HAM HUM

February 1962

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Join the Ak-Sar-Ben Radio Club
and enjoy Ham-Hum every month

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FOR SAFER MOBILING . . . .

Carry an old red handkerchief, cloth or flag to fasten to the top of your whip when pulled to the side of a busy road. For safety at night fasten a few strips of scotchlight tape to the inside of the front door. Leave the door ajar to mark the outline of the car body to approaching automobile lights.

Safe driving demands that fully as much attention be paid to the car behind as to the one in front. A clean rear-view mirror is indispensable. No turning, stopping or passing maneuver should be attempted without monitoring the action of the car behind in your rear-view mirror. Every car you see with a bashed-in trunk is mute evidence of disregard of this basic rule of safe driving. Sure, it may have been the other fellow's fault, but such accidents can often be avoided by application of a little hindsight as well as foresight.

A box of sand in the trunk may make good ballast, but is always frozen hard when you want to scatter some under the wheels. Equally good as ballast and far better as a ready traction aid on a slippery spot, is a bundle of coated asphalt shingles.

And finally, remember any car will last a lifetime - - if you're careless enough.

de St. Paul Mobile
Radio Club News

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THE VERY LARGE

tera	1,000,000,000,000
giga	1,000,000,000
mega	1,000,000
kilo	1,000
hecto	100
deka	10

THE VERY SMALL

deci	0.1
centi	0.01
milli	0.001
micro	0.000001
nano	0.000000001
pico	0.000000000001

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PREXY SEZ—

By Royal Enders, KØLYO,
1962 Club President

To all members of Ak-Sar-Ben Radio Club, and to all Radio Amateurs, wherever you may be:

This will be a monthly column in Ham Hum, and is the report of the 1962 President of Ak-Sar-Ben Radio Club, Inc., to its Members and Friends, of the plans and hopes of the 1962 Board of Trustees.

All Committee Assignments have not yet been made, but we can tell you that the project is under way. Tom Ladd, KØMKT, is Chairman of the Committee on Coaching and Exams, and Tom and his Committee will soon be teaching the CW and Technical parts of the Novice, Technician, and Conditional Class Examinations. We already have 8 applications for this service, and we look forward to Tom and his Committee doing an excellent job preparing people for the Exams. Let Tom know of any one who wants coaching in regular classes. Larry Schumacher, KØSJD, 5311 Redman St., 451-4725, is the Board Member who supervises this activity.

Joe Berounsky, KØQDB, is the Board Member who supervises the Membership Committee. His QTH is 3227 Seward St., Omaha 11, Nebr. The Committee has not yet been completely selected, but its function is to call on prospective members, and other prospective Hams, and solicit membership for the Club. Please call Joe if you know of prospects.

This committee will be working with Church Youth Groups, Boy Scout Groups, and with Y.M.C.A., and other groups to increase Club Membership, and to create interest in becoming a "Ham."

Ye Olde Secretary for 1962, Lou Cutler, WØLVI, will supervise the Committee on Mobile Activity. This Committee will be announced soon.

Your President will work with the Combined CD, MARS, Red Cross, National Guard Committee. The Chairman of this Committee is Dick Eilers, WØYZV, and members are Hugh Tinley, KØGHK, Ed Donze,

(Prexy Sez - continued)

WØYEV, Russ Hassmann, and Ed Gutmann, WØCQX, RACES Radio Officer. If you have any ideas concerning this very important activity, call any of the above.

Harold Welch, KØSCG, is the Board Member who works with the Program and Planning Committee. The Chairman is Ed Gutmann, WØCQX, and they are very ambitious for 1962. In fact, the March Meeting will be a Pancake Supper, and you will hear all about it in the next issue of Ham Hum. Variety Programs will be offered at most Club Meetings, similar to the February Program. An Auction is coming up, an XYL and YL Program, and the big Picnic will be in September, Soon we will honor the Old-Timers and our Past Presidents.

All in all, be proud of your Ak-Sar-Ben Radio Club; you belong to it; don't you wish everyone did?

We are looking for many new members, not only those in Omaha, but lots in surrounding towns and counties. This Club has a lot to offer to you; you can bring a lot to this Club. Why not fill out the application in this issue and mail to Joe Berounsky, KØQDB, 3227 Seward St., Omaha 11, Nebr. or to P. O. Box 291, Omaha 1, Nebr.

More next month. 73. Royal.

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Dick Reimund, WØLFM/5 is now at 322 So. Barkley, Spearman, Texas. He may soon be on 40 M SSB.

