



HAM HUM

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No. 8-9

August - September 1966

NEXT MEETING

The next meeting of the Ak-Sar-Ben Radio Club, Inc. will be held at the 4-H Building, Ak-Sar-Ben Field, on Friday, October 14th, at 8:00. P. M.

SPEAKER: CECIL D. DE WITT, WØRMB

TOPIC: CHECKING MODULATION WITH RECEIVER AND A SCOPE.

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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DESIGN PROBLEMS

Our members will recall a few months ago a demonstration of the Galaxy 6/2 transceiver being designed by WRL. At that meeting we went into some of the problems of design and cost, particularly pointing out the close relationship of quality and cost. To bring you up to date, production of the transceiver will be considerably delayed.

To us simple folk, from a practical standpoint this means the transceiver has been shelved and will not be produced until such time as the cost of the unit can be brought down without sacrificing quality. You would imagine as the cost would go up, each dollar of additional cost would make that many fewer prospects and thus would reduce the production run. Unfortunately when you reduce the production run in quantity you increase the cost of the production per unit which in turn again reduces the prospects which in turn can reduce the production run. This transceiver

has suffered in the production run at the moment in that they have one machine. Anyone with fifty or sixty thousand dollars in their jeans might make them an offer. This, of course, is where the gamble is in the production of any new device and represents a part of the cost of doing business under today's conditions and might be thought of occasionally as we look at ads for various gear.

When we buy a piece of gear or even consider buying a piece of gear, while the price might be a little higher than we think it should be, we sympathize with the manufacturer as he undoubtedly also had problems in its design. On the other hand, this editor would like to state that even though it is not worth much to those who spent the money on the Galaxy 6/2 transceiver I would like to say "thanks" for trying to get me a piece of gear of the quality I desire and that I had hoped to own.

PICNIC

It was a good day for a picnic September 11th, but we had a poor turnout. Those who were there had a good time. There were games for all. Games consisted of: running backward race, balloon blowing contest, three-legged race for kids and adults, tug of war, balloon breaking, egg throwing, and shoe kicking. All children won in drawing. The door prize was won by you'll never guess

who. Would you believe it was me? Well, it wasn't! It was Mrs. Mary Berounsky, XYL of KØQDB. So if you ever get by Joe's, ask for a cup of coffee from their new 30-cup coffee pot. Sorry more of the members were not able to be at the picnic.

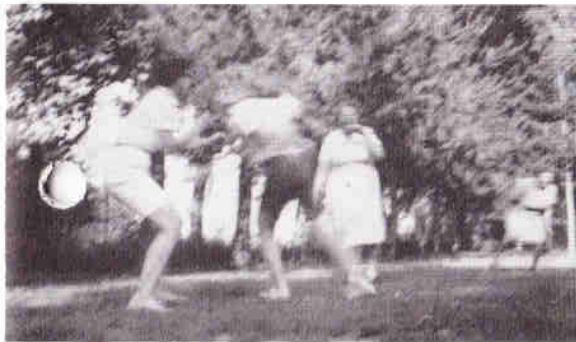
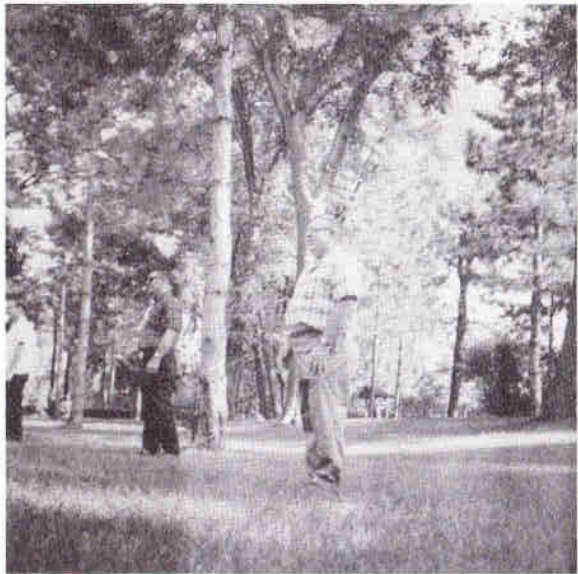
By - Harold, WAØDGA

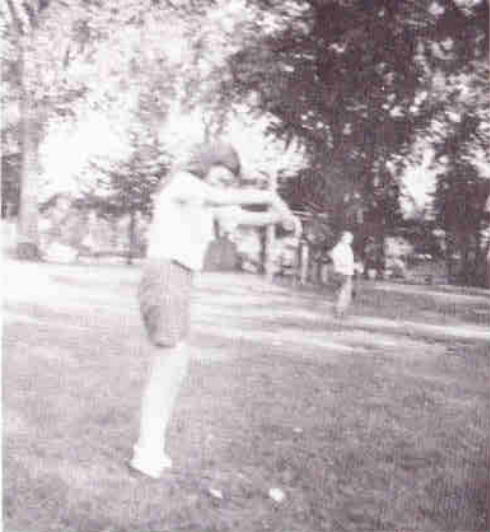
(Editor's Note: Thanks to all those who helped with the picnic arrangements.)

