



HAM HUM

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



Vol. XXIII
No. 5

May 1973

NEXT MEETING

WHEN: FRIDAY - MAY 11, 1973

TIME: 8:00 P.M.

WHERE: FITZGERALD FRIENDSHIP ROOM
COMMERCIAL FEDERAL SAVINGS AND
LOAN ASSOCIATION
4724 South 24th Street, Omaha
(Free parking in rear off 25th Street)

WHAT: PROGRAM BY MAC MC CARTY, W0UPY
400 FEET OF 16 MM FILM OF PAST FIELD DAYS
AND PICNICS (1948 THROUGH 1950) OF
AK-SAR-BEN RADIO CLUB, INC. MAC WILL
NARRATE WHILE SHOWING FILMS.

REFRESHMENTS-EYEBALL QSOs-VISITORS WELCOME

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: May 18th.

LOCATION CHANGED FOR SCARS PICNIC

The location for the Saunders County Amateur Radio Society picnic has been changed from Memphis State Recreation Area to the Wahoo City Park, 5th and Beech.

Bring your own food and utensils. We have about 25 items to be given away as door prizes. Meal will be late in the afternoon with the afternoon for eyeball QSO's. There will probably be a station on 2 M and one on 75 M for talk-ins. Everyone is welcome!

B C N U May 20, 1973 at Wahoo.

Jared A. Ketner, WA0QWU
V.P., SCARS

ADDITIONAL AUCTION INFO

At the April 13th meeting Treasurer Kelly, WA0UZX, reported the "take" from the March auction was \$136.94 plus \$55.50 from the sale of items donated to the Club for the repeater fund, a total of \$192.44.

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AK-SAR-BEN RADIO CLUB, INC.

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FIELD DAY 1973

By - Del Gibson, K0UIV

Field Day is again approaching us. It will start June 23rd and continue through the 24th. Exact times will be published in Ham Hum next month or check QST for complete Field Day rules and regulations.

Location for Field Day will again be at the Connie and Norval Bowen acreage, the same fantastic site as last year overlooking the beautiful Platte River Valley. Map showing directions for reaching the site will appear in Ham Hum next month also.

We are looking for volunteers to be shack coordinators for the following:

75 and 15 meter phone

40 meter phone

6 and 2 meter phone

Anyone who would like to be a coordinator please call me at 734-3034 or Jim Garr, WA0CLU, at 453-1349.

Thanks and see you next meeting!

APRIL MEETING

Our regular April meeting was real great in spite of Friday, the 13th.

Al McMillan, WØJJK, gave a demonstration of slow-scan TV amateur style. He brought with him an SBE Scanvision which he carries in stock at his place of business, Hobby Industry (HI). He had some pictures that he had taped off the the air. Most of the slow-scan can be found on 20 meters. The pictures were very good and most interesting.

Slow-scan takes up no more space than a voice signal and can be put on tape just as voice can as it contains no greater frequencies. Stop over at Al's HI and you can play with the slow-scan yourself.

Many thanks, Al, for a fine demonstration.

Russ Minks, WAØVEE

Al McMillan gives lowdown on slow-scan.





Al and his assistants, left to right, Bob Andrus (holds light), Dick Eilers (adjusts camera) and Alan Fleming was the willing subject.



WØJJK fields questions.



Al demonstrates an answer.

MUFON

1124 W. Koenig St.
Grand Island, Neb. 68801
April 23, 1973

The Midwest UFO Network (MUFON), directed by Walter Andrus of Quincy, Illinois, is a formally organized group of volunteers dedicated to the investigation and scientific research of the so-called UFO phenomena.

According to the January 1, 1973 FAA Facility Management handbook 7210.3A Chg. 5 on page 68, "when a report is received from an observer of unidentified flying objects, refer the individual to the nearest scientific establishment or institution of higher learning if a scientific interest is expressed. If concern is expressed that life or property might be endangered, refer the individual to the local police department."

