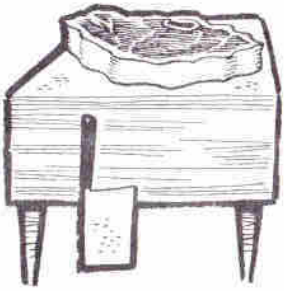
HAM HUM

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

September, 1971

Vol. XXI
No. 9

See you at 2:00 P.M. at the
Ham Fest and Steak Fry on Sunday,
September 12, 1971, at
Cooper Farm,
8705 Mormon Bridge Road,
Omaha



NO REGULAR SEPTEMBER MEETING IN VIEW OF HAM FEST

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: September 17th

Published by
AK-SAR-BEN RADIO CLUB, INC.
Post Office Box 291
Omaha, Nebraska 68101
Editor: Dick Eilers, WØYZV
Phone HOME: 391-2255
BUSINESS: 342-1402 - EX. 32
Associate Editor: John Snyder, WØWRT
Phone HOME: 556-1538
BUSINESS: 536-4460
Associate Editor: Ervan Heinz, WAØEEM
Phone HOME: 553-2033
BUSINESS: 553-4700 - EX. 331

ON REPEATERS

Gentlemen:

Information to mobiles traveling east this summer or next summer.

After leaving Omaha, Nebraska on the 23 of July 1971, we talked for a total of 35 minutes using our Motorola 43-G FM transceiver during our entire trip. This doesn't sound like a ham, but one must consider the different repeaters enroute. Des Moines is on the same frequency as we are and also one repeater in New Jersey and one in Michigan. So, for traveling 3841 miles on our vacation, we didn't do too much talking, but a lot of listening.

A lot of the repeaters are transmitting on the 146.940 Mhz. but have other inputs than 146.340. We found out two ways: one, our list from QST; and two, talking to the New Jersey station. So a word to the wise: check your capabilities before going east or west. We didn't!

Bob Andrus, KØLUG

****

Small boy in barber's chair: "I want my hair cut like my daddy's – with a hole on top!"

****

AUGUST MEETING

Our thanks to Russ Minks, WAØVEE, for bringing the program for our August meeting. It was enjoyed by about 35 persons.

This was a presentation by Motorola of their manufacturing of integrated circuits. Of particular interest, he brought along a news release put out by Motorola at the time the astronauts were on the moon calling our attention to the fact Motorola had the first auto radio way back when, and now claim another first as having supplied the first auto radio on the moon.

Refreshments and ragchew followed.

****

DAFFYNITION

EPITAPH – Postponed compliments.

****

CORRECTION

Telephone number shown in August 1971 issue for Patrick Scolla, WNØEGR, is incorrect. His correct phone number is 393-1285.

****

HOW TO HINDER HO-HUM HAMMING

It's usually after a QSO like "TNX ER CALL, OM. UR RST 579 IN OMAHA, NE. NAME IS DEXTER. HW?" that a ham shuts off his transmitter and mumbles, "What am I doing, anyway?"

This thought-provoking question is usually uttered long after the "Novice enthusiasm" has subsided. However, with QSO's like the above example, a guy begins to wonder where amateur radio has gotten him.

True, he is a member of the local monsoon net, but somehow they've never been "on alert." And it can't be denied that the said ham is the proud possessor of a "Worked All Bolivian Aircraft Carriers" certificate, although Dexter no longer is on the awards kick.

How, then, can a ham benefit himself with just everyday hamming? The answer is simple: just remember that amateur radio is educational as well as fun.

If one and one equals two, then when the words "hamming" and "education" go into a radio aficionado's mind, out comes the word "electronics." Swell! After all, wasn't it an early "radio experimenter" who invented radio telephony?

All the time you spend with your beloved hobby doesn't have to be on the air. Go ahead and finish that idget you were constructing, but is now dusty and sitting half-done in the corner. As long as you've the land, it doesn't take much time or material to whip up a new antenna, for instance, a wire beam.

What ever happened to that foreign language you knew so well back in high school? Ham radio gives you an opportunity to brush up on the language (especially Spanish), which many teachers, immigrants, etc., would love to have.