Picnic Photos

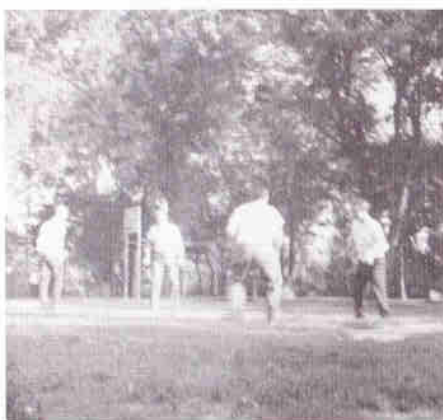
courtesy of

WAØDGA





More
Picnic Photos



1101 South Ash
North Platte, Nebraska
August 16, 1966

AK-SAR-BEN Radio Club

P.O. Box 291
Downtown Station
Omaha, Nebraska

Dear Friends,

On behalf of the North Platte Amateur Radio Club I am writing in regard to a project we have originated here in North Platte August 7, 1966 at our annual HAMFEST. We have started the Nebraska Amateur Radio Hall of Fame for the Nebraska Amateur Radio operators. Our aim is to contact as many radio clubs as possible in Nebraska and hope they will participate and help us get this program on its way. We are setting up rules and regulations for the qualifications of any new members.

We have inducted two old-timers from this locality to start this program on its way; namely, WØEXP Charley McNeel and WØSAI Claude Longstreth. Our plans are to induct one member each year into the Hall of Fame beginning in 1967. We will be asking for nominations from all over the State of Nebraska and a committee will be picked to choose the next member, and he would be honored at a HAMFEST or program, etc. We feel it will also help upgrade the standards of many amateur radio operators.

We will welcome any ideas from your club or other clubs and hope you will give your support to this program.

We are checking with authorities concerning the proper handling of

this program. This is not a local program--our intentions are to make it state-wide and with the cooperation of the many other clubs we can make a nice program for the Nebraska amateur radio operators.

There are hall of fames, etc., for many other sports and hobbies. Why not the Nebraska Amateur Radio Hall of Fame?? Let us honor one of our old timers each year who has contributed much over the years to our hobby.

Hoping to hear from you with your support and approval.

Best wishes & 73's
Charles Kucera, WØFZZ
Program Chairman

Gentlemen:

Please make a temporary change in my address starting September 8, 1966, and until June 1, 1967. I will be moving to the University of Nebraska and my new address will be 803 Cather Hall
University of Nebr.
Lincoln, Nebr. 68508

Thank you.

Sincerely,
Harry I. Silver
WAØDJK

FOR SALE

Heathkit Sixer with mobile power supply and Saturn 6 Halo... \$50.00

Ameco Double Nuvistor all band preamp...\$23.00

Call - Jay, WAØLLQ
339-3448

August 29, 1966

Ham Hum

Ak-Sar-Ben Radio Club, Inc.
P. O. Box 291, Downtown Station
Omaha, Nebraska 68101

Hi:

The AM Operators held the annual No-Host picnic at Kelly Park, McCook, Nebr. Aug. 28.

Hal, W8ULD/Q, Castle Rock, Colo. came the furthest; Dayton, WQVEA, of North Platte, Nebr. was first at picnic site, so became anchor-man for the talk-in to pilot mobiles to the site. Range covered, mobile to mobile, on 3.850 Mc, was better than 75 miles, some QRN from power lines. Many Hams along the way, who did not make the picnic, joined the talk-in, made it more interesting.

Seventeen Hams, and families, made the picnic. Seven mobiles with loaded whips kept the conversations lively. Nebraska, Colorado, and Kansas, were represented, and a lot of fine fellowship and food was enjoyed.

Floyd, WAQDOU, had some Mars gear to distribute; Mickey, WQVUB, had some plastic tubes to give away, FB insulators they make, and the swapping was really wild.

Harold, KQFRU, and Dayton, WQVEA, gave a short demonstration of two-meter mobile, and Ed, WAQCBJ, tried to talk up 160 mobile, got some interested in joining the 160 meter net this winter, anyway.

No date or place was set for next year's get-together, except

plans were made to do it more often during the summer.

73,

Dayton L. Phifer, WQVEA

FOR SALE

- 1 - 40 foot Rohn tower
- 1 - CDR Rotor AR-22
- 1 - 6 Meter 6 Element Hy Gain Beam
- 1 - 2 Meter Converter
- 1 - 6 Meter Converter with Power Supply.

B. Smith
WAQICK
238-2363
Bennington, Nebr.

FOR SALE

Heathkit HW-22, HP-13, GH-12 Mike and HS-24 Speaker. Assembled and professionally wired but unused. With all manuals. Kit price or best offer.

Deluxe Vibroplex Bug, Gold-plated Base, Chrome-plated Arms, Red Paddle - - \$13.95. Will deliver in Omaha.

73's and thanks,
Perry H. Laten, WQRFLL
1946 N. Lincoln
Fremont, Nebraska
Phone: 721-8609

MOBILE RADIO PLEADS FOR MORE ROOM

The Commission has given consideration to use of single sideband but there are so many technical difficulties associated with it that even the industry pushes for it. Its main drawback is that it is not compatible with the existing double sideband mode of operation. Even if it were, many engineers believe the spectrum can be better utilized by splitting channels than by using SSB.

The Mobile Radio Services operate in the 25-50, 150-170, and 450-470 mc bands. Among the users, to mention but a few, are aviation, marine, police, fire, local government, highway maintenance, forestry, emergency, State guard, utilities, petroleum, business, manufacturers, relay press, motion picture, railroad, taxicab, buses, amateur and a host of others.

There is only so much room in the spectrum. It is already loaded to the breaking point with frequencies for the various services.