MUFON net meets every Saturday morning at 8 A.M. on 3.975 Mhz (central time). Ron Anderson, WA9PAM, Route 5, Box 511 of Chippewa Falls, Wisconsin 54729 is the Net Control Station for the Midwest UFO Amateur Radio Network. Marshall Goins, WA9ARG in Quincy, Illinois and Bill Armstrong, W0NC, in St. Louis are the alternate Net Control Stations.

The Nebraska organization, comprised of science professors and teachers as well as men of communications and electronics, is vitally interested in receiving all reports of unusual-looking craft or unusual glowing lights near the ground. We also need radio hams who have some

scientific background and have an open mind on the subject. If you are interested in our organization, please write to me or contact me at home (308) 384-7195.

Elmer A. Kral
State Director, Nebraska
Midwest UFO Network

CORRECTION

In the April issue of Ham Hum we inadvertently listed Ervan D. Heinz, WA0EEM, as one who donated merchandise for the auction, the receipts to go to the repeater fund. This donor was Arvin Hernes, K0INZ, rather than WA0EEM. Sorry we goofed, fellows!

THINGS LEARNED THE HARD WAY:

Coaxial cables buried in the ground can collect moisture! At my previous QTH, with the operations in the basement, I ran the coax underground out to the tower. About six months later, I was amazed to have water dripping out the end of the cable. Upon taking up the cable, no breaks in the sheath were found, and the antenna end had been firmly sealed and formed a loop so no rain could enter. So the conclusion is, that the sheath may not be impervious to water, or the cable breathes enough to form condensation. Anyway, the safe way is to run your coax in the open, not in the ground.

Maynard, W3HWZ

de Auto-Call

INTERESTED IN AN ELECTRONIC WRISTWATCH?

The mechanical watch movement has been a reliable performer for years but is on its way out — the solid-state electronic watch is now a reality — at competitive prices. Virtually every watchmaker is evaluating electronic timepieces and some models are already on the market. The latest thing in electronic watches is the digital readout using a liquid crystal display.

Except for the display and a 15 volt power converter, the main components remain essentially the same as those in previous electronic watches — an oscillator, an MOS IC divider circuit containing about 400 transistors, a single 1.5 V battery, and an MOS counter/decoder-driver circuit with about 900 transistors.

With the liquid crystal display to indicate seconds count, the colon flashes at a 1-hertz rate, although on some models the entire display blinks off the seconds. The power converter provides 15 V for the display and has a nominal power dissipation of 15 microwatts.

A big selling point with the electronic watch is the accuracy possible with the crystal-controlled oscillator. In general, the higher the frequency the higher the accuracy with a frequency of 32,768 hertz, providing a satisfactory compromise with cost, size, power consumption, etc. The quartz-crystal oscillator is set to an accuracy of 0.5 parts per million — that is 15 seconds a year — by a trimmer capacitor in the oscillator circuit. With aging and temperature variations taken into account, the

overall deviation of the watch will be less than 10 seconds a month.

Of course, the circuitry involved in something like this is tremendously complicated and pretty difficult for us ordinary people to understand. Just setting the watch to the correct time sounds pretty involved. For instance, the time setting circuit is controlled by a four-position switch constructed like the stem of a conventional watch. For hour changes, the crown is rotated clockwise and held, while the hours advance until the crown is released.

For correct time setting, the crown is rotated counter-clockwise to the first detent, which places the watch in a hold position. Two choices are available at this point. If the watch is running fast, this position is maintained until the correct time signal is received, then the crown is rotated back to the operating position. If the watch is running slow, rotating the crown further in the counter-clockwise position and holding it advances the minutes. Releasing the crown returns the watch to the hold position, and when the correct time signal is received, the crown is rotated back to the normal operating position.

Once the display, electronics, and power-source configurations were established, the next problem was how to get all the parts into an attractive case — also light enough and small enough so that you could lift your arm high enough to read the time. How well they succeeded can be judged by the size of the movement — 1.44 by 1.13 by 0.29 inches. Future design goals call for a complete watch movement 1.0 by 0.6 by 0.14 inches.

Designers say that digital display

watches retailing for \$100 are feasible - but don't hold your breath until you find one at that price. Remember the middleman!