Since this writer learns German and Spanish in high school, he makes it a point to use his dialects whenever he can in working "DX." A Mexican contact, which otherwise would have turned out to be a hello-good-bye QSO, wasn't. Instead, Lucha (an XYL) and I chatted (in CW) for more than an hour in Spanish. She told me the only word she knew in English was "yes."

Of course, a ham can't help but learn some geography while "working the world." (How many hams do you think had heard of Navassa Island before they got their tickets?) Although not much, it does take some knowledge of national geography to fill in your W.A.S. map.

An atlas at your elbow is a good idea, whether you're working Liechtenstein or central Iowa. It just might turn out that the farmer you're talking with knows exactly how to get rid of those aphids in your rhubarb patch!

Technicians who have a hankering to check out the lower bands could tune their HF receivers to W1AW, the ARRL station. The boys in Newington will try their darndest to boost your code speed to 13 w.p.m. so you can pick up the general ticket.

So, boys, don't forget amateur radio must be good for something, or Uncle Sam would have never lifted the ban. And you would have never become a radio amateur.

By–Brian R. Zdan, WNØAJI
(Waiting for WBØ ticket)

****

NEBRASKA AMATEUR RADIO HALL OF FAME

Isaiah (Ike) C. Zenor, WØCVC, was nominated by the Selection Committee at the Victoria Springs Hamfest on July 25th as the amateur to be honored and inducted into the Nebraska Amateur Hall of Fame.

Mr. Zenor was honored on Wednesday night, July 28th, at a dinner held at the Cedar Bowl restaurant and was presented a trophy by the North Platte Amateur Radio Club for his knowledge and service rendered to the public and other hams over the many years he has been in amateur radio.

This also was Mr. Zenor's 82nd birthday. His first amateur radio license dates back to March 5, 1932. The Nebraska Amateur Radio Hall of Fame originated in North Platte in 1965 and has become an annual program for Nebraska amateurs. There are now six members in this select radio society.

The Selection Committee meeting has again been set up for Victoria Springs for 1972.

By Charles Kucera, WØFZZ
Chairman for the North Platte Radio Club

****

DISTRIBUTED CAPACITY COAXIAL DIPOLE ANTENNA

This dipole antenna takes on some very interesting characteristics unlik its predecessor the "simple dipole." Unlike the simple dipole, this antenna is very broad banded. Normally, the bandwidth of this coaxial dipole is around 500 KHz wide with average installation considerations and an SWR under 2:1. The higher SWR occurring, of course, at band edges. The SWR will be absolutely flat when the antenna is of the proper length at design frequency.

By proper choice of design frequency, one may have an SWR on one band edge equal to that of the opposite band edge. If this is your preference you will want to establish a design frequency somewhere in the top half of the band. As an example, for the 75-80 meter band the design frequency should be about 3.920 MHz. At the 4 MHz end of the band the SWR will be about 1.5–1 with the SWR at 3.5 MHz at about 1.5–1. This is all without the aid of a "match box." However, antenna parameters may vary slightly from one antenna location to another.

There are at least several reasons why this antenna is so broad. One reason is because this dipole is matched to the feed line. Another reason is that it electrically incorporates its own balun. Also, this dipole has a large circular-mil area ov its entire surface, thus a low Q.

Over a 5 year period of testing, K7UAE, reports an arithmetic mean average of 1.5 DB gain over a simple dipole cut to the same frequency and installed at the same height and

configuration. From the author's findings this gain figure could be a conservative representation. Also, he reports a −6 DB noise figure due to static charge build-up common to the open wire construction of the simple dipole. Since this coaxial dipole is completely covered by a vinyl jacket, it greatly reduces static charge build-up, which discharges causing a popping noise in the receiver. The vinyl jacket covering is usually found on most well designed mobile antennas.

This antenna also greatly reduces harmonics of the operating frequency. Any signal fed to the antenna which is harmonically related to the antenna's operating range is reduced by a considerable amount as compared to a simple dipole. This feature, as well as other features of this antenna, amount to a substantial savings in cost for the extras, such as an antenna "match box," low pass filter, balun, etc.

