



# HAM HUM

Published by  
AK-SAR-BEN RADIO CLUB, INC. - Omaha, Nebr. 68101  
Post Office Box 291 - Downtown Station



Vol. XIX  
No. 12

December 1969

## 1969 ANNUAL MEETING and CHRISTMAS PARTY of Ak-Sar-Ben Radio Club, Inc.

December 12, 1969 - 8:00 P.M.

WORLD INSURANCE COMPANY  
CAFETERIA  
203 South 18th Street

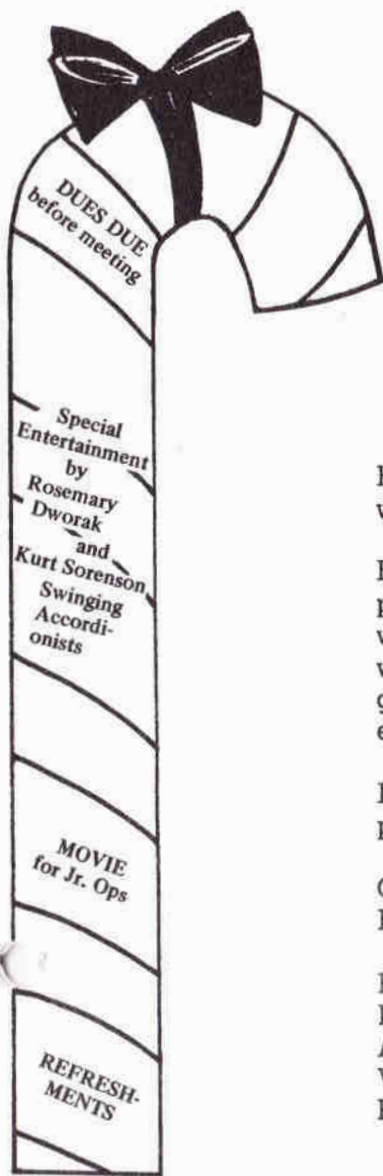
ELECTION of officers. PAID MEMBERS will vote on officers for the coming year.

EXCHANGE of gifts. ADULTS ONLY - please bring a gift of one dollar or more value. Paid Club members will exchange with each other. Non-members who bring gifts will be eligible for the guest exchange.

FOR CHILDREN - special gifts will be presented to each child by the Club.

GUESTS INVITED - BRING YOUR FAMILY AND FRIENDS.

BOARD OF TRUSTEES of AK-SAR-BEN RADIO CLUB EXTENDS TO YOU AND YOUR FAMILY WISHES FOR A VERY MERRY CHRISTMAS AND A HAPPY NEW YEAR.



**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.



Next copy deadline: December 26th

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## PRESIDENT'S CORNER

In lots of ways the year has gone by in a hurry. It seems such a short time since the last annual meeting and Christmas party but here it is, that time again.

It has been a real enjoyable year for me with a few new experiences. Attendance has been fair to good at the meetings; the programs have been very good, thanks to the work put forth by the Program Committee. All the Board meetings have been well attended and every member of the Board has made his or her contribution to what I think has been a successful year for the Club.

I think this is also a good time to say a big "thank you" to the Red Cross for the use of the meeting place each month. It has been real nice and I hope to see the Club grow to the point this area is too small. We had the best crowd of the year at the last meeting but there was still room for 40 or 50 more. Where were you?

Again, many thanks for the opportunity of being President this year. I hope next year's president

receives as good cooperation as I did and enjoys his term in office. Good luck and let's all pull together for a bigger, better and more enjoyable Radio Club.

73's

Royce E. Johnson, WAØKIL  
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## NEWS ITEMS

Jay McAleer, WAØLLQ, is home from the hospital and well on the way to recovery from his operation. He has recently acquired one of the FM-210s and I'll bet he will answer a call on 2 meter FM.

Roy Kaiser, KØIPV, is now operating one of the GT-550s and he can very often be caught listening or talking on 28.8.

There is a real lively group that gets together for a rag chew session at 8:00 P.M. each Monday night on 28.8. Everyone gets a chance to talk and everybody is welcome. Join in and catch up on the local gossip.

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## NOVEMBER MEETING

Past Presidents turned out for the traditional night of reminiscing. Group picture (left to right) No. 1 – Royce E. Johnson, WAØKIL; Robert C. Lockwood, WAØDHU; Ervan D. Heinz, WAØEEM; Louis A. Cutler, WØVLI; Royal M. Enders, KØLYO; Dick L. Eilers, WØYZV; Max N. McKinney, WØYVV; Herbert D. Curry, WØQXR; Arthur R. Gaeth,

WØFQB; John W. Orr, WØPHW: Inset picture No. 1a, Earle E. Olson, WØJKE, a latecomer because of another meeting, missed the group picture.

(Picture No. 2) – Art Gaeth, WØFQB, Past President 1947, started things off by recalling many hams and projects.