(Ed. Note: Very FB art Jack, many TNX). de GCARC, New Jersey

A teacher wrote this note to Johnny's mother: "John is a good student, but I must find some way to take his mind off the girls."

Johnny's mother sent back this reply: "If you find a way, let me know. I'm having the same trouble with his father." El Mina Mentor

THE W6SD CARRIER TESTING A TUNED "LC" CIRCUIT

To find the resonant frequency without any current from the set going through it, attach the signal generator with a one megohm resistor in series with the hot lead of the generator on one side of the condenser to isolate the generator current from the circuit. Attach the ground lead to the other side of the condenser.

A scope may then be attached being sure to hook the hot lead of the probe on the side of the resistor

ADDITIONS TO ROSTER

Charles B. Juvenal, KØKKL
6923 "B" Street
Omaha, Nebraska 68106
Phone: 393-2650

Claude R. Sauvain, Jr., W5GAQ
2639 Forbes Drive
Omaha, Nebraska 68123
Phone: 291-6288

Far-Out Definition

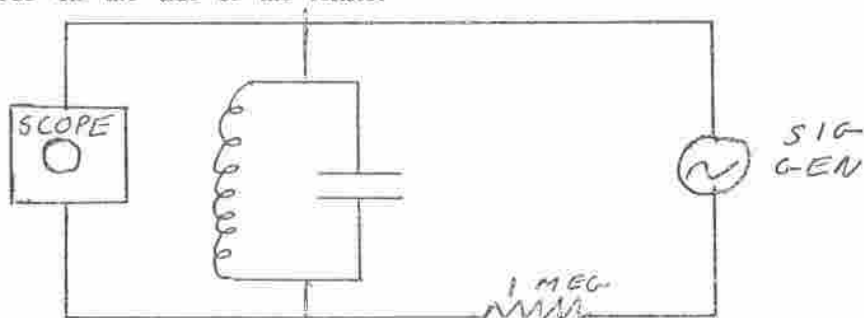
HONEYMOON: A vacation before going to work for a new boss.

Service

nearest the condenser in order to "read" the pattern of the "LC" circuit and not the signal generator.

The signal generator then may be tuned to the different frequencies to determine the resonant frequency of the "LC" circuit.

The largest R.F. pattern will be the resonant frequency; and the narrow pattern on each side of it determines the "band pass" of the "LC" circuit.



Gene, WB6OOX

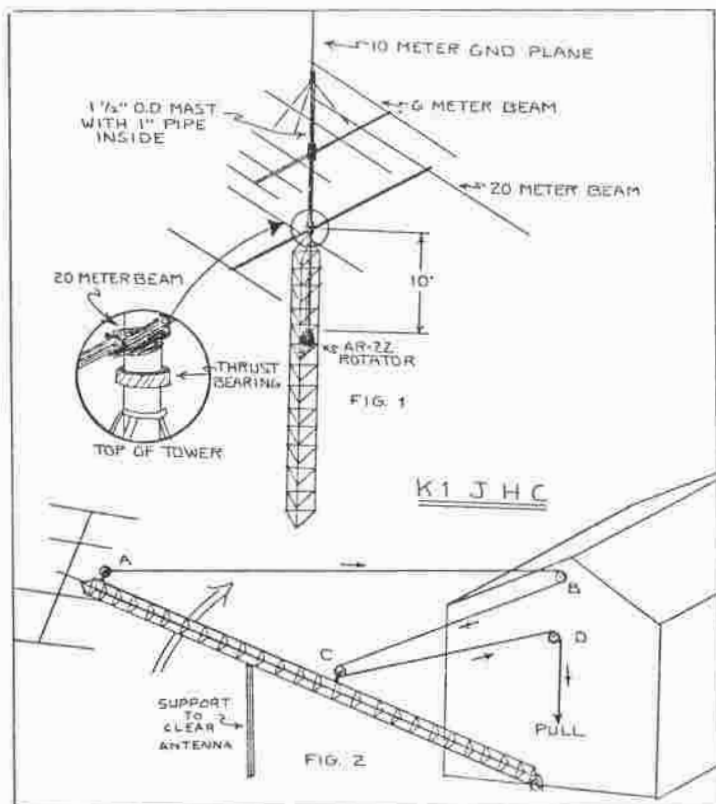
TOWER POWER

Tom Duffy, K1JHC, of Leominster, Mass. sent us a couple of useful hints which enable an enterprising ham to get a little more out of his antenna tower installation.