In summary, the advantages of this antenna are: 1) broad bandwidth 2) almost unaffected by environment 3) positive gain with reference to a common dipole operating under the same relative conditions 4) greatly attenuates harmonics 5) substantial decrease in static charge build-up 6) essentially non-directional.

CONSTRUCTION HINTS

For antenna lengths see diagram. For illustration, however, the 80 meter antenna will be used. It is suggested at this time that one may use any 52 ohm coaxial cable for both the construction of the antenna and the feeding of it. The common choice of cables that meet this requirement are RG 58A/U or RG 8/U. It may be noted that RG 58A/U is a very good choice in that it is the least expensive. As for attenuation in this coax, within the high frequency band, losses are considered negligible. Also, with this antenna one may use RG 58A/U at maximum legal power without fear of feed line breakdown.

For 80 meters, measure from this reference point on *each side* of center 30 ft. 6 in. and solder the inner conductor to the outer conductor of the coax. This forms the 52 ohm matching section and the balun. When completed one will want to waterproof these points of the antenna well. Next, at both ends of the antenna, the inner conductor must be shorted to the outer conductor. Waterproofing of the ends is not necessary at this time as the ends may need cutting later for tuning purposes.

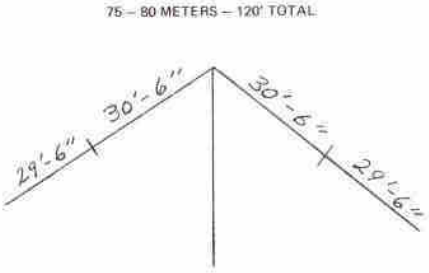
At the center of the antenna, remove *one inch maximum* of vinyl jacket (½ inch each side of center). Cut the shield in the center all the way around the coax. *Do not cut* the insulation or the center conductor. Form two (2) leads with the shield. These leads are the feed point of the antenna. Next, connect the feed line to these leads by soldering the feed line center conductor to one lead and taping, then soldering the shield to the remaining lead. When this is completed, waterproof as best you know how. As for feed line length, random length may be used. However, lengths of 57 ft., 87 ft. and 103 ft. are about optimum for 75-80 meter use. The same coax type should be used for both antenna and feeding. Separate feed lines must be used for each antenna.

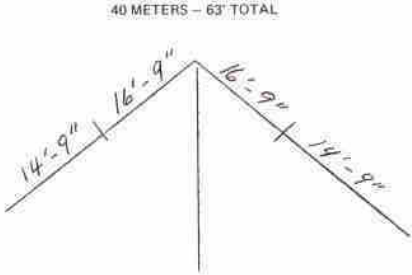
Next, the antenna is erected. After erecting the antenna, measure the SWR and trim the antenna to length at desired resonance. The SWR will be an absolutely flat 1:1 when the antenna is at the proper length at design frequency. Be sure to solder the ends of the antenna (shield to center conductor) before measuring the SWR and also, after completion. Finally, waterproof the ends. This completes the antenna installation.

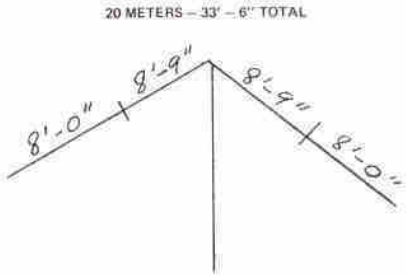
Follow this same procedure for antennas of other bands. Refer to diagram for proper dimensions. It may be added that this antenna is designed for use as a "Flat Top" or "Inverted V."