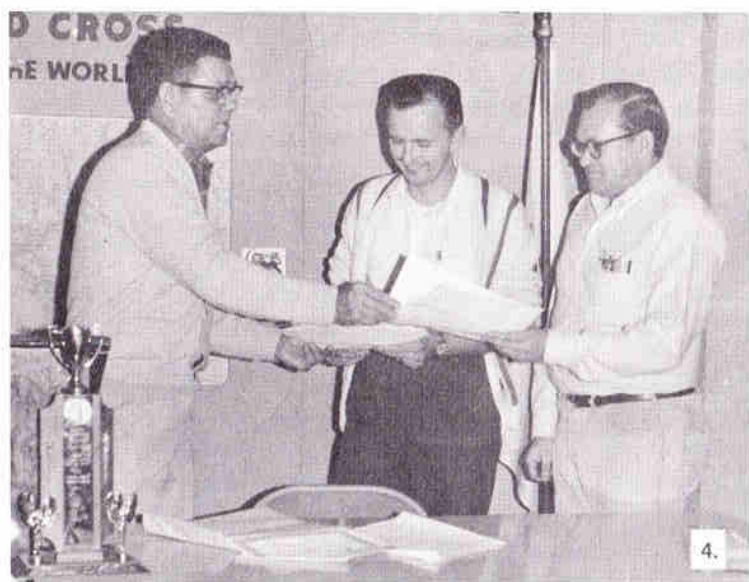


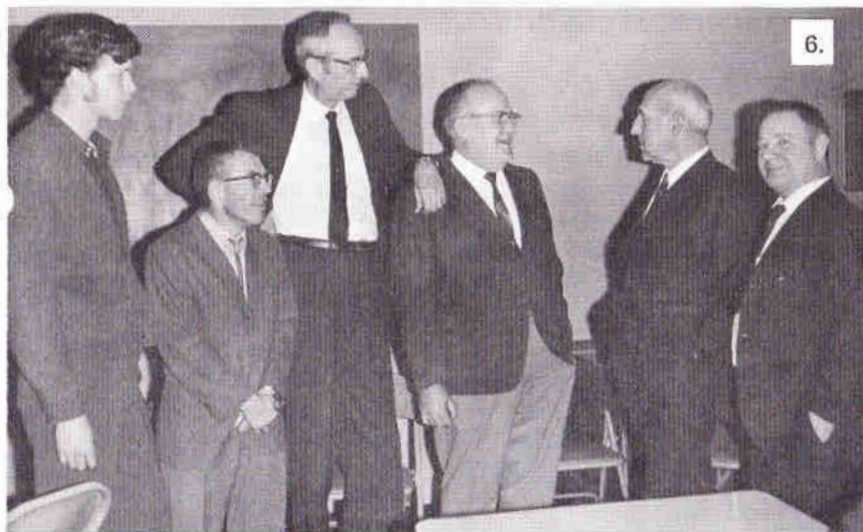


Past President 1968 Bob Lockwood, WAØDHU, wound up with the latest Field Day QST results (picture No. 3).

Current President Royce Johnson, WAØKIL, presents membership certificates to two new members – H. T. "Bud" Henley, WAØPZV, and Charles E. "Chuck" Conner, W8DZS/Ø (picture No. 4).

Then Jim Droege, WØYCP, tuned the group in on the latest on the 2 meter repeater (picture No. 5).





Picture No. 6 — Even though he came late, Past President Earle E. Olson, WØJKE, enjoyed the eyeball QSO following the meeting. He is

shown in the center of the picture between William F. McCarty, WØUPY, and Herbert D. Curry, WØQXR.

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## NOTES FROM THE BOARD

Because of a transfer out of the city, John C. Ebright, WAØQGZ, resigned as a member of the Executive Council. The Board selected Dick L. Eilers, WØYZV, to fill the unexpired term (1969-1970) and this selection was approved by the members at the November 14, 1969 meeting.

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## NEW MEMBER ADDITION TO ROSTER

John L. Giulietti, K1MNF  
P. O. Box 31671  
West Dodge Station  
Omaha, Nebraska 68131  
Phone: 558-6060

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## AIR FORCE MARS APPOINTMENTS

Dick Eilers, WØYZV/AFØYZV has been appointed Area 3 Administrative and Records Manager and Joe Roberts, KØKEO/AFAØKEO has been appointed Nebraska Administrative and Records Manager. Both of these jobs were formerly held by Ed Donze, WØYEV/AFØYEV.

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## FOR SALE OR TRADE FOR RECEIVER

Like new Hy-Gain Hy-Tower vertical antenna, Model 18HT . . \$100.00.

Dick Cunningham, KØHHP  
391-3710

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## WHAT IS NEW WITH THE REPEATER?

This is a report that should have been made months ago, but it seemed that every time I sat down to write it, Ham Hum had gone to press. So much for the excuses; now the report.

The repeater had been experiencing some trouble with what I think was an intermodulation problem, that is, a mixing of the strong transmitted signal of our own transmitter and some other signal, such as TV or FM broadcast transmitter producing a signal on the repeater input which being on the input frequency was impossible to filter. One solution was to ask the TV and FM stations to quit broadcasting, but this was the wrong approach. I suspect the interference was radio, which made it also very hard to trace. When the interference occurred the repeater was usually shut down for thirty minutes. There was a fifty-fifty chance it was OK then. Some of the things I tried to stop the interference were a Notch Filter in the receiver line tuned to the transmitter frequency; a Notch Filter in the transmitter line tuned to the receiver frequency; and a passive filter in the receiver line.

Just about the time I was ready to give the whole thing up and pass the lethal current between my nose and my toes, I decided to try to move the receiver to a different location. So, it was moved as an experiment to the house of John Snyder, WØWRT, with a 2 Jpole antenna about 10 feet off the ground and a 430 MC transmitter that was usually used as his control transmitter. This transmitter was used to insert the audio to the transmitter at the Red Cross. The repeater has been operating this way about 2

months, and I have not heard the interference once. So it was decided at a meeting of the Repeater Committee that we would look for a new receive site. Several places were thought to be available but most fell through when the magic moment came to say "yes" or "no."

Stan Bach, WAØIIX, was asked if he could get the Methodist Hospital as a site as it had once been a possible site for the whole repeater. Within about three days the good news came back that either the new or the old Methodist Hospital was available for our site for receiving purposes only. The ball was rolling now. Arrangements were made with the management of the old Methodist Hospital (and by the way they treated us like royalty); and a 4 Jpole had been donated to the Club by the Galaxie gang - Chuck, W8DZS; Neil, WAØKXW; Reno, WAØWKX; Bud, WAØPZV; and Ron, WAØQIB.