Via Alan McMillan
JJK (WRL)

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FOR BETTER UTILIZATION OF OUR BANDS . . .

de Splatter - Minneapolis

How many times have you tried to DX or handle cross-country phone patch traffic only to be QRM'd by a QSO between two hams in the same town each running a gallon? Many times, I'll bet! Let's face it - our frequency allocations are limited; our bands are crowded. As a courtesy to other hams we should ask ourselves two questions each time we go on the air:

1. Could this contact be made on a band that is less crowded, where it will not *unnecessarily* QRM someone?
2. Could this contact be made with lower power?

If the answer to either is "yes," it's your *obligation* to do something about it. Adoption of these criteria by a majority of hams would make operating more pleasurable, thus benefiting all of hamdom.

Phone operation was in mind when this article was written, but these comments apply equally to CW operation.

For a closing thought, our VHF bands are megacycles, not merely 100KC or so wide. Why don't we make fuller use of these bands by moving our local ragchewing off of the high frequency bands (75 through 15 meters) up to 10, 6, or 2 meters where there is sufficient spectrum space for all present hams to carry on QRM-free QSOs. Unless we use them, we may lose them!

- - (author's name withheld by request).

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(Prexy Sez - continued)

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- - (author's name withheld by request).

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CAR RADIO - SANS CAR

An evenings inspection of accumulated "junk" under the workbench brought to light an old 51 Buick push-button car radio designed for 6 volt operation. My first impulse was to give it the honorable rites of the "Deep-Six." On second thought - those old car radios were some times pretty good, so an inspection was begun. First examination disclosed no apparent trouble, but I could not be sure until it was "fired-up." At this point, the "Deep-Six" came to mind again as I had no car battery, nor an inverter at hand. Not wanting to start a major project only to find out I had junked it for a good reason; I first thought that I could rip out the internal vibrator power supply and use my utility power for a test. Then, if it was found ok, make a suitable power supply from an old transformer in the junk box, using selenium or silicon rectifiers. Frankly, at this point it still looked like a good sized project.

When in doubt, there is nothing like "thinking it over with a cigarette." About the 10th puff it cleared like dawn. Why worry about using external power supplies? The unit has a power supply built right in it. While I did not have 6 volts DC I did have 6 volts AC in the form of several old filament transformers. A look at figure #1 (P.8) confirms the well known - but forgotten for the moment - fact that after all, the vibrator just changes the DC to AC and after that it's just a normal transformer and rectifier system.

The specs for the radio showed that the current drain was only 6 amps and a dandy 6 amp transformer poked its nose from the dust under the bench. Now, what do I do to get going? Again, reference to figure #1 shows that if the vibrator is removed (it was) and the input lead is lifted from the center tap of the transformer (change #2) and the other side of the primary jumpered to the grounded pin on the vibrator socket (change #3 and the last one) then, all that remains is to hook the 6 volt leads to a 4 pin plug and plug it in where the vibrator was (which I did). That's almost the end of the story. Well - not quite. I should tell you that the radio plays like a dream and is a real DX chaser. Car radios are made to operate well from 3-4 feet of antenna and when you use an antenna 15-30 feet long the DX rolls in-- East & West coast, North, and even Mexico.

What is it good for? Well - car radios are not hard to find, especially old 6 volt ones. A decent 5 or 6 tube radio along with a cheap "old-style" ham converter can make you a really nice ham receiving set-up at a very few dollars. My guess is that a similar car radio can be had at car "graveyards" going for as little as $5 or $10. Old 3 or 4 band ham converters are available for under $20 in many cases. The car radio's inherent sensitivity and shielding is excellent and this combination can often beat a $150 ham receiver. A couple of simple

The Salvation Army

OMAHA NEBRASKA

In Appreciation for Outstanding Service in Behalf of the Christmas "Tree of Lights" Campaign

AWARDS THIS CERTIFICATE

TO

Ak-Sar-Ben Radio Club

WHOSE EFFORTS WERE INSTRUMENTAL IN BRINGING CHRISTMAS CHEER TO SEVEN THOUSAND NEEDY AND UNDER-PRIVILEGED PEOPLE OF THIS COMMUNITY