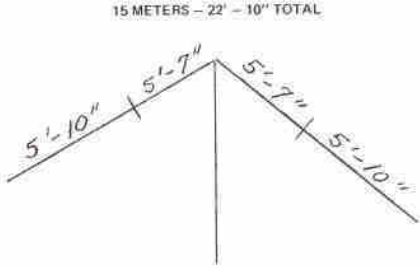
Best of 73's
WA9PIV – – Lynn

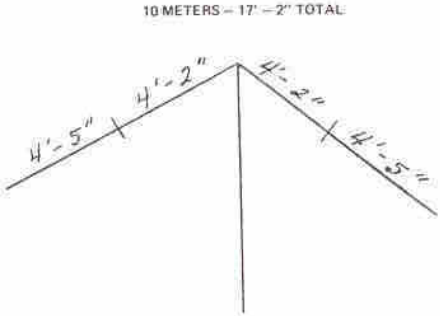
(Submitted by Mike Wilczynski, WBØBMV)











****

FOR SALE FROM ESTATE OF REV. M. P. BOLLESON, WØFYJ

Ak-Sar-Ben Radio Club
Box 291, Downtown Station
Omaha, Nebraska 68101

Dear President & Club Members;
My Father who passed away a couple of years ago was an avid ham radio operator. My mother has decided to sell a lot of his ham radio equipment. We thought maybe the members of the club might be interested in it. The following are the items and the price that was estimated by a radio dealer.

1	Hammerlund HQ Receiver	$160.00
1	Johnson Viking Ranger Transmitter	$ 80.00
1	Halicrafter Speaker	$ 15.00
1	Microphone D-1040	$ 10.00
1	Heathkit 0-5 Oscilloscope	$ 20.00

If anyone is interested in purchasing any of these items they can call me at 334-1952 and I will inform them where they can be seen.

Sincerely,
Mrs. Don Ringler
13441 Cedar St.
Omaha, Nebraska 68144

****

FOR SALE AS PACKAGE OR TRADE FOR MINT U. S. STAMPS

SBE 33 – Xcvr	Calrad SR-16 – SWR meter
SB2 LA – Linear	14AVQ – Vertical antenna
FLDX 2000 – Linear	TA-31 –10, 15, 20M Dipole, 1KW
TR44 Rotor with CDR indicator	Coaxial switch – Model 335
Heath HD-15 – Phone Patch	Mikes-Astatic 513H, Electro Voice 606, etc.

Also: some test equipment, receiver, tape recorder, tubes (6146's, 6LQ6's, 250's, 4-125's, 4-65's, etc.)
Crystals, small parts, and take all I can find that I didn't list.

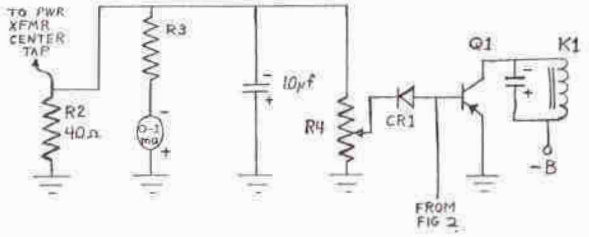
Tom J. Hiross, WA2HPN/Ø
3403 Albert Rains Avenue
Omaha, Nebraska 68123
Phone: 292-1131

****

DIODE-GATING

Gating circuits allow more than one feedback voltage to control the same function.

Suppose we want to protect our final tubes against excessive plate current by using a sample from the bleeder – see Figure 1.

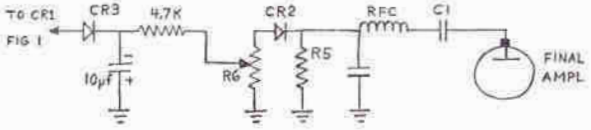


(Fig. 1)

Select R2 to give about -10 volts across the meter at normal plate current. For example:

$$R2 = \frac{10V}{250ma} = 40 \text{ ohms.}$$

If meter is 0-1 ma, R3 will be 20,000 ohms to read -10 volts midscale. The potentiometer, R4, is juggled to get whatever threshold voltage we want for control. Suppose the voltage controls a transistor, and the transistor requires two volts at the base circuit and we say 400 ma plate current is the greatest. The 400 ma provides 16 volts across 40-ohm resistor R2 and we vary the arm on potentiometer R4 so that we get the two volts we need for the transistor. But, here's a problem: Sometimes our equipment can get into trouble with *low* plate current and excessive plate voltage swing. This will happen if the output circuit is unloaded. We would like a feedback circuit for it and its control voltage should control the same transistor. See Figure 2.