The antenna party consisted of Jim, WØYCP; John, WØWRT; Bill Snyder; Fred, WØEGP; and Charlie, KØQVL. The gang mounted the antenna on the elevator penthouse on the newer wing of the hospital with a 10-foot piece of pipe and a grand total of about 15 feet of coax cable. It was decided to use the old hospital location because from the transmitter it is 4 miles to the new hospital and only 1 mile to the old hospital. Phone lines are going to be used to eliminate the need to license and identify a 432 MC transmitter, and the phone line charges in this town are one dollar per one-fourth mile. That is why we're locating at the old hospital.

**OFFICIAL BULLETIN NR 246  
FROM ARRL HEADQUARTERS  
NEWINGTON CONN  
NOVEMBER 13 1969 TO ALL  
RADIO AMATEURS BT**

By the way, the old hospital is located at the same elevation as the Red Cross and you can usually copy the repeater farther than you could get in to it, so with this new receiver, this problem should be eliminated. At the time of this report the phone lines were promised installed by December 5th so by press time we should know how the system will be working.

Our chief tape changer, Charlie, KØQVL, reports to me that we are using about 24 hours of logging tape every three weeks and as the gang increases this is going to increase. So remember the rule of thumb - if you can make it direct, go direct and save tape.

Jim, WØYCP

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11-8-69

Hi-

Just received my November issue of HAM HUM which reminds me that when it comes out next time, I will be living in Seattle. So would you please change my mailing address to:

John C. Ebright, WAØQGZ/7

2606 SW 116th St.

Seattle, Wash. 98146

I don't know what my call will be out there but the portable 7 will be true until I get the license modified.

I surely have enjoyed the Ak-Sar-Ben Radio Club as well as other associations and contacts I've made thru Ham Radio. Hope to be working some of them when I get to my new QTH.

73's

John C. Ebright, WAØQGZ

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In connection with the Australis Oscar 5 amateur satellite experiment, third party communication has been authorized between United States amateur stations and Australian amateur stations on matters relating to satellite experiments. These arrangements, which are effective immediately, will continue for a period ending four months after the satellite ceases to transmit. Australis Oscar 5 is scheduled for a piggyback launch with the Tiros-M mission. The expected orbit will be circular at 790 nautical miles with an inclination of 101.56 degrees. Listen to W1AW for further information on the launch AR

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**ENFORCEMENT ACTIONS  
HIT MORE HAMS**

From the Amateur Radio News Service, we learn that FCC took action on March 14 to revoke the licenses of Steven P. Bowman, WAØHQO (Conditional Class); and Gary Overman, WA9EKA (General Class).

Not only were charges of obscene, indecent and profane radio communications placed against these operators, but also transmission of false or deceptive signals or communications, and malicious interference. The enforcement actions followed investigations following complaints received from other amateur radio operators.

de Ham Monitor

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## FIELD DAY 1969 RESULTS

Have you looked at the November QST lately? If not, you should for the 1969 Field Day results are in. The Ak-Sar-Ben Radio Club did it again. We are 13th place in the four transmitter class and for three year's running we have been top dog in the Ø call fone. We put on quite a show this year and the records show it.

This year's official point value is 9268 and we had a total of 1366 valid QSOs. As we look back at this year's event, we can remember a time of real fun with the weatherman cooperating well. One of the big factors which contributed to our high point value was the site. Signal hill is really a good site for Field Day, the best we have had in many a year. We are grateful to Norval and Connie for letting us use this site.

Another big factor in our point totals is the enthusiasm of the club members. It was a sight to behold to observe so many guys so faithful in their efforts to keep four rigs going. Truly this year was one of our best because of the backing you gave.

I have been your Field Day Chairman for the last three years. During this period the Club surged ahead by leaps and bounds. It did so because of new ideas regarding the planning for the event. The Club backed me 100%. We pulled together and made a good team showing. Next year you will have a new chairman. This means new ideas, and new ideas are good for a club project like this one. It is bad for us to get into an annual rut. I urge you, therefore, to back your new chairman as you backed me. We have great potential for

Field Day competition and we should always strive to do our best.

The success of Field Day depends for the most part on two factors: good planning and total club participation. We have made a great showing in the past three years. Let's strive to do even better at Field Day '70.

Respectfully submitted,  
Bob, WAØDHU

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## OFFICIAL BULLETIN NR 247 FROM ARRL HEADQUARTERS NEWINGTON CONN NOVEMBER 20 1969 TO ALL RADIO AMATEURS BT

The ARRL committee of tellers met today to count ballots in the elections just concluded for ARRL Director and Vice Director. The number of votes credited to each candidate is as follows. The first listed candidate is declared elected for the next term of office.

MIDWEST DIVISION *for Director,*  
Sumner H. Foster WØGQ, 1508  
C. W. Wade WØINH, 650.

(Ed. Note: We list here only results of Midwest Division. Results of other elections can be found in the next issue of QST. We previously reported Ralph V. Anderson, KØNL, had been declared elected Midwest Division Vice Director as he had no oppositio. These men take office on January 1, 1970. If you desire a full copy of the bulletin, we will be glad to send it on request.)

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October 29, 1969

Ham Hum

Ak-Sar-Ben Radio Club, Inc.

P. O. Box 291, Downtown Sta.

Omaha, Nebr. 68101

Hi:

Merging the Nebraska CW net with the Kansas QKS net on 3610, closes a net operation that is one of the oldest in this part of the country. I have no idea how many years it has served Nebraska, and amateur radio.