Figure 1 shows how a simple AR-22 rotator is used by Tom to rotate a full-sized 20 meter beam, a 6 meter beam, and a 10 meter ground plane. Use of the inexpensive rotator is made possible through the following techniques: first, weight of the antennas is kept off of the AR-22 by supporting the mast with a thrust bearing at the top of the tower. Second, by placing the rotator 10 feet below this bearing,

bending load due to wind is reduced at the rotator location. There is no brake in the AR-22, so the antennas will "weather vane" into position of least resistance during high winds, reducing torsion on the rotator. By setting the position control on North the whole system can be easily recalibrated.

Figure 2 shows how to raise a 50-foot tower when your house is only 25-feet high. When the tower is nearly erect, point C will be pulling almost directly on the tower. When the tower is horizontal, a 3 to 1 power gain is achieved through the pulley arrangement. With a boat winch at D, one



man can easily raise and lower the tower.

Our thanks and a five dollar bill go to Tom. SKIP is still interested in any simple project you might like to describe in a tech article. Credit and some cash go to all those whose articles we print. Just send it along to P.O. Box 501, Miami Springs, Florida 33166. How about it, fellas?

WA4DHU

de Florida Skip

WHAT IS YOUR DEFINITION OF "AN EDUCATED MAN"?

"An educated man is not merely one who has received formal training for a specified number of years in a school or college - although this may be part of his education. Beyond the technological skills he has developed and beyond his knowledge of a particular professional or academic discipline, the educated man has the political awareness to participate in the democratic process; he has the sense of history and philosophy to place his immediate needs and desires in a framework of what is historically realistic and philosophically good; and he has the sensitivity to place restraints on his own demands if they run counter to the general good. Finally, he has developed objectivity that is essential to making judgements of quality or virtue. This represents an ideal, one worth pursuing even if it is never wholly achieved." - Charles E. Young, Chancellor, UCLA

de Fresno, Ca. SKIP

RECENT CONTRIBUTORS

Repeater Fund

Rolland A. Fried, WØYMU

Auto Patch Fund

James A. Collins, WAØYHS

Claude R. Sauvain, W5GAQ

Thanks, fellows!

FOR SALE

SB-101, AC and DC Power Supplies, mobile mount, mobile antenna, microphone.

KWM-2 AC Power Supply, Patch console, microphone, matching home brew linear, 4-811A's (linear needs work).

Jim Howard, K5TNP/Ø

Phone: 339-5318

FOR SALE

Motorola 41V dual freq. converted to base station. Has 94/94 and 64/64; 20 watts out. AC only.

RCA Carfone 150 dual freq., (crystals with set are 34, 64, 94 Xmt. 94, 64 Recv.). Can be used mobile or base. AC Power Supply included. 30 watts out.

Hy-Gain 4 Stack "J" Poles, antenna and all harnesses and mounting clamps included.

Contact Marty Klein, WBØHXA, Fremont at 721-2570

Also monitor the Omaha & Council Bluffs machines.

NOTES FROM THE BAND-SPANNER

"The Care & Feeding of Printed-Circuit Boards

Printed-Circuit Boards are a relatively new way to create a compact and attractive unit. This process was developed by the industry in the late 1940's and was employed for the most part by commercial and military users, due to the availability and cost of materials. These materials have become readily available to the radio amateur in recent years at an attractive price. The purpose of this article is to familiarize the amateur with the various processes and materials now in use.