Plead for More.

Last year, for instance, more than 1½ million station authorizations were outstanding in the Safety and Special Radio Services. Some of these involve the use of many transmitters (about 5½ million in all). Of the 1½ million station authorizations, 52,300 were in the Public City Service and 16,000 in the Land Transportation Service.

Most of the 1½ million station licensees are constantly screaming to FCC about their frequency shortages and pleading for relief.

Many Mobile Radio Service users find reasons to severely criticize the commission for its handling of the problem. But about the only solution they offer to it is to suggest taking some frequencies away from the other guy to alleviate their own plight. The regular broadcast service (TV and radio) is the prime target for this mode of attack.

Other Solutions.

There are other solutions but these are up to industry to find.

If more advanced equipment were available, channels could be narrowed to almost any width, thus providing many more of them in the same amount of space.

With more sophisticated equipment, much higher frequencies could be used and the whole range of frequencies could be shifted around to give everybody more.

Like laser-beam communication, however, this is a long way into the future. The state-of-the-art has a way of advancing only so fast and there seems to be no magic wand to wave.

de Limarc Log L.I., N.Y.

FOR SALE

Multi Elmac
AF-67 transmitter
PMR-7 receiver
M-1070 power supply
Mike

R. B. Wentworth, WAØEDO
3510 South 120 Street
Omaha, Nebraska 68144
Phone: 333-8543

Sept. 24, 1966

AK-SAR-BEN Radio Club, Inc.
Omaha, Nebr.

Hi:

Just tinkering around, with a noisy electric clock, found that if you drill a small hole in the top of the gear case, squirt some light oil in and turn the works around a few times, while running, they will quiet down, even run like new. May take a day or two for the oil to really get to some spots. Brush the drill with spaghetti or something to prevent it going past the casing into gears.

Salvaged an old felt hat, makes fine covering for bottom of gear. Resists slipping too, key feet, mike bottom, F.S. meter, etc.

What to do with a 60 milliamp AC meter? Added a 4k 10 watt wire-wound resistor in series, checked against house voltage, read 120 volts at about half scale, started up the emergency power supply, plugged in an electric clock, checked against second hand on watch, regulated the governor till they synchronized, then put a spot of nail polish on the dial of the volt-meter for future reference. Also found fluctuation in speed of dynamotor and readjusted the carburetor till it ran smoother. Dynamotor synchronized at 60 cycle AC at 117 volts.

Changed out old mobile rig, put in Elmac Pmr 7 and AF-68, noticed a lot of noise that had not been apparent on old converter, cleaned up everything, still noisy, remembered using "Plastic-Cote" ignition spray one time, got a can, tried it, and cleaned up the last of my QRN.

8

(Have tried other types of spray, none so good as "Plastic-Cote".) Wiring on old car is ten years old.

Rigged up an AC power supply for the Elmac, so can use it in shack or power the mobile, from AC on field day, etc. Made every effort to use disconnected plugs of different types, so it will be almost impossible to hook up wrong connections, can quickly hook it up without reference to charts, markings, etc. But what to do with the harness? Took insides out of an ancient portable radio, installed a speaker, with connections to match the PMR-7, had lots of room left over, enough for the harness, hand-key, and so forth.

Did you ever notice a salesman coming to the door and remember to turn on the tape-recorder?

73,

Dayton L. Phifer, WØVEA

**OFFICIAL BULLETIN NR 75
FROM ARRL HEADQUARTERS
NEWINGTON CONN AUGUST 25 1966
TO ALL RADIO AMATEURS BT**

The Federal Communications Commission this week denied a petition, RM 519, filed some time ago by WA2VAF. The amateur had asked that the maximum permissible input power for U.S. amateur transmitters be reduced by steps over a period of years, finally to reach 100 watts. The Commission did not feel that a power reduction of this order would reduce mutual interference between amateurs significantly AR

Technical Notes
by Bob Schoening, W0TKX

ALL ABOUT ANTENNAS

The subject of antennas has been covered many times, but with new hams joining the ranks all the time, it must be repeatedly iterated. Most of us lump wave propagation, antenna theory, antenna design, feedline theory, and mechanical details all together under the subject heading "Antennas." Most of these are covered by the ARRL *Antenna Handbook* which is a great bargain. We will attempt to bring out some frequently misunderstood points. A good antenna is one that gets results. Results depend on many factors, but generally are evaluated according to signal reports (over a period of years - not weeks) with correction factors for transmitter power.

For absolutely top-notch results, we must consider five variables. The first one is essential for any results at all. The others are in approximate order of urgency: (1) Good propagation conditions over the path to be covered; (2) Favorable directional characteristics for our antenna; (3) An efficient feed system; (4) An efficient antenna; (5) A low SWR. If the path is closed, we won't see it at all. If we radiate a megawatt straight up, we can't work west very well. If we lose the signal in the line, it won't get radiated. The SWR, a modern fetish, is of little significance if the line is efficient,

but can help us to load the transmitter properly.

If one or two of the desirable conditions can not be met - for example, a mobile antenna for 80 or 40 meters can never be efficient - we may still get good results. Let's consider the list in order:

Nobody would seriously consider scheduling Hawaii on 160 meters at noon, yet all signals go everywhere, we are told. These signals would be so far under the noise that unattainable power levels and receiver sensitivities would be required to dig them out of the heavy atmospheric noise. 160 is our only MF (Medium Frequency - .3 to 3.0 mc) band, and the MF region is generally reserved for surface wave communications. These waves travel along the earth's surface, and at the VLF (below 30 kc) can be heard around the world day and night.