Served in many ways, 15 years ago I was one of those copying WØEGQ, Bob, in Leigh, Neb. code practice, and then he was NCS of the Neb. Slow Speed Net, and I did get practice there also. The first time I got up enough nerve to check in, there was an urgent request for someone to handle traffic for North Platte. I checked in, fumbled and struggled but I got the traffic, and a cordial friendly invitation to check in regular. Bob, WØEGQ, sure did a lot for beginners and others, handling traffic and giving code practice. I remember how surprised I was, after listening to him send so patiently slow on NSS and practice, to hear someone call him after net, and I declare he took the weights off the bug.

Of course there were many others that helped on the net. Bob, WØNYU, tried something to clear the net frequency. He sent OBS bulletins, RTTY just before net time, and it sure did clear the frequency for a week or so. Then every RTTY operator in the country moved on frequency to QSO him.

One night Ruth, KØONK, called the net, and everything seemed routine

until she sent QNC QNC QNC, and there was something different, urgent, something about her signal that got attention. The band went clear, then she sent the message that WØMAO had joined Silent Keys; and then each station sent QSL. After all these years, that memory still brings tears.

There was the summer that Bill, WØOKO, called net, and I QNI, just the two of us all summer long, but winter came and the net perked up again.

The net moved up, and down, changed NCS, speeded up, slowed down, and at the last, Velma, WAØGHZ, called the net, and I QNI, till this fall it seemed the few old-time regulars were not coming back and it would be best for CW operators to join a stronger net with more active members in order to better serve our purpose of handling traffic.

73,

Dayton, WØVEA

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### "CORRECTION"

On my article "Notice: Try 2 Meters And The Repeater" in the November issue, I made a mistake. Where it says; You have a choice of 31 two-meter FM channels, 6 kc. apart; It should say 60 kc. apart, not 6 kc.

William Snyder

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### FOR SALE

Hallicrafters S-38C

Call Bob, WNØZPW

553-0469

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## Reflected and Directed

George H. Goldstone, W8AP  
1010 Burnham Road  
Bloomfield Hills, MI 48013

### PUTTING OUR BEST FOOT FORWARD

Our eyes were caught by the large display ad on Page 2 of the Detroit Free Press recently, captioned "17 Delightful Reasons You Should Live in Avon Park." Not that we want to live any place other than our present QTH; but knowing the good features of one's own neighborhood, it is probably the usual thing to compare the claims of a subdivision developer with one's own place of abode. Reading along, we soon found that "Avon Park" is promoted by its developer as a deluxe mobile home community. (They never call them "trailers" or "house trailers" any more. Shades of the "Tin Can Tourist Association"!)

But the 17 delightful reasons were truly interesting. One, a sumptuous 6000 square foot clubhouse. Two, private paved parking pad, plus patio. . . . Four, famous name appliances. Five, minimum lot 50x80'. (Is that big for a trailer park?) Et cetera, et cetera — through item Thirteen: "NO HAM radios or short wave EQUIPMENT."

It doesn't exactly give you a proud feeling to see that in a large metropolitan newspaper, does it? Like saying, "No motorcycle addicts, pot-smokers, chronic alcoholics, or radio hams need apply." But, besides offending the radio amateurs who read the ad, it suggests to other subdivision developers (who are building homes, not trailer sites) that they, too, ought

to consider forbidding amateur radio by deed restrictions.

Deed restrictions specifically forbidding amateur radio don't just originate out of nowhere. Just such a situation developed in our community a few years ago when a resident, a subdivider (who was also a lawyer) took exception to an 85 foot utility pole that one resident erected for his one-story brick ranch style home — a house of perhaps 1500 square feet floor area. The developer found no way to force the ham to take down the mast — a real giant of a Black Diamond, all creosote dipped — but what do you think happened in the next two subdivisions he developed, adjacent to the first one? Mr. Developer had his law partner draw some new restrictions — one of which specifically forbids the operation of amateur equipment in the subdivision!"

We don't know of any way to operate an amateur radio station without an antenna; and we don't know of any way to utilize a well-sited beam without a mast, tower, or pole — unless you use a large balloon, or suspend the beam from a huge tree. These exceptions are uncommon, to say the least. The best we can do — and do it we must — is to demonstrate to our neighbors that the presence of our antenna system does NOT mean any degradation whatever of their radio, television, hi-fi, or other equipment. This may be a big order, we realize.

A ham beam doesn't permit much concealment of the fact that you possess an amateur radio station. The beam is there to see 24 hours out of every 24, and it creates little confidence to say "I'm only on the air a little while each week." You've

simply got to create the best possible impression on your neighbors.

If you get into some neighbor's TV or radio, try to find out about it early, and do something about it! Assuming you utilize a low-pass filter on your transmitter, keep a few small high-pass filters around for judicious attachment to the neighbor's TV — at your expense. Oh yes, we know there are some set owners who say they "don't want anything attached to the set." Well, you can usually con them into attaching a tiny 300 ohm high-pass to the antenna lead as it enters the set, telling them it can be quickly removed if it doesn't improve their reception. You can nearly always get a look at their set, to determine the manufacturer and model number, so that factory advice and help can be sought.

The front end overload and audio rectification cases are something again — but tact and planning can usually clear the way. A high-pass filter with properly chosen cut-off frequency will do wonders, in the case of overload, as will a resistive pad, usable where the TV viewer has lots of TV signal from local stations. The treatment for audio rectification is well-known, described in the handbooks — does require getting into the equipment. If you have a portable TV that has had the preventative treatment, you can consider loaning it to your neighbor while he has his set treated — or at least to convince him that interference CAN be taken out of a TV or BC set.

