

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Homesteader Amateur Radio Club  
Lee Witulski, Sec'y.

New Officers:

Pres., Dick Beran, WØYTZ  
Vice Pres., Randall Faris,  
WØMYT  
Sec'y, Lee Witulski, WØAQQ  
Treasurer, Louie Fink, KØCBV

The club has its new call "WØTIA" which we are mighty proud of. It was the call of our first President, the late Dr. Arthur (Art) Bryant.

We, also, have applied for an Air Force MARS call.

Fire in the Court House has temporarily chased us out of our club room, almost before we got moved in.

73,  
Lee

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Dear Sir:

Would you please put me and my brother on your mailing list for HAM HUM. Every once and a while one of the local members will bring over a copy. I enjoy it very much and would like to have it mailed to me. I hope I can come to one of your meetings some time.

Jim Richardson, KNØWOP  
and Dave Richardson,  
KNØWOP  
Box 186  
Mitchell, Nebr.

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Is there an emergency coordinator in Omaha?

If there is, what telephone number do we call if we hear an emergency call on the air.

I would also like a standard procedure outline of what to do in case of emergency and who to call in order to help.

Ron, KØKMX

Ron: EC is Ed Gutmann, WØCQX  
WE-3665

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Here's the new officers for the coming year for Lincoln Amateur Radio Club:

President - Marvin Garber,  
WØZVQ

Vice President - Jerry  
Chenowith, WØYSW

Sec.-Treasurer - John Turner,  
KØJKH

Editor - John Wick, KØHKI

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**OFFICIAL BULLETIN NR 738  
FROM ARRL HEADQUARTERS  
WEST HARTFORD CONN  
JAN 28 1960 TO ALL RADIO  
AMATEURS BT**

Effective February 5, 1960, amateurs of Haiti and the United States will be permitted to exchange messages on behalf of third parties. Full details in March QST AR

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## AN IDEA!

(de the Modulator - Convair-Pomona)

Make yourself a tool rack for less than a dollar. Take wire mesh "Hardware Cloth" of the 3/8" variety. This comes in 24" and 36" width. Now bend it to form a parallelepiped (sort of a rectangular tube, you know) measuring either 24" x 4" x 2 1/2" or 36" x 4" x 2 1/2". Nail this to the wall behind your workbench with a 2 1/2" side against the wall. Then drop all of your screwdrivers, nut drivers, pliers, diagonal cutters, etc. into the 3/8" holes. It looks terrible but is the handiest gadget in the shop.

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**OFFICIAL BULLETIN NR 737  
FROM ARRL HEADQUARTERS  
WEST HARTFORD CONN  
JAN 28 1960 TO ALL RADIO  
AMATEURS BT**

FCC has granted the request of the League that an additional fifty kilocycles be provided for phone in the twenty meter band. Effective March 10, 1960, the regulations are amended to permit phone operation from 14,200 through 14,350 kc. with no change in the classes of license required to use the band. Full details in March QST AR

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## TRANSISTORS vs TUBES: 1960

(de the Modulator - Convair-Pomona)

K6YCX

Transistors represent the greatest single advance in the electronics art since the vacuum tube. It is obvious that as transistors improve in quality their usage will increase. This is significant to the amateur since, without doubt, transistors will be used more widely in this type of equipment. Of particular significance is the invasion of transistors into the field of mobile and portable equipment. Early in their development, it was predicted that transistors would obsolete ALL forms of vacuum tubes. To date, at least,

this prediction has no bearing in fact.

Of paramount importance is to understand the Component parameters of the vacuum tube as compared to the transistor. It should be understood that generalizations are made that may have individual exceptions. This comparison is intended to represent the "state of the art" in both vacuum tube and transistor technology. The following table summarizes some of the more significant component parameters of the two devices.

TABLE I

PARAMETER	TUBES	TRANSISTORS
Gain	Usually adequate	Usually more than adequate
Noise figure	adequate to good	poor to adequate
Ruggedness	adequate to good	good to excellent
Thermal Sensitivity	good to adequate	poor to fair
Weight	fair to good	excellent
Stability	good to excellent	good to excellent
Frequency	good to excellent	fair to good
Consistency of Mfg.	good to excellent	2:1 quality ratio common, poor to fair
Sensitivity to fluctuating voltages	low to medium	high to very high
Sensitivity to burnout	low	very high
Care required in const.	very little	great care required not to thermally burn out the transistor

Vacuum tube design has reached a peak of perfection hardly dreamed of a decade ago. Added to the impressive selection of excellent thermionically heated tubes are a group of new tube types. One such tube type is the Nuvistor. This tube is a cold-cathode ceramic tube of very advanced design. One ever-present criticism of the vacuum tube has been that considerable power is usually required to excite the cathode. The Nuvistor places vacuum-tube technology on the same level as transistors, in as much as no heater power consumption is concerned. The first transistors were hand manufactured in the Bell Telephone laboratories and were hardly more than scientific curiosities. Today the state of the art is such with transistors, that at least one manufacturer has designed a transistorized television tuner. Present-day transistors are improving to the point that units are available that permit their usage at 1000 Megacycles and higher. A problem in high frequency operation has been that of noise figure. Present design indicates that a lower noise figure is possible using tubes than is possible with transistors. This will doubtless change as the transistor "state of the art" improves.