As we get higher in the frequency, ground losses increase to the extent that there is a considerable difference in surface-wave coverage between the low and high ends of the Standard Broadcast band. 160 meters, being near the high end of the MF range, allows only 25 miles of coverage, or so, with surface waves and normal equipment. Hams depend on sky-waves, often weak due to ionospheric absorption in the MF region, and this makes our skip

unreliable. For distances of 25 to 800 miles, high-angle sky-waves from low or slanting wire antennas are better than low-angle verticals. For DX on 160, if we can't get the horizontal over 100 feet high, the infrequent f-layer skip is best hit by a vertical. WØVXO, a local 160 meter DX specialist, uses a 120 foot vertical. If 90% of your contacts are at distances around 300 miles, or so, you don't want a vertical, however.

As we go higher, we enter the the HF region containing the 80, 40, 20, 15, and 10 meter bands. On 80 meters and 40 meters, high-angle E-layer skip accounts for a large number of contacts, so the inverted "V" or slanting dipoles of various designs give good results. Again, DX specialists will use high horizontals, verticals, or even directional arrays of various types; 40 meter beams are no longer rare. 20, 15, and 10 should never be used for local (within the USA and Canada) contacts when open for skip. Near the high limit of the ionosphere's influence, these frequencies are reflected with less absorption and allow long distance contacts with very strong signals. With strong local signals (local meaning, for example, California from here) it is a temptation to work other W stations, but wastes the spectrum. There is no room for high-angle work here, since when the band is open, low angles work best, and when it is not, it may be used (like 10 meters these last few years) as a space-wave local rag-chewing band, where

(as on 6 and 2) low angles are also desirable.

As we get into the VHF region, shorter wavelengths permit the construction of highly efficient and highly directional antennas of reasonable size, and these lend themselves to the "space wave" propagation condition - a direct ray and reflected rays from various objects including the earth itself. If sporadic E-layer ionization allows long distance work on 6, it will generally be up to 1200 miles (one hop) and 2400 miles (two hops) and the best with low-angle antennas - the same ones that work so well for extended ground wave, scatter, auroral reflection, meteor scatter, and all the other types of communication on these bands. Study them; it is too bad that many hams don't know how their signals are getting from one place to another. There are many modes of propagation, easily recognized with a little practice, and to lump them all together as "ground wave" or "skip" or "short skip" suggests a lack of knowledge, or at least experience, in this interesting area of propagation.

Some predictions about tomorrow's propagation paths are possible, and for this, we depend on experience to a large extent. Pick the right time on the right band for the distance you want to work; it's fun to try to power through on a dead band. That's why proper path conditions are first on our list of how to get results.

Item two concerns our antenna's directional characteristics. An an-

tenna which might meet all the other requirements would be, for example, a 100 foot vertical made of 3" diameter silver tubing, and used at 2 meters. Properly fed, it will exhibit terrific efficiency, but nobody will hear you. That is, unless the other station is directly overhead. If your antenna radiates 430 watts (a good average for a HF station running a KW input to a 70% efficient final, with a 95% efficient tank, a 95% efficient antenna tuner, and 80% efficient feedline and an 80% efficient antenna) it would radiate from a single point source (isotropic antenna) a certain reference signal strength. A dipole will improve this to about 650 watts in its best directions but less in other directions. A 2 element yagi array might run this up to 1960 watts-worth, but in one direction only with less-than-20-watt signal off the back. A large 5-or-so-element array might give you 6500 watts in one direction by

sacrificing the radiation in other directions.

"Sacrificing" high-angle radiation in this manner is a good bargain. Loss in other horizontal-plane directions is made up by making the array rotatable. The beam is definitely desirable, but don't forget that a vertical dipole is radiating more signal in most directions than the big beam (and picking up QRM from all these directions in proportion). Whichever antenna you choose, assuming that it radiates 430 watts, it can't radiate any more than that, so increasing the radiation in any direction(s) must decrease it in others. Long, non-rotary, random wires often give surprisingly poor or good results, but some of us like to be surprised! Point three in our search for results is the feed-line efficiency, so here is a table giving the approximate efficiency of various lengths of various types of feed lines at various SWR readings.

% EFFICIENCY OF VARIOUS LINES IN

TRANSMISSION LINE TYPE	50' LENGTH				100' LENGTH				200' LENGTH			
	SWR				SWR				SWR			
	1:1	2:1	4:1	10:1	1:1	2:1	4:1	10:1	1:1	2:1	4:1	10:1
A	71%	67%	54%	34%	50%	46%	36%	20%	25%	22%	17%	9%
B	89%	86%	80%	63%	79%	76%	66%	45%	63%	59%	47%	28%
C	98%	98%	95%	89%	95%	95%	91%	81%	91%	89%	83%	68%
D	99%	99%	99%	99%	99%	99%	99%	99%	98%	97%	96%	90%

A: Line with 3db loss per 100 feet, such as small co-ax at 10 meters.

B: Line with 1db loss per 100 feet, such as small co-ax at 75 meters or RG-8/U at 10 meters.

C: Line with 0.2 db loss per 200 feet such as RG-17/U at 10 meters, RG-8/U on the lower bands, or open wire line at 2 meters (if it doesn't radiate).