It takes tact; careful language, and arrogance whatsoever. We might mention here that if the language you use over the air, often heard on TV and BC sets, is offensive to the average person (even if not legally obscene or profane), you have about 4 strikes on

you before you even talk to a TVI complainant! Our on-the-air language must be above reproach — and this applies to the subject of ham discussions as well.

The price of being an amateur radio operator today is measured in more than dollars. In a largely urban society, it takes a heap of tact to earn and retain the goodwill we need to block restrictions on the hobby.

W8AP

de Ham Monitor

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If you have an important job to get done, always give it to the busy man...he'll have his secretary do it.

de Ham Monitor

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## 1970 CODE AND THEORY CLASSES

The 1970 code and theory classes will convene the first Tuesday, January 6th, at 7:30 P.M. Slow code for those going for novice class and higher speed for those going for general class. Theory classes for novice through advanced classes, ARRL films, demonstrations, and lecture. Bring latest license manual for study guide. All welcome — no charge.

Classes held for 14 weeks. Last class just before April FCC exam date. All welcome, Club member or non-member.

If you are interested or have a friend who is interested, let us know and we will send you finalized information. At the time of this writing we do not have approval on the meeting place but will have this information by the time of the next Club meeting.

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## NOMINATIONS FOR 1970

The election of officers for the year 1970 will take place at the annual meeting of the Ak-Sar-Ben Radio Club, Inc. on December 12, 1969.

At this meeting a President, Vice President, and four members of the Executive Council are to be elected. The President and Vice President are elected for a one-year term; the Executive Council members are elected for a two-year term. The outgoing President remains on the Board of Trustees as Immediate Past President for one additional year.

Those remaining on the Board as members of the Executive Council for 1970 are: Royce E. Johnson,

WAØKIL; James C. Anderson, KØDNE; Carolyn Bowen, WAØMYF; Henry J. Dworak, WAØQLE; and Dick L. Eilers, WØYZV.

The Board of Trustees, composed of these five remaining members and the six new ones elected, will then elect from the members of the Board a Secretary and a Treasurer.

The Nominating Committee, composed of the President and at least two Past Presidents, select and qualify members whose names can be placed in nomination at the annual meeting.

The nominees for 1970 follow with a brief write-up of each:

### For President

Harold E. McClenahan, Jr., WAØDGA

Age: 37  
Address: 6640 Emmet Street, Omaha  
Phone: 556-2863  
Wife: Eva  
Children: Robert, Patricia Ann, Scott  
Employment: Vickers Inc.  
License: 7 Years (7-6-1962)  
Hobbies: Hunting and Ham radio

### For Vice President

James C. Droege, WØYCP

Age: 30  
Address: 19 Indian Hills Road, Council Bluffs  
Phone: CB-322-6272  
Wife: Kathleen, WAØUXE  
Children: Patti, Mike, Lynn  
Employment: Engineer, KRCB (Part time Grace Bible Institute)  
License: 14 Years (General)  
Hobbies: Ham radio, bowling, automobiles

### For Executive Council

Robert D. Andrus, KØLUG

Age: 47  
Address: 4116 North 100th Street, Omaha  
Phone: 397-7755  
Wife: Audrey  
Children: Robert (19); Richard (16); Ann (14)  
Employment: Heyden Tile Co.  
License: 12 Years (Tech) (1957)  
Hobbies: Ham radio, woodworking

Edward F. Askew, WAØRDZ

Age: 41  
Address: Thurman, Iowa  
Phone: (712) 628-2591  
Wife: Marjorie, WAØRDY  
Children: Margaret (16); Edward (15); Rebecca (12);  
John (10) and Catherine (4)  
Employment: Farmer  
License: 4-21-1967 (General)  
Hobbies: Ham radio, hunting, camping

Dr. Stanley M. Bach, WAØIIX

Age: 53  
Address: 9104 Woolworth Avenue, Omaha  
Phone: 391-6607  
Wife: Lulu  
Children: Stanley, Jr., (26); Alan (20); Karen (19)  
Employment: Orthopaedic Surgeon  
License: 3-17-1964 (General)  
Hobbies: Ham radio, athletic activities

John D. Snyder, WØWRT

Age: 43  
Address: 3221 South 45th Street  
Phone: 556-1538  
Wife: Mary Agnes  
Children: Daughters: Marianne, Nancy Jo, Lorene, Karen,  
Amy Lynn  
Sons: Billy and Fred  
Employment: Medical Electronics Technician  
University of Nebraska, College of Medicine  
License: 1953  
Hobbies: Ham radio, car tinkering

November 9, 1969

Ham Hum  
Ak-Sar-Ben Radio Club  
Omaha, Nebr.

Hi:

Reading about beam antennas, building, putting up, tuning, sounds so easy, till you try it.

For all summer I have been figuring to put up a 15 meter, 3 element beam, gathering material, working out the how, waiting for the right day, clear, warm, calm.

Simple job, just bracket a pipe to the center pole of my dipoles, beam about five feet above the pole, armstrong rotator, T coupling from feed-line up to beam. Nothing to it.

By the time I got that beam assembled on the ground, twenty foot boom, twenty-two foot elements, more or less, it began to look big. Gamma match, simple, till I grid-dipped it, then back to the books, finally found a formula, tried that, no good. But I am getting close, ended up with about five inch spacing, forty inch long gamma leg. 120 mmf capacitor, OK with the grid dipper, except it dipped at 20 mc, and 22 mc, showed load in between, will try it.

WØKWQ, Mike, volunteered to help, and the day came, clear, calm, warm, and I land-lined Mike, out he came, buzzing along on his motorcycle, wheeled into the yard, and said, "Get me to a doctor, quick, your neighbor's dog chewed up my right leg." And he was not kidding, trousers torn, leg gashed and blood running into his shoe. I phoned for a doctor to be at the hospital and we rolled the old Rambler into town, broke all speed laws, and the doc was waiting.