(Fig. 2)

We take a sample of RF plate voltage and juggle R5 to get about -10 volts DC the top of R6 with normal plate voltage swings. Diode CR3 is back-biased (gated by CR1, (Figure 1) so the voltage rectified by CR2 doesn't get to the transistor. CR3 also back-biases CR1 so the voltage developed by plate current doesn't reach the transistor either. So, by judicious juggling of our variables, the predominant control voltage can be made to gage off the other and assume control of the transistor.

If you end up with very small voltage changes, you can use an SCR in the transistor base current. Let the control voltage turn on the SCR and the SCR will do the rest. If you want three feedbacks to control one thing, you simply back up another diode to the function of CR1, and CR3, and it will back-bias both with negative voltage from the third feedback circuit.

Ray, WAØNEA
de Bandspread – Cedar Rapids, Ia.

****

UNDERSTANDING COMPUTERS

By Bob Shriner, WAØUZO

As Father Time marches on, each of us is exposed more and more to computers and their functions. As a general rule we only see the result of the computer actions in the form of our paychecks, bank accounts, bills from the large utility companies, etc.

Over the next few months a series of articles will appear here in Grid Leak to help you to understand the functions of a computer.

First it must be remembered that a computer is a passive device. It will not do anything or produce any results on its own. However, upon command it can produce any function that has been "programmed" into it.

Note the use of the word "programmed." The use of the word "program" for our purposes means "to set up the machine to perform a function." When you turn on your radio you have "programmed" it to receive a signal, when you change frequency you have changed the "program." The computer works in the same manner. Hundreds and even thousands of simple circuits such as on/off switches program the computer to give a result.

There are several terms that you should be familiar with.

First is Binary Arithmetic which will constitute the balance of this first article.

Binary Arithmetic is the science of arithmetic using a numbering system composed of only two marks.

The decimal system that we are all familiar with uses 10 marks, i.e. Ø thru 9. The Binary system only uses 2 numbers and for the purpose of this discussion will be assigned the digits Ø and 1.

Before we go into the actual arithmetic let us understand why the Binary System is used in the computer.

All data used by the computer is in the form of numbers. These numbers are in the form of ones and/or zeros. As there can be a whole bunch of ones and zeros in a number it is very difficult for a human to comprehend these numbers; however, it must be remembered that a human only has one brain capable of storing a lot of information and a computer has a large number of "brains," however, each "brain" can only store two things, i.e., 1 or Ø putting it another way "on or off," or positive or negative.

Let us observe some Binary numbers and their decimal equivalents:

Ø . . . . . .Ø
1. 1

10 2
11 3
100 4
101 5
110 6
111 7
1000 8
1001 9

There are three rules used in adding Binary numbers (1) 0+0=0 (2) 1+0=1 (3) 1+1=0 with a carry of 1. All right now, let us set up the problem of 3+4 and solve it both in the Binary and decimal system.

BINARY SYSTEM		DECIMAL SYSTEM
11	Equals	3
100	Equals	4
111	Equals	7

Simple isn't it? Don't try to make it complicated because you must remember that you are only working with two digits and it cannot get too complicated. Let's try it again and this time we will carry a 1.

BINARY SYSTEM		DECIMAL SYSTEM
11	Equals	3
101	Equals	5
1000	Equals	8

Remember rule (3) 1+1=0 and carry 1.

One last problem:

1	Equals	1
11	Equals	3
101	Equals	5
1001	Equals	9

Subtracting Binary numbers requires the following rules (1) 0 from 0 = 0 (2) 1 from 1 = 0 (3) 0 from 1 = 1 (4) 1 from 0 --- put down 1 and then change the numbers in the upper row (from right to left) until you change a 1 to a 0.