D: Open wire 600 ohm line (2 #12 wires 6" apart) at 40 meters, which has a negligible loss.

80% efficiency corresponds to a loss of 1db, the minimum that could possibly be detected by another station, but remember that a db here and a db there can add up to an S-unit quite rapidly.

Now to point four: Antenna efficiency is increased by size, as a rule. The better radiator we have, the higher its radiation resistance, so that a given amount of loss resistance will represent a smaller proportion of the total resistance. Losses can only occur in resistance, so if your antenna has perfect connections, no losses in the earth or nearby rain-gutters and trees, and no resistance in the wire, it must be 100% efficient. This doesn't mean it will work. But if the other factors are favorable, efficiency is always desirable. Mobile antennas on 80 and 40 are always inefficient. Installing them, we must remember that with an ohm or less of radiation resistance, we can't have more than 1 ohm of loss resistance without dropping the efficiency below 50%. Can we do it? NO!! The efficiency will be as low as 1% in practice, and less than 50% in any conceivable case (unless the antenna is too high to get under bridges). All commercial mobile antennas can be made to work about equally well, and are probably better than home-brew ones. The installation is the important thing, not the manufacturer. Some types are more tolerant of poor installation than others, and to find

out which have given the most consistent results, visit our advertisers' stores and talk it over with them. They can recommend good mobile antennas, and some tips on installation (FREE). As we pointed out earlier, a low SWR may mean that you are feeding a dummy antenna, which won't work out at all! The table for point three, however, suggests that a low SWR will help feed-line efficiency, especially if the efficiency is low to start with, as often occurs with lines we can afford at the very-high frequencies. The other purpose in reducing the SWR is to present the proper load to the transmitter. Such rigs as the Collins line, CE-200 V, etc., are not as tolerant of load impedances as the old-fashioned rigs, and both tank circuit efficiency and final plate efficiency can be effected by improper loading. Of course, a badly mis-adjusted antenna can cause your final amplifier's screen grids to melt in short order, too. It isn't that we don't want a low SWR, just that if all the other factors are favorable and the rig works OK, it is the least of your worries!

So what? Don't confuse an efficient antenna with a good antenna. Don't attribute strong signals to high power, when they are really produced by propagation conditions. Don't expect your 10 watt rig to compete with the KWs (they'll do good antennas too, and they have to keep the losses low to avoid fire!) To illustrate my point of this article, I have been using a 150 foot doublet, 50 feet high on all bands, 160 through

6 meters, with an antenna tuner behind it.

OLD WIVES' ANTENNA THEORY - some common fallacies.

((("My antenna must be working; SWR is 1:1" (Your feedline is working, or is very lousy. You get this SWR reading most easily with a dummy antenna.)

"A high SWR causes TVI." (A radiating feedline can sometimes overload TVI-prone sets in its field, but feeder radiation is caused by unbalance and is not significantly greater with a high SWR.)

On 40 meters: "Your signal is very good, and it's probably because we are both using vertical (or horizontal) antennas." (On 2 meters polarization counts. On 40 it couldn't mean less.)

And on 2 meters: "The good swampy soil under the antenna in this new location has helped my signal." (Not if it's more than 10 feet high. Perhaps he has moved out of an area full of trees and houses which were not doing the signals any good.)

"Antennas should be carefully pruned to resonant lengths." (If this is so, why do all the broadcast stations use reactive lengths? Pruning is to get a certain impedance to feed, but it doesn't help the radiation a bit.)

(((On 40: "I can't work Idaho because it's right off the end of my dipole." (That null off the end of your dipole is only at zero angle of radiation. You can work Idaho on a higher angle quite well. The trouble

is there isn't anyone there to work. You worked New York off the other end, didn't you?)

73,

WØTKX

de Splatter, Minneapolis, Minn.

THE OLD GROUCH

Anonymous Unknown
c/o Editor, Auto Call
2509 - 32nd St., S.E.,
Washington, D.C. 20020

With the sun spot situation progressing slowly to a point where the ten meter band is expected to become useable for more than local contacts, I consider that the League's action in petitioning the FCC for authorization to use Teletype on the 28.0-28.5 sub-band is thoroughly in order and may be of assistance in providing occupancy of that portion of our frequencies. As I have pointed out previously, the scramble for frequency assignments is now becoming so intense that the amateurs, world-wide, must show that they are using their allotted bands, to combat the commercial interests' attempts to secure them for their use.

This ties in directly with the situation I mentioned in my column in the March issue of the Auto-Call regarding the use of amateur frequencies by intruders, commercial broadcasters and even foreign governmental stations. If we do not occupy our allotted frequencies, we are extremely vulnerable to charges

that we do not need any spectrum space, and, believe me, the commercial interests, both foreign and domestic, will press the point to the utmost in an effort to grab additional space for themselves.

True, the 28.0-28.5 MHz portion of the ten meter band is currently open only for A-1 (CW). Wouldn't it be a very good place to carry out that threat you have made for several months past to practice the code and get your speed back to the point where you won't have to perjure yourself in order to renew your FCC license? You would help our cause by providing occupancy!

The Old Grouch.

REFLECTED AND DIRECTED

George E. Goldstone, W8MGQ,
1010 Burnham Road,
Bloomfield Hills, Mich.

FREDDIE THE FREELoader - WILL YOU PLEASE GET WITH IT?