Got Mike patched up, went to his home to get change of clothes, and then he said, "Well, let's get that antenna up." I said, "What the heck, ain't you had enough for one day?" "Nope, let's go."

We got the beam bolted to the pipe, dug out some ropes from field day gear of two years ago; I got up the pole high as I could go, could not find my spikes, started pulling, Mike guiding, and it began to come up. About half-way, that old rope broke, and down shattered the beam, all around Mike.

Mike expressed his regrets and wheeled his motorcycle home; I spent the rest of the day rebuilding the beam.

Next morning, I located my spikes, lashed the pipe to the pole, leaned the beam against the pole and went to the top, laying back into the belt, I pulled that beam up, bolted it to the pipe, dropped wrench, down and up again, temporary lash up and so out of breath, legs cramping, took two hours rest.

Too many years since I wore the spikes, took a small three-legged TV tower, leaned that against the pole, got the XYL to steady it, and began the permanent lashing. Those bands I had fixed were too heavy to bend and make a good cinch around the pole and pipe. Used galvanized wire, hope it holds. Cut the 15 meter dipole out and rehung the dipoles, tied in the coupler and just about ready to test. Dropped the pliers, down and up, just making the last adjustment up there and 'ladder' began to slip, yelled to XYL, "What's the matter?" "Do you need me?" and there she was stretched out on a bench sunning herself.

By noon had everything ready for

test, called Mike, he reported his leg was stiff and sore, but Doc said it would be OK. So we tried the beam; Mike lives about six miles away, and reported 50 db front, 20 db back, S 7 from the side. A good beam.

The loading on the beam was very close to my chart for the dipole, and dummy light bulb, except, when I change frequency, then check and recheck, trim and retrim both the final and the grid. Still close to normal chart, but tuning is very sharp on both final and grid. The dipoles showed some change in loading, but still close to original settings, 160 meters is even better loading than before:

And that is how to begin to learn about beam antennas.

73,  
Dayton, WØVEA

P.S. The doctor told Mike, "Anyone over 65 years old that rides a motorcycle, dogs had ought to bite him."

Mike said, "Just for that remark, Doctor, if I get hydrophobia, you are the first person I am going to bite."

dp  
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## FOR SALE

2 meter FM T-51 mobile rig - 6, 12, or 24 volt DC. Set up for repeater frequencies complete with antenna, control head, mike, etc. - \$120.00.

Norv Bowen, WAØNPF  
3413 Bridgeford Road  
Omaha, Nebr. 68124  
Phone: 391-4859  
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## OFFICIAL BULLETIN NR 248 FROM ARRL HEADQUARTERS NEWINGTON CONN NOVEMBER 28 1969 TO ALL RADIO AMATEURS BT

The FCC has taken final action in Docket 18506 relating to maritime mobile operation. Effective December 31 such operation may take place from 7.0 to 7.1 MHz by United States amateurs when on or over the high seas. This portion of the 40 meter band is a world wide exclusive amateur allocation. Further information will appear in January QST AR

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## FOR SALE

From Estate of Edmond E. Donze, WØYEV:

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## BASIC STEPS TO DESIGNING A TRANSISTOR AMPLIFIER

By W6HHC

There are many types of amplifiers: linear amplifiers, power amplifiers, RF amplifiers, DC amplifiers, etc. etc.....!! Each one has its own design techniques. Since we can't possibly cover all types, let's just concentrate on the basic RC coupled audio amplifier. Most articles and handbooks show you designed amplifiers and tell how they work, but they don't tell how to design them yourself. This month I'll show you what you have to do to design a single stage; next month I'll go on and complete a preamplifier

### THE BASIC DESIGN

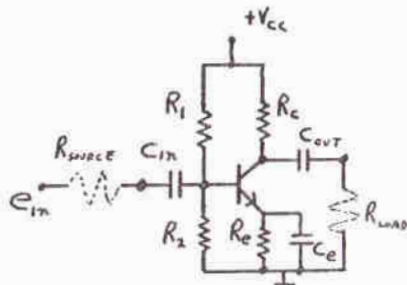


FIG 1  
A TYPICAL CLASS A AMPLIFIER

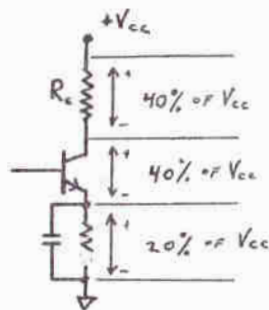


FIG 2  
HOW DC VOLTAGES ARE DISTRIBUTED

for a VOM using this month's techniques.

Figure 1 shows the basic schematic of a CLASS A RC coupled transistor audio amplifier. Basically, Resistor  $R_e$  and  $C_e$  are biasing components and serve the same purpose as the cathode resistor and capacitor did in the old vacuum tube days. The resistors,  $R_1$  and  $R_2$ , assist in biasing the transistor by supplying the DC base current. The collector resistor,  $R_c$ , provides a means of developing an AC output voltage.  $C_{in}$  and  $C_{out}$  ARE coupling capacitors designed to block DC voltages from disturbing the bias of the transistor, yet look like a path for any AC signal.

Figure 2 shows the desired biasing of an AC amplifier with no AC signals applied. About 20% of the available battery voltage is used for the bias voltage across the emitter resistor  $R_e$ . The rest of the battery voltage (80%) is equally divided between the transistor and the collector resistor  $R_c$ . Now when an AC input signal causes the transistor to conduct heavy current, the voltage drop across  $R_c$  is almost 80% of  $V_{CC}$ . When the input signal causes the transistor to conduct very lightly, there is almost no voltage drop across  $R_c$  and the voltage of the collector of the transistor is almost equal to  $V_{CC}$ . Thus the collector voltage is an amplified signal of the input signal. By capacitively coupling this signal out to a load, you can drive a speaker, voltmeter, etc.....