Of prime interest to the amateur is how, when, and why to design using transistors. Transistors may best be used by their

inclusion in circuits that feature their strong points. There are features of transistors that practically preclude their use in power circuits. This is true in higher audio power (above 50 to 100 watts) and RF power. Higher power is not possible due to the unreasonably high current that is required at the low voltage to achieve the power. To date, transistors have only limited usage in transmitters. With common types of transistors, RF outputs of a few watts provides a limiting factor to transistor usage in the output stage.

At this point an obvious possibility is that of hybrid circuitry. Hybrid circuitry is realized by the partial transistorization of a unit. In the case of a transmitter, the entire transmitter might be transistorized except the output stage. It is quite reasonable to resign an entirely transistorized transmitter using a 6146 in the output. In the case of a receiver, a satisfactory solution to the problem of noise and small physical size might be to use tubes in the high frequency portion of the receiver and use transistors in the IF and audio sections. This is particularly applicable to VHF and UHF receivers.

There are design trends that indicate the dominance of transistors in particular areas of amateur design. Equipment such as mobile power supplies and

(Continued on page 9) 7

## COAX - or - "What's Underneath That Braid?"

By Charles Compton - WØBUO

DE The Ground Wave

(St. Paul, Minn.)

D'ya ever wonder about that coax stuff - where did it start - why is it round - why all the numbers and sizes??? Frankly, there isn't too much published on the subject, but here is a little background.

During the late thirties, 72-ohm coax was put on the commercial market using a center stranded wire, with either polystyrene or ceramic beads to keep the conductor centered and insulated from the outer braid. Then a cotton covered coating was applied. By today's standards, some twenty years and a couple of wars later, it was no good.

About 1939 or 1940 the first of the solid dielectric material came out under the number EO-1. It was supplied in either 50 or 72 ohm types. But it melted in the noon day sun, and at night it was so stiff that it broke up like macaroni. It was used during the era of early radar sets.

Since 1941, coax has been engineered, researched and developed until today some pretty good transmission lines are available. One well known supplier markets about 75 different types in six characteristic impedances. The inner conductor may be stranded or

braided, single or double, tinned or plated, copper nichrome, or copperweld. The dielectric may be of polyethylene or teflon. The outer shield may be of copper, tinned copper, or silver copper, and in single or double layers. The outer jacket may be of vinyl or vinyl and armor covered or a tough low temperature vinyl. For high temperature application, teflon is used as a dielectric, then shield wrapped and covered with fibreglass braids impregnated with silicone. It is interesting to note that the ratio of inner conductor diameter to outer shield diameter is the same regardless of the material used for the dielectric. A slight variation in the impedance value may be obtained using a semi-solid dielectric, such as in RG-62. Here the dielectric and air surround the inner conductor. The RG-U designator is a military type number originating with the Signal Corps Radio Frequency group. Suffix letters, such as A, B, or C will be used to indicate low or high temperature or special features of a particular coax type.

Why 52-ohm coax? Those who have researched the thing have come up with a mathematical solution indicating the maximum operation voltage characteristics are obtained at about the 52-ohm point. Similarly it may be shown that at about



73-ohms, operating conditions permit least line attenuation per unit length. Coincidentally, the 73-ohm figure is the calculated value for the center feed impedance of a regular dipole.

As a result of the above, most transmitters today - both commercial and amateur - are designed to feed a 52-ohm load, and receivers are designed to be fed from a 73 or about 300-ohm source. The 73-ohm unit being an unbalanced line, and the 300-ohm a balanced line.

Recent studies indicate coaxial transmission lines subjected to weather deteriorate in about three to four years. Although the characteristic impedance remains unchanged, attenuation losses increase and breakdown voltages decrease to such values that the line may be punctured if operated at near peak power levels. Peak Power levels decrease with increasing frequency. Attenuation increases with increasing frequencies.

This latter characteristic forces commercial transmitter operators to use gas filled transmission coax lines which have less attenuation. Yet, in this type line, it is common to have 3 db loss. This means that half of the carrier output power is lost getting up to the top of a TV tower. (Just imagine losing 25 to 30 KW going up a tower line!) Many TV transmission lines today are 6 1/8"

in diameter, and newer stations are going to the 9 1/2" line. These lines run about \$20 to \$40 per foot installed. (And you gripe about surplus coax at 7 cents a foot.) To combat the line losses, some of the UHF channel stations are experimenting with putting the transmitters at the top of the tower next to the antenna array.

One last item to make the discussion complete. All solid dielectric coax is rated at 65.9% velocity of propagation. The semi-solid material has a rating of about 84%. Should you desire a rather comprehensive indexing of coax materials all the way from miniature or sub-miniature types from 100" to large types 1,200" in diameter, write to the Amphenol-Borg Corporation, 1830 South 54th Avenue, Chicago 50, Illinois, and ask for their catalog D3 covering Radio Frequency Cables and Connectors.