This month we'd like to say a few words about a type of radio amateur that, regretfully, is too common in the Great Lakes Division of the ARRL. This refers to "Freddie the Freeloader" - and we don't mean the TV character portrayed by Red Skelton on the Boob Tube. We specifically refer to those licensed radio amateurs who take all the benefits earned and preserved for amateur radio by ARRL - but flatly

refuse to join the League saying, "What has it done for me?" Or, "I like some of the things they do but I don't agree with some." Or, "What has the League done for me lately?"

Since this Bulletin gets around, it is entirely possible it might be read by some of the very individuals we mean. So we'd like to talk about some of the services they are getting.

A.T.&T. - or "Ma Bell," as Big T is more commonly known, has become very concerned over the use of electronic devices which cheat its automatic accounting system out of long distance tolls. In fact, such equipment, widely used by gamblers and such persons, not only to fraudulently avoid tolls, but also to conceal the place of origin of the call, causes considerable loss of revenue to the various operating telephone companies. To combat such losses, A.T.&T. has arranged for the introduction in the legislature of every state a bill to make such practices illegal. The bill was introduced in the Michigan legislature by Rep. Boos of Saginaw - and is House Bill No. 3287. Its language is so broad that it might well be construed to apply to "phone patch" arrangements used by amateurs, on the ground that few, if any, amateurs pay the telephone company for making a service connection the patch. The phone patch set-ups generate many thousands of dollars of revenue for Bell, right here in Michigan; and Bell has NO OBJECTION to this added revenue!

An alert amateur (and ARRL member) preemptorily reported this bill to W8FX, ARRL's Michigan Section Communications Manager. W8FX immediately turned the info over to W8MGQ, an Assistant Director of the Great Lakes Division of the ARRL, who wrote at once to Rep. Boos explaining the likelihood of improper interpretation of the proposed bill, which permits confiscation and destruction of all equipment used in violation of the proposed law. Copies of this correspondence, as well as a copy of the proposed bill, were sent to W3PS, ARRL's General Counsel in Washington, D.C. His prompt reply indicated an early conference with A.T.&T. attorneys to get the matter straightened out. There are good prospects that a dangerous situation may thus be avoided; and one of amateur radio's better public relations devices - "phone patching" to remote outposts, such as Antarctica, Viet Nam, and such - may be preserved.

Now, WHO is doing this for amateur radio? CQ Magazine? Heck no! Is 73, the Green Comic Book doing anything? Of course not! Nor is the shadow organization formed by Green - the IoAR - doing anything to help amateur radio out of this rough spot. The amateur turns for help to the American Radio Relay League - and no one else.

We are disgusted to see so many amateurs who do not bear their part of the problems of amateur radio by supporting the League. Many non-members are the first to scream when their tower is threatened

by zoning; and a substantial number of these members of the Freeloader family are "phone patchers." They can't see why they should belong to the League, or contribute to the League's Building Fund - where the Great Lakes Division is near the bottom of the heap in meeting its percentage quota.

Now, how about it, you Freeloaders? Would you like to put a big purple "F" on your QSL's (instead of the ARRL diamond) to let everyone know you are freeloading? Maybe wear an "F" in your lapel to the next club meeting? We'd much rather see you as an active, supporting member of the League.

W8MGQ

de Auto-Call

Washington, D. C.

**OFFICIAL BULLETIN NR 73
FROM ARRL HEADQUARTERS
NEWINGTON CONN AUGUST 11 1966
TO ALL RADIO AMATEURS BT**

The United States has renewed a temporary agreement with the International Telecommunications Union in Geneva, Switzerland, permitting the handling of third party communications between amateur station 4U1ITU and amateurs in the U.S. until March of 1967. The messages must be relatively unimportant personal communications, involving no pecuniary interest AR

From the Anaheim Radio Club paper, Bob, WB6BXC:

Want to build a VFO? Check back thru your QSTs for these articles:

The following projects caught our eye as being particularly interesting:

ISSUE	DESCRIPTION	ISSUE	SUBJECT
Oct. 60	5MC VFO	May 63	Transistorized Grid-Dip
Nov. 60	VHF XTL Control	July 63	Two Tone Transtr. Test Osc.
Feb. 62	3.5 and 7mc	Aug. 63	Band Switching Absorpt. Wavemtr.
Apr. 63	VO-CAN Remote Control	Aug. 64	7mc Transtr CW Xmtr & Rcvr
May 63	3.5 to 3.6mc XTL Control	Sept. 64	Matching Circ. for Random Length Antennas
July 63	VFO for 144 and 432mc	Oct. 64	Coaxial Tank VHF Filters
Aug. 63	VFO for 50mc	Oct. 64	Oscilloscope set-up for Xmtr Testing
July 64	2mc Permeability Tuned	Feb. 65	Transtr Audio Oscillator
Aug. 64	3 band VFO Amplifier	Nov. 65	Transtr Audio Filter
Sept. 64	Transistorized VFO	Nov. 65	Transtrized Grid-Dip
Dec. 64	Full Band XTL Control	Dec. 65	Transtrized Keyer
Nov. 65	5 mc Nuvistor VFO		

Dear Editor:

Have just returned from W6 land and had a land line contact with Dave Hollander, W6COJ. His XYL, Pearl, W6COM, as well as Dave send their best 88's to the Club.

Also learned that Doc Jaros, WAØJKO, has his antennas working again. The only Ham that has "his" and "hers" ham towers.

Hope everyone had a good time on the Field Day.