The resistors  $R_1$  and  $R_2$  are calculated to deliver the necessary DC base current to get the transistor biased as shown in Figure 2.



## DETERMINING COMPONENT VALUES

- 1) The first step is to determine how much battery voltage is needed. A good rule of thumb is:

$$V_{CC} = (1.25) (2 \times 1.414) (E_{out\ rms}) \text{ or } V_{CC} = (3.5)(E_{out\ rms})$$

Thus if you need a maximum of 3  $V_{rms}$  out, then  $V_{CC}$  must be greater than 10.5V. A 12V battery would perform nicely.

- 2) Next determine the value of  $R_C$  or determine what collector current you need. If you need an output impedance of 1K, then make  $R_C = 1K$ . Since 40 percent of the battery will nominally drop across  $R_C$ , in our case  $R_C$  drops 4.8 volts and  $I_C$  (DC) is equal to  $\frac{4.8V}{1K} = 4.8\text{ma}$ .

$$I_C = \frac{V_{RC}}{R_C} = \frac{4.8V}{1K} = 4.8\text{ ma}$$

- 3) Now determine value of  $R_E$  and  $C_E$ .

We have already determined the DC collector current. This current must also flow through the emitter resistor and drop 2.4 volts across it (20% of  $V_{CC}$ ). Therefore,  $R_E = \frac{V_E}{I_C} = \frac{2.4V}{4.8\text{ ma}} = 500\Omega$ . The impedance  $X_{C_E}$

should be less than 10% of  $R_E$  at the lowest frequency of interest. So, for  $R_E = 500\Omega$  and  $f_L = 30\text{ cps}$  then

$$X_{C_E} = \frac{1}{2\pi f C_E} = 50\Omega, \quad C_E = \frac{1}{(6.28)(30\text{ cps})(50\Omega)} = 1000\text{ MFD}$$

- 4) Now determine the DC base current required to sustain 4.8 ma of collector current. If the transistor has a gain ( $\beta$ ) of 50 then the base current needed is  $I_B = \frac{I_C}{\beta} = \frac{4.8\text{ ma}}{50} = .1\text{ ma}$ . The base resistors,  $R_1$  and

$R_2$  can be found as follows:

- a) The base voltage of the transistor,  $V_B$  should be about 0.6V higher than the emitter for silicon transistors. So,  $V_B = 2.4V + 0.6 = 3V$ .

- b) Set  $I_2$  equal to nine times the base current (see Figure 3)

$$I_2 = (9)(.1\text{ ma}) = .9\text{ ma}$$

$$R_2 = \frac{V_B}{I_2} = \frac{3V}{.9} = 3.3K$$

- c) Set  $I_1$  equal to ten times the base current.

$$I_1 = (10)(.1\text{ ma}) = 1\text{ ma}$$

$$R_1 = \frac{V_{CC} - V_B}{I_1} = \frac{(12-3)V}{1\text{ ma}} = 9K$$

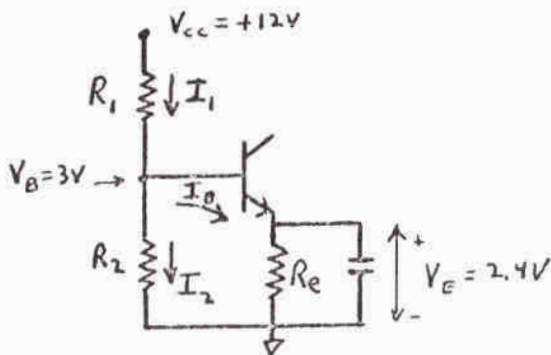
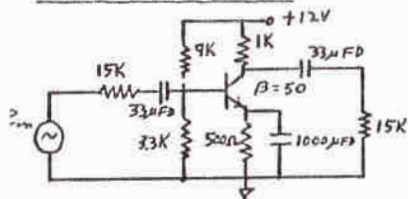


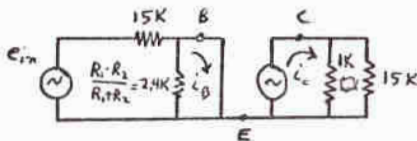
FIGURE 3

- 5) Now all that remains is to select  $C_{in}$  and  $C_{out}$ . Like  $C_e$ , make  $C_{in}$  small with respect to the source resistance and make  $C_{out}$  small to the load. For example, (using the formula in STEP 3) if  $R_s$  and  $R_1$  are both 15K, make  $C_{in}$  and  $C_{out}$  equal to 33MFD.

THE FINISHED AMPLIFIER



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Reno A. Kobold, WAØWKX  
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A girl applying for a job was asked if she had any particular qualifications or unusual talents. She said she had won several prizes in crossword puzzles and slogan-writing contests.

"Sounds good," the manager told her, "but we want somebody who will be smart during office hours."