BOARDS:

The choice of board material by the user is the most fundamentally important part of success. Several types of boards are available, but two major ones are important to the amateur: PHENOLICS - Compression type boards are made up of a phenolic or similar type material, which is compressed into large sheets. During the compression process, the foil is compressed along with the board material to create a permanent bond between the two. This type of board is usually brownish in color. Phenolic boards contain no internal reinforcement and thus are prone to breakage. It is the least expensive of the two major categories and is usually used in large production-line products such as televisions, transistor radios, etc., where a superior part is not needed. ERG (Epoxy Reinforced Glass) is the other type, which is made by

saturating a sheet of fiberglass, or glass cloth, with an epoxy resin and subjecting it to heat and pressure. The foil is usually compressed along with the board, which gives it a very permanent hold, due to the excellent adhesive properties of the epoxy resins. These boards are usually greenish or off-white in color and have very good vibration and shock resistance. Epoxy is a superior dielectric material and finds wide use in high frequency or low-loss circuits. This type of board is more expensive than the phenolic type boards and is used extensively in military applications.

Boards are available in many shapes, sizes and thicknesses and are available in solid or regularly perforated form. They are available with copper or silver foil on one or both sides.

Etchant: This is the chemical used to remove the unwanted foil from the board. Many solutions are available, including ammonium persulfate, ferric chloride, and nitric acid, to name a few. From the amateur's standpoint, ferric chloride is the safest and most economical solution to use. It requires no mixing and can be stored in a plastic bleach bottle with a plastic cap. The ferric chloride comes already dissolved in sulphuric acid and is ready for use. Care should be taken to NOT store it in a metal container, or use a container with a metal cap. Always keep this or other strong solutions out of the reach of children - and always mark it prominently with a label or otherwise.

Tray: The etching tray should be made of glass or a thick resistant plastic. A rectangular Pyrex cooking

dish serves nicely. A heat lamp or spotlight (100W or so) can be placed above the tray during use to speed up the reaction. Keep the lamp about 12 inches away and maintain the solution temperature at about 90 degrees Fahrenheit.

Resist: This material is used to protect the area on the board that is to remain. A variety of commercial types are available including strips, resist paint, and resist marking pens. Household enamel-base paint can even be used and removed after etching, with lacquer thinner. Photo-resistive boards are also available, which utilize a photographic exposure to create a resistive layer. This process allows sharp definition and fine detail, but is more expensive than the manual application process. This is the process used in the manufacture of the majority of commercial and military boards.

Miscellaneous: It's a good idea to have a pair of wooden or plastic tongs on hand to remove the board from the etch bath. Another identical tray filled with water is handy to put the board in after etching.

de Fresno Skip

FOR SALE

Drake 2 meter FM TR22 completely crystallized 34/94 - 94/94 - 16/76 - 34/76 - 22/82 - 28/88 with mobile mount - \$175.00

Larsen antenna with mount - \$17.00

Newtronics 4BTV 5 band trap vertical - \$30.00

James R. Belt, WA0JH
Phone: 397-5720

FOR SALE

HW-16 and HG-10 VFO. Complete novice station. Also other assorted gear.

Roy W. Pflingsten, WN0FOE
12614 Holmes Street
Omaha, Nebraska 68137
Phone: 333-2955

FOR SALE

Drake sideband receiver
Home-built transmitter (80-40 meter)
20 - 4" x 4" x 6" heat sinks
3 - 480V 135A SCR's
3 - 480V 135A diodes
2 - 68A 480V SCR's
2 - 68A 480V diodes

Doug Summerfield, WN0HBU
Phone: 553-5112

FOR SALE

A nice mint TR-4 - AC-4 -
\$385.00

Dr. Coy Byrd, WA4HAV
Rt. 5, Box 101, Dial St.
Kannapolis, N.C. 28081

Lincoln was once fined by a judge after he made the clerk laugh aloud in court. Said the judge, "This must be stopped, Mr. Lincoln. You are constantly disturbing this court with your stories. I fine you \$5.00."

Later the judge called Lincoln to the bench and said, "I remit your fine. What was that story?"

Sunshine Magazine



Hobby Industry



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CALL:Tues./Sat.-Noon/5PM

Al McMillan WØJJK

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QTH: 16th & Ave. "G" in the Chalet
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Drop in for your "ham" needs.
AL MC MILLAN WØJJK