Lou, WØVLI

FOR SALE

Hustler mobile antenna with 10-20 and 40M coils complete with base and resonator spring. Call: 551-7914. Best offer takes.

Joe Berounsky, KØQDB

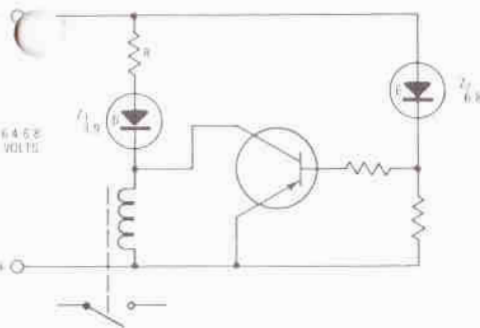
New address: 4422 Cass Street

Omaha, Nebr. 68131

OFFICIAL BULLETIN NR 78 FROM ARRL HEADQUARTERS NEWINGTON CONN SEPT 16 1966 TO ALL RADIO AMATEURS BT

United States amateurs are again reminded that the following countries object to communications between their amateurs and those of other countries. Cambodia, Indonesia (including West New Guinea), Thailand and Viet Nam forbid such radio communication. The prefixes to avoid are HS XU 3W8 (or XV5) and 8F. Canadian amateurs may not communicate with Cambodia, Indonesia, Laos, Thailand, Viet Nam and Jordan. Prefixes to be avoided are HS JY XU XW8 3W8 (or XV5) and K1YPE/XV5 is operating from Viet Nam with the express authority of the local government and the FCC, therefore, has no objection to U.S. amateurs working K1YPE/XV5 AR

VOLTAGE SELECTIVE DEVICE
UTILIZING ZENER DIODES



A Voltage Selective Relay is shown in the Figure at Left. Such a system would be useful for rapid "GO-NO-GO" sorting of Batteries, Zener Diodes or other voltage sources. It might also be useful for voltage adjustment of power supplies in applications where delicate meters could be damaged due to rough handling.

If sufficient voltage is applied to the input, diode Z1 will conduct and energize the relay. In this example a 3.9 volt diode (Z1) is used in conjunction with a relay set to pull in at 2.5 volts. Thus a 6.4 volt input signal will energize the relay. If the voltage exceeds this level, diode Z2 will conduct and apply forward bias to the transistor. This in turn reduces the collector-emitter junction resistance which de-energizes the relay. Thus the relay pulls in at 6.4 volts and drops out at 6.8 volts approximately.

The voltage "bandwidth" may be reduced by increasing the size of

resistor "R." As this resistance is made larger, the voltage required to trip the relay increases, bringing the pull-in point closer to the conduction voltage of Z2. By careful selection of components it should be possible to resolve approximately 0.1 volts.

The system may be used at higher voltages by employing other diode-relay combinations.

A system with resolving power in excess of 0.1 volts may be devised by using zener diodes to provide a reference for transistor switches. Such a system of quantizing would be useful for analog to decimal converters in statistical sorting applications.

de Enesco Bulletin

COMMUNICATIONS COMMISSION
REGULATIONS

The following information was released to the press by the Federal Communications Commission on November 16, 1965:

"On November 15, 1965 Richard P. Greenside of the Mattapan (Boston) area was sentenced to one year in jail for transmitting obscene, indecent, and profane language by means of radio transmission."

"On October 26, 1965 Mr. Greenside had been found guilty in the Federal District Court at Boston, Massachusetts of transmitting obscene, indecent, and profane language over a Class D citizens radio station in violation of the U.S. Criminal Code, Section 1464."

"It was announced by the United States Attorney's Office and the Boston Office of the Federal Communications Commission's Field Engineering Bureau that this is the first trial, conviction, and sentencing in the New England area for transmitting obscene, profane, and indecent language by means of radio transmission and it is the first step in an intensive enforcement campaign to combat the use of improper language by Class D citizens radio stations in the area. This trial and conviction as well as other pending actions resulted from intensive investigation and monitoring efforts on the part of the FCC Field Engineering Bureau Office and the Federal Bureau of Investigation at Boston, Massachusetts. Similar enforcement efforts are being conducted by the other Field Engineering Bureau Offices and monitoring stations located in the United States and territories."

(Editor's Note: Don't be lulled to sleep because this is Citizens Band. It is just as illegal to transmit obscene, indecent, and profane language by means of an amateur radio station.)

DATA DEP'T

Frequently, we assemble home brew circuits using mica compression trimmers from the 3-30 mmfd. range on up to values as high as 1200-2525 mmfd.

The most common brand found in the average ham junk-box is made

by ARCO. Most of these can be identified by their numbers which are printed on the ceramic frame. You can solve many of these unknown values with the following chart.