"Oh" said the girl, "this was during office hours." (W7SPB)

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## OFFICIAL BULLETIN NR 245 FROM ARRL HEADQUARTERS NEWINGTON CONN NOVEMBER 2, 1969 TO ALL RADIO AMATEURS BT

The ARRL Board of Directors held a special Board meeting at Hartford, Conn., Nov. 1, 1969, to consider a set agenda of subjects. Among its actions were agreement on the principle of accepting Technician Licensees as communicators rather than experimenters, studies of changes in band occupancy and of disaster preparedness among amateurs resulting from incentive licensing, approval of national conventions in Boston in 1970 and Long Beach, Calif., in 1971, providing for attendance of Vice Directors at one Board meeting during their term of office on approval of the Director. A special committee was formed to draft a constitution and By-laws for the ARRL Foundation. Other actions included instructions to publish a final report of the VHF Repeater Advisory Committee in QST and request comments from members, petition FCC to grant counterpart call letters to amateurs moving from one call area to another, a special award to retiring QSL Manager WØDMA, a special committee to study Board procedures and a resolution congratulating retiring FCC Commissioner Rosel Hyde on completion of an outstanding career in the Commission. The Board will meet again in May 1970 and at that time give further consideration whether or not to provide for regular meetings twice instead of once annually. Complete minutes will appear in the February issue of QST AR

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## HEARD ON THE PARTY LINE

Charley Vonderberg, W0CCT  
2711 Washington St.,  
Davenport, Iowa 52804

This month your "Party Liner" has decided to join the protesters. Grab your sign and join us in line.

After last November there are many general license holders who might complain of FCC brutality.

We might try a march on Gettysburg, but it seems that has been done before.....quite a while back.

Perhaps we could march in Salina, Kansas. Maybe we could take over Bob's basement.

As for our signs..... in place of "Ban the Bomb" how about one which would read "Bomb the Band"? (The eleven meter band of course).

Some curvaceous, scantily clad YL might carry a placard reading, "Tune for Maximum Smoke." That one would bring about a lot of comments both in AND out of the ham ranks.

"Help Stamp Out Those Over 30" could be followed by "30 db" in small print.

It goes without saying that we should have one which reads, - "Down With Standing Waves!"

One might confuse the public with this one: "Build Simple Filters Directly on Octal Plugs." It's also a very good idea, isn't it?

"Outlaw Sunspot Activity" might bring about varied interpretations from the non-hams.

Here is a word of caution regarding "Tilt Over Tower" signs. It just might give the TVI complainant some nasty ideas.

Perhaps we shouldn't even mention burning our FCC Citations at the next hamfest.

"Push To Talk" also sounds like it has some sort of brutality connected with it.

For that matter, we should soft-pedal the mention of "Sweepstakes." Some states might have law-enforcement people who could be wondering about that one right at this very moment.

We should stomp out DXpeditions as well, as that might sound just a bit off-key.

"Down With Postage Rates" would surely help the QSL situation.

"Legalize Flattopping" or "Simplify Schematics" would surely fit into this picture.

Here is a real goody: "Reduce Harmonics!" Everyone will drink to that.

The definition of a "Mob Scene" is a net - anyway you slice it.

"Circuit Breakers" might be unhealthy to mention along about now. And perhaps we should substitute the Spark-Gap Days for the Generation 'Gap Era.

Say, how about a bumper sticker that reads, "Make CW - not War" for that mobile unit?

In order to reduce feedback, harmonics, flattopping, over modulating, miss matches, and the like - rid the world of.....

W0CCT

de Ham Monitor

\*\*\*\*\*

Then there was the OM that higher principles than George Washington. George Washington could not tell a lie...the OM could but won't.

de Ham Monitor

\*\*\*\*\*

## HOW I BECAME AN "APPLIANCE OPERATOR"

With very few exceptions, American hams today operate commercially made rigs, either bought factory made assembled from kits. However, before World War II, most hams built their rigs from scratch, thereby gaining experience in theory and construction as well as operating experience. And it must have been those old-timers who coined the expression "appliance operators" when talking about hams who buy their equipment rather than building it.

I am an appliance operator, as most of my equipment is commercially made. But while there are some fellows around who really don't have much of an idea about what goes on inside their boxes, I think most hams are appliance operators for financial reasons and lack of time rather than inability to design and build their rigs.

I was first bitten by the radio bug shortly after World War II when I was a 12 year old boy living in a defeated and demolished country, which now uses the prefix DL. Radios were hard to come by and anyone who could build a radio could profitably trade it for food or sell it on the black market.

If one wanted to buy a radio in those days the average wage earner had to invest a month's wages or more for a 5-tube superhet. But military surplus parts and equipment of both German and American origin were cheap and plentiful and building radios was a profitable hobby.

At that time, the minimum age to get a ham license in Germany was 18, so all I could do was concentrate on building receivers and I built them by the dozens.

After coming to this country it was several years before I was eligible for citizenship and a ham license. Right away I started to build a transmitter and receiver from scratch. But what a shock to find that commercially made rigs could be bought for less than what it would cost me to build my own. And they would be more versatile and better looking.

The current state of the art makes designing one's own equipment a complicated job and the complexity of building an SSB rig requires many hours of spare time which most of us don't seem to have.

Another factor is the problem of getting the parts. Just try to build one of the more complicated circuits from the Handbook and you find yourself ordering parts from catalog houses all over the country.

So let's not look down on appliance operators! Just let the next guy enjoy this wonderful hobby of ours as much as we ourselves do.

Horst A. Geipel, WAØNUH  
de Barracks Bugle — St. Louis, Mo.  
\*\*\*\*\*

The bathtub was invented in 1850 and the telephone in 1875. Had you been living in 1850 you could have sat in the bathtub for 25 years without the telephone ringing once!

\* \* \* \*

Civilization is a system under which a man pays a quarter to park his car so he won't be fined a dollar while spending a dime for a nickel cup of coffee.

de Ham Monitor  
\*\*\*\*\*

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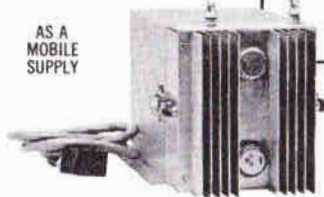
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