DATED THIS ELEVENTH DAY OF JANUARY, 1962

N. MURRAY LONGWORTH, *Chairman*
Advisory Board

A. J. RHODES, *Honorary Chairman*
Christmas Activities Committee

W. LAWRENCE SHOMAKER, *Chairman*
Christmas Activities Committee

BRIGADIER RAYMOND JOHNSON
Divisional Commander

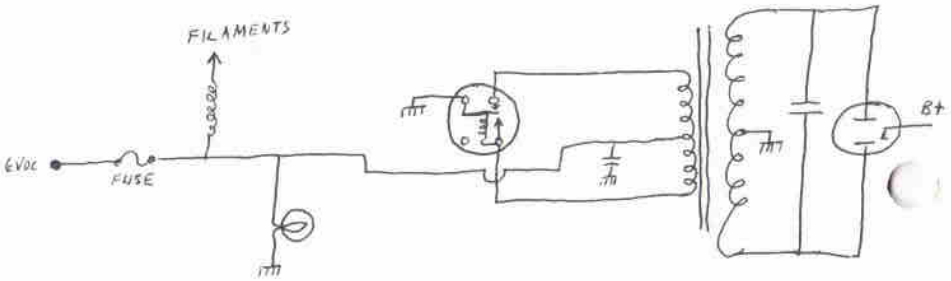
refinements would be to add a "Q" multiplier and a BFO for CW. A BFO coil is available (diagram packed in the box) at the parts emporium and requires only one triode tube to be added outboard. If you like to play it rough, just use one of the tubes in the radio for the BFO. Mine has push-pull 6V6 tubes in the output with enough audio to rattle the walls. It could well suffer the loss of one of them to make a BFO.

Now that you have the conversion done, check the temperature of that 6 volt transformer you are using to see if it's hot enough to fry eggs on. Mine was. I was using a 6 amp transformer which, according to the specs, should have been adequate for the listed 6 amp battery drain. It appears the car radio transformer has a rather low power factor on the primary, at least when excited by AC from another transformer. That is to say - a good part of the power from the filament transformer was being dissipated as wasted heat and only partly doing a job of powering the radio. Happy day! I see a 10 amp transformer down there in the dust too! Now, after several hours of operation the filament transformer is just barely warm.

Have I got the car radio hooked up to a converter and am I listening to the DX roll in? Nope - the XYL has spoken. This is just what she needs in her basement sewing room for music from way off (5 or 10 miles). Now another project rears its ugly head. She would like to have it built in the wall WHEN I finish the walls in her sewing room, AFTER I lay the tile on the floor, then I cannnnnn. O! I don't think this was such a good project after all.

Alan McMillan
WØJJK

FIG. # 1



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YESTER YEAR

Once upon a time, many, many years ago, I lived in a small town of little consequence. My father had the very important and official task of turning the ELECTRIC street lights on along down town Main Street. You may not believe it, but there were very few electric lights in the surrounding homes. We lived near the small municipal steam generating plant and as you can guess, "Electricity" was a very important subject in our household. It was our work and hobby, our life-blood, even at the age of six.

We built boats, wagons, sleds, gun-powder cannons, kites - it was about the time I invented "Perpetual-motion." You see I had amassed a huge store-house of information on things scientific. My father had given me a long lecture on dynamos. In the old days, this was a DC Motor, or Generator, depending on whether it was driven by a power belt to generate electricity, or connected to batteries and run as a motor.

I convinced all the kids in the neighborhood that what we needed was two dynamos. As scarce as they were, we dug up two of them and set about immediately to build a paddle wheel to drive them. Our mothers had repeatedly warned us about playing too near the river, but we managed to get the whole mess all hooked up, "our apparatus." The Paddle Wheel was turning, the generator was generating. We stood by breathlessly, waiting to throw the switch which would take this generated current to the motor which in turn was coupled to the generator. By this time a large crowd had gathered. I finally got up enough nerve and threw the switch. Everything came to a grinding halt, the motor, the generator, and the paddle-wheel. By this time, I was frantically trying to figure what went wrong, the crowd getting bigger, I wished we had performed our experiment in secret.

It was my first "failure." I was branded a "nut," I was first kidded unmerciful, then ignored most completely, I next set out to build a DC transformer, hoping to get several thousand volts from a few dry-cells. I tried and tried to no avail. You would have thought by now I would have learned my lesson. But no - I talked a friend into helping me hook up a telegraph to his house from mine. We used the river for one conductor and the local water main for the other. By this time we were working in secret. Well, after about a year of failures, we finally got a signal across, but we had to use wire. Ford spark coils did the trick, but we burned up the trees badly for lack of insulation on the wires.