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*(Continued from page 7)*

small miniature equipment will doubtless become entirely transistorized in the near future. It is also entirely reasonable to assume that transistors will become more important in the design of other amateur units. Regardless of the direction of usage of transistors the "state of the art" is bound to be improved to an unprecedented level.

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## The Pro's and Con's of Surplus (DARA QMN Bulletin, Detroit and C Q Club Bulletin)

Surplus Is No Bargain!  
Fourteen years after the end of WW II, there are as many ads in the magazines - and as many (if not more) dealers in electronic surplus as there were immediately after the war. For the most part, the prices are the same and in some instances higher than in 1947-48. The typical pitch of the electronic junkman is "Yours for \$9.95; Government cost over \$100"; or "Easily converted to ham use; worth many times the price in parts alone".

Take a good look at this junk, and see what the ads really mean. Take the \$100 item - yes, Uncle really paid that for it in 1943 (the contract date is right on it) to be used for a specific military use with a life expectancy of about 5 years.

Now let's define "easily converted". Generally that means the same length of time it took to build the thing in the first place. Chances are that it is wired for 400 cycle AC, - which boils down to a new power supply to start with - and then on from there. Or perhaps 28 V. DC, with peculiar tubes, calling for a complete rewiring job. After you chip and burn away all the varnish and fungi-proofing off the connections.

Then there is that little matter of parts. Let's see; 3 coax fittings; a little pitted and corroded, of course, but usable if you can hack them off the panel. And then the resistors and condensers - ah, yes! When you get them out - quarter-inch leads left on each end, values you never heard of, if you can decipher the dots, and what is greenish powder on the wire? For THIS you paid \$9.95!

Some of the receivers are real prizes, with selectivity of 100 kcs, and sensitivity of 100 microvolts engineered in them. And for good reason. These things were designed to be used by some draftee, who had never seen a receiver before, and who by virtue of three months boot training was supposed to be a radio operator. When he was told to set up on Channel B at 3115.6 kcs, he couldn't miss with that degree of selectivity. And since the transmitter might be only a few miles away, the sensitivity also was not a problem. So this is good for ham use? Well, yes. You could monitor the whole 40 meter CW band at once.

Most hams have radios, phonos, and TV in their homes, and would not be caught dead with a hi-fi, vintage of 1940. Yet in their ham shacks, it's a different story.

In 1932, WW I gear was already being conserved for posterity on museum shelves.

The average ham of that year was not buying surplus coherers and crystal detectors. And yet in this era, of solid state devices, parametric amplifiers, backward wave oscillators, etc., the traffic in antique junk still goes on.

This is bad. It is a thorn in the side of progress. Amateur radio used to be an area in which progress could be made. We are not confined by designs frozen by mass production. We can tear things apart and try something new every day, if we desire, without costing a million or so for retooling. And yet many hams are spending their money on designs and components at least 15 years old.

It doesn't make sense.

So stay away from surplus. It's already as extinct as the dodo, but doesn't know it. If you venture into one of the surplus emporiums, prepare to be taken. Are you still driving a Model T?

W8NGO

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## OFFICIAL BULLETIN NR 735 FROM ARRL HEADQUARTERS WEST HARTFORD CONN JAN 15 1960 TO ALL RADIO AMATEURS

Amateurs throughout the world are invited to participate in the 26th ARRL DX Competition. The phone week ends are February 5 through 7, and March 4 through 6. The CW week ends are February 19 through 21, and March 18 through 20. Participants are reminded that Alaska and Hawaii

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## OFFICIAL BULLETIN 734 FROM ARRL HEADQUARTERS WEST HARTFORD, CONN. JAN. 7, 1960 TO ALL RADIO AMATEURS BT

The 1959 ARRL Sweepstakes contest found no less than four stations claiming scores above the CW record of W2IOP set in 1957. Claiming scores above that total were W9IOP 249,386, K5ESW 246,284, W0VXO 240,535, and W4KFC 238,710 points. Other single operator Sweepstakers claiming scores over 200,000 points were K2DGT, W3JNQ, W3EIS, K4LPW, W4YHD, W4DQS, W6ZVQ, W9YFV, W4RQR, W5YDC, W9RQM, W3ALB, W7HMQ, W7YGN, W0CDP, and K4GSU. High claimed score on phone was K5MDX with 212,868 points. Other single operators claiming phone scores over 150,000 points were W6LNW, K0RNZ, W7BSW, K4IEX, K4KXX, and W0MLY. High claimed Sweepstakes scores will appear in February QST.

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are now counted with other VE/W entrants. Requests for DX contest logs are now being filled at ARRL. When requesting logs, please specify number and whether phone or CW. Complete rules for the ARRL International DX Competition appear on page 49 January QST AR

AK-SAR-BL RADIO CLUB INC.

P. O. BOX 626

OMAHA, NEBRASKA

NEXT MEETING

PANCAKE SUPPER

MILLER PARK PAVILION

FEBRUARY 12, 1960

6:30 - P. M. SHARP