ARCO#	CAP. RANGE
460	1.5 to 15 mmfd.
461	2.7 to 30 mmfd.
462	5 to 80 mmfd.
463	9 to 180 mmfd.
464	25 to 280 mmfd.
465	50 to 380 mmfd.
466	80 to 480 mmfd.
467	110 to 580 mmfd.
468	140 to 680 mmfd.
469	170 to 780 mmfd.

de VHF'er, Oregon

OFFICIAL BULLETIN NR 74 FROM ARRL HEADQUARTERS NEWINGTON CONN AUGUST 18 1966 TO ALL RADIO AMATEURS BT

A reciprocal operating agreement is now effective between Kuwait and the United States. Amateurs of one country visiting or residing in the other may obtain permission to operate their own amateur stations there. The United States has previously reached reciprocal agreements with Australia, Belgium, Bolivia, Canada, Colombia, Costa Rica, the Dominican Republic, Ecuador, France, Germany, India, Israel, Luxembourg, Paraguay, Portugal, Sierra Leone and the United Kingdom. Many others are being negotiated and successes will be announced as they occur \overline{AR}

**OFFICIAL BULLETIN NR 76
FROM ARRL HEADQUARTERS
NEWINGTON CONN SEPTEMBER 1
1966 TO ALL RADIO AMATEURS BT**

The annual Simulated Emergency Test will be held October 8 and 9. All ARPSC amateurs, AREC, NTS and RACES are urged to participate in local exercises and nationwide traffic handling activities involving traffic for the Red Cross, Civil Defense and other agencies. Much ARRL administrative traffic will also be flowing through regular traffic channels. ARRL precedence designations will be in use. All ARPSC officials will soon receive full details. Additional information will appear in October QST. If you want to be a part of this nationwide demonstration of amateur radio public service facilities, contact your Emergency Coordinator or Radio Officer and sign up in the AREC or RACES AR

FOR SALE

Complete station ready to go on the air. Like new - used very little. Moving - must sell.

Galaxy III and AC power supply and deluxe accessory console; SB44; Bug; HT18 HY tower and antenna; teleprinter and terminal unit. Coax switches, cables and many odds and ends. \$350.00 takes all!

Pete, WØJHU

Phone: 391-4762

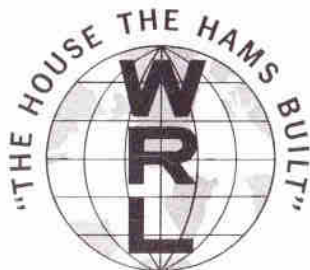
**OFFICIAL BULLETIN NR 80 FROM
ARRL HEADQUARTERS NEW-
INGTON CONN SEPT 29 1966 TO
ALL AMATEURS BT**

An Associated Press story on Docket 15928 has created the erroneous impression that some new action was taken on this docket. It was not an FCC or ARRL release but independently written by W3DEF of the AP staff to inform the general public. It is nothing new. Unfortunate choices for local headlines add to the confusion. The story fails to differentiate between ARRL and FCC proposals. The League proposal was for reinstatement of the Advanced Class license. ARRL did not propose re-examination of amateurs as the story suggests. To repeat: there is nothing new and the article is simply a recap of Docket 15928 developments during the past three years AR

SEEING IS BELIEVING

Have you ever seen a quarter wave?
Have you ever seen a volt age?
Have you ever seen a center tap?
Have you ever seen a band pass?
Have you ever seen a net work?
Have you ever seen an element beam?

(via-Auto Call-W3NL ED.)



WORLD RADIO LABORATORIES

DEPT. QST

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- Ship Special Package ZZM088 — \$199.95
- Ship Duo-Bander 84 — \$159.95
- Send Information on other Duo-Bander Packages
- Quote attached Trade
- Send Free 1966 Catalog
- Check or money order enclosed F.O.B. Council Bluffs, Iowa

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Address _____

City _____ State _____ Zip _____

INTRODUCING WRL'S SENSATIONAL COMPACT 300 WATT DUO-BANDER 84 FOR IDEAL SSB TRANSCEIVING ON 80 AND 40 METERS



INTRODUCTORY OFFER UNTIL MAY 10TH

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\$8.00 MONTHLY

WIRED

NOT A KIT! THE PERFECT FIRST OR SECOND — MOBILE OR FIXED STATION — TWO BAND TRANSCEIVER

COMPACT — 80-40 METER SSB TRANSCEIVER. A LOW COST RIG—WITHOUT SACRIFICE OF POWER AND PERFORMANCE. INCLUDES BUILT-IN SPEAKER AND GIMBAL MOUNT!

E-Z TUNING WITH BANDPASS EXCITER DESIGN — JUST PEAK OUTPUT FOR SMALL QSY. Illuminated VFO dial with 2 kc calibration. High impedance mic. input with push-to-talk operation. Combination S-Meter/Output indicator. Smooth vernier (12:1 slow and 2:1 fast) VFO tuning.

300 Watts PEP-SSB input, covering 3.8-4.0 and 7.1-7.3 mcs. (LSB-80 and 40 meters). A pair of proven 6HF5 final tubes. Separate, relay switched, tuned RF receiving stage, 1/2 uv. sensitivity at 10DB S/N. Rugged printed circuit boards, combination tube-transistor circuitry for best performance. Stable solid state VFO and balanced modulator, zener regulated. Selectivity 2.5 kc @ - 6DB receiving and transmitting with a 4 crystal filter. Carrier and unwanted sideband suppression - 40DB. 1 watt of audio with built-in speaker. Fixed 50 ohm input/output impedance. Excellent AVC. COMPACT SIZE: 5" high, 11 1/4" wide, 10" deep, less power supply. Net weight 10 3/4 lbs. Shipping weight 15 lbs.

DUO-BANDER 84	\$8.00 monthly	\$159.95
AC48	250 Watt (115 VAC) Economy Supply	\$ 49.95
AC384	300 Watt (115 VAC) Deluxe Supply	\$ 79.95
DC384	300 Watt (12 VDC) Deluxe Supply	\$ 89.95

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(INCLUDES DUO-BANDER 84 AND AC 48 SUPPLY)

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