The die was cast, this "wireless business" was here to stay. So after more years than I care to mention, I'm still trying. You see, I did build a "DC Transformer" the other day, and it did work! It was far from perpetual-motion, my first failure. With the aid of these new fangled transistors and a lot of other people's Know-How I can now step my 12 volt car battery up to six or seven hundred volts and no trouble getting as much as 650 milliamperes! "No trouble" did I say? Well it took me nearly a year to find out.

After winding about 15 of those toroid things, I had just about decided there was a limit to these things - not much better than a wet mop, for sopping up juice, you know electricity. After many weeks of reading, studying, sweating, and discussing this thing, even with experts, I further decided that either no one knew anything about this business or else they weren't telling. So, if the information I am about to divulge is true or not, at least it helped me come up with the answer.

First, select power transistors with high current gain, and second, operate them at the correct square-wave frequency. The converter transistor is merely a D.C. switch - be sure to operate it this way. The "rise-time" and "fall-time" should be as instantaneous as possible, no more than 4 micro-seconds rise and no more than 10 micro-seconds fall time. Transistors with high collector saturation voltage usually have fast switching time, a most important discovery.

Good toroids operate best (with greatest effeciency) at the higher frequencies, just like any good high grade audio transformer up to fall-off frequency. Good power converter transistors operate best (with greatest efficiency) at square wave frequencies below 2000 cycles, down to 100 cps and less. The trick is to select an operating frequency, usually 400 to 1200 cycles with the least amount of sacrifice in losses in both the transistors and the toroid, working together.

Consider your D.C. converter as a bi-stable flip-flop oscillator, operating as a saturable square-wave inductive reactance. The fact that it is also a transformer is only secondary. Base bias and forward bias are adjusted to transistor cut-off condition with a dead short on the secondary winding. Releasing this short, our bi-stable "teeter-totter" swings first one way kicking the bias inductively on the opposite leg, causing this side to out-pull the first side. This "see-saw" action is controlled by the saturation curve of the toroid which is essentially a "square loop" as opposed to an "S" loop of most audio transformers. This is commonly called the "BH" curve.

Standard power transformers work under the assumption that the primary winding energizes the core which in turn imparts lines of force in the secondary 180 degrees later in the cycle of events, and at no time does the core saturate. Not so with the efficient operating toroid converter. Current (DC) in the primary rises almost immediately (less than 4 microsec). In this brief space of time, the transformer has done the job, current continues to flow at the crest of the square wave until it is cutoff by the transistor "switching action."

With the discovery of "high-speed" ferites, wherein the individual molecules are spinning on their own axis, in addition to their own orbit, we find a new source of toroid material which far exceeds what the hypersil steel band wrapped toroids can do. There ferite molecules "precess" much like a gyro compass needle, causing each successive layer of molecules to "role-over" to a saturation point with very little

(YESTER YEAR - continued)

coaxing from the rising DC flowing through the transistor "switch."

Yes, the DC transformer is here. I may not have discovered it as I started out to do close to 45 years ago, but I have perfected a 500 watt transformer and power supply which you can hold in your hand and weighs less than two pounds. Takes DC in and puts DC out, and has better regulation than any dynamotor you ever saw. So don't belittle the young squirt who comes up with those weird ideas - you might just have to eat those words some day. Hi.

The Old Timer
(Unknown)
de Florida Skip

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January 22, 1962

Dear Dick:

We are deeply grateful to you and the members of the Club for the fine service rendered on Sunday, December 24th when the collections were made as a result of people calling in and making pledges.

Would you please convey to the other members of the Ak-Sar-Ben Radio Club our heartfelt thanks?

Sincerely Yours,
Olin Brigman
Major
Divisional Secretary
The Salvation Army

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MOM IS ON WRONG FREQ?

(Following clipped from Miami News)

Dear Jane Dare:

I have a 23-year-old son who has fallen for a widow as old as I am.

My son has always been interested in ham radio, but we never could afford to install one. This woman has a very expensive set of her own and he goes over at least three times a week to listen in.

She is using this to keep him going to her house. Sometimes he stays there for several hours. I know this woman often gives him lunch or supper. I am ashamed to see my son's car parked in front of her house because I know what people are thinking.

He goes out with girls of his own age but he doesn't date any one in particular. What can a mother do to make her child see what he is getting into?

Mrs. H. C., Miami Beach

(Reply)

Dear H. C.:

If he were a child you could buy him a set of his own. Since he is not a child he has a life of his own which makes him eligible for interest in all kinds of communication.

Your son is probably interested in only headphones and switches. Ham operators never seem to be concerned with age, sex, race, color or creed of their fellow hobbyists.

You just aren't operating on their frequency.

de Florida Skip

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