OK now, let us try some subtraction:

111	Equals	7
- 11		-3
100		4
1000	Equals	8
-110		-6
10		2

Multiplication is easy, just follow these basic rules: (1) 1 times 1 = 1 (2) 0 times 1 = 0, (3) 1 times 0 = 0 (4) 0 times 0 = 0.

Essentially Binary multiplication boils down to this, if you can add, you can multiply. Let's try it.

BINARY SYSTEM		DECIMAL SYSTEM
11		3
X10		X2
00	Equals	6
11		
110		

Try it again:

11		3
X 11	Equals	X3
11		9
11		
1001		

Now that we are all experts in Binary Arithmetic, we will let it soak in real good for a month and will pick up again next month with Logic Circuits which are "brain" to the computer.

de Pueblo Ham Club

****

FOR SALE OR TRADE

1. Audio generator
   (20-200,000 cycles)
   Model TS-382 D/4 . . $ 60.00 cash

2. 19 Drawers of Sams Photo
   Facts #1 to #1145
   Car Radio Manuals
   #19 to #59 . . . . . $500.00 cash

Please call or write:

Tony Klein, WØQOU
Box 218
Snyder, Nebraska 68664
Phone: (402) 1-568-2645

****

RIG WANTED

I have passed the General exam and am now waiting for my new ticket. Therefore, I am interested in obtaining a $150 to $200 SSB HF transceiver, in at least fair condition.

My HW-16 CW transceiver can be traded as partial payment for the SSB rig, but I am also willing to pay cash. Any takers?

Brian R. Zdan, WNØAJI
6818 Hartman Avenue
Omaha, Nebraska 68104
Landline: 451-6818

(Ed. Note: Congratulations on the General ticket! Hope someone comes up with the rig so we can read about your ventures in the region of the General's.)

****

WORLD RADIO's "HAM-HUM" SPECIALS

DON'T MISS OUT ON THESE BIG VALUES!	Reg.	Special
AMECO - CN50 (wired) 6M Converter (14mHz-I.F.)	$ 49.95	$ 24.95
ASTATIC - 521 (Ceramic Hand Mic.-PTT & Coil Cord)	10.00	4.85
HALLICRAFTERS - HA1A (Electronic Keyer)	119.95	89.95
GONSET - GSB201 MK4 (Linear-2KW-115/230VAC)	525.00	395.00
GALAXY - R530 Receiver (500kHz-30.5mHz)	895.00	495.00
DRAKE - TC6 (Xmt. Converter from 14mHz)	250.00	149.95
DRAKE - TR6 XCVER (With blanker)	650.00	449.00
DRAKE - TR6 XCVER (Less blanker)	599.95	399.95
RAYTRACK - HORIZON 6 Linear (6M-2KW, W/PS)	649.95	349.95
AMECO - TX62 (6 & 2 AM/CW Xmtr-115VAC)	159.95	119.95
AMECO - R5A Rec. (550kc-54mHz-w/spkr.-115VAC)	109.95	89.95
WORLD's - DUO-POWER 300 (12/120V, P/S for xcvr.)	149.95	49.95
MOSLEY QUAD - MCQ3B (20-15-10M)	105.00	94.50
COLLINS - 75S3-B Rec. (our demo.)	795.00	495.00
HY-GAIN - SJ2S2 Ant. (2 ele. "J" pole for 2 meters)	39.95	19.95
B & W - FC30A (30 Amp. Fil. Choke for G.G.)	33.40	14.95

LIMITED "OVERSTOCK" – "DISCONTINUED MODELS", ETC. NEW EQUIPMENT WITH FACTORY-DIRECT WARRANTIES – THESE ITEMS MAY BE PURCHASED ON:

MASTER-CHARGE – BANKAMERICARD, and CASH TERMS ONLY – AND WE'LL **PREPAY SHIPPING ON CASH ORDERS FOR THESE ITEMS IN NEBRASKA-IOWA.**

MINIMUM MAIL-ORDER $10.00

SEE THESE SPECIALS AND OTHER VALUES!

Be Our Guest For Free Coffee Saturday Mornings.

WORLD RADIO

3415 West Broadway • Council Bluffs, Iowa 51501

Phone – 328-1851