



AARC

SERVING ALLIANCE AREA HAMS

ZERO BEAT



VOLUME 7 NO. 9

SEPTEMBER 1993

Mall Show is Sept. 18-19

The Alliance Amateur Radio Club will hold its annual Mall Show Saturday and Sunday, Sept. 18-19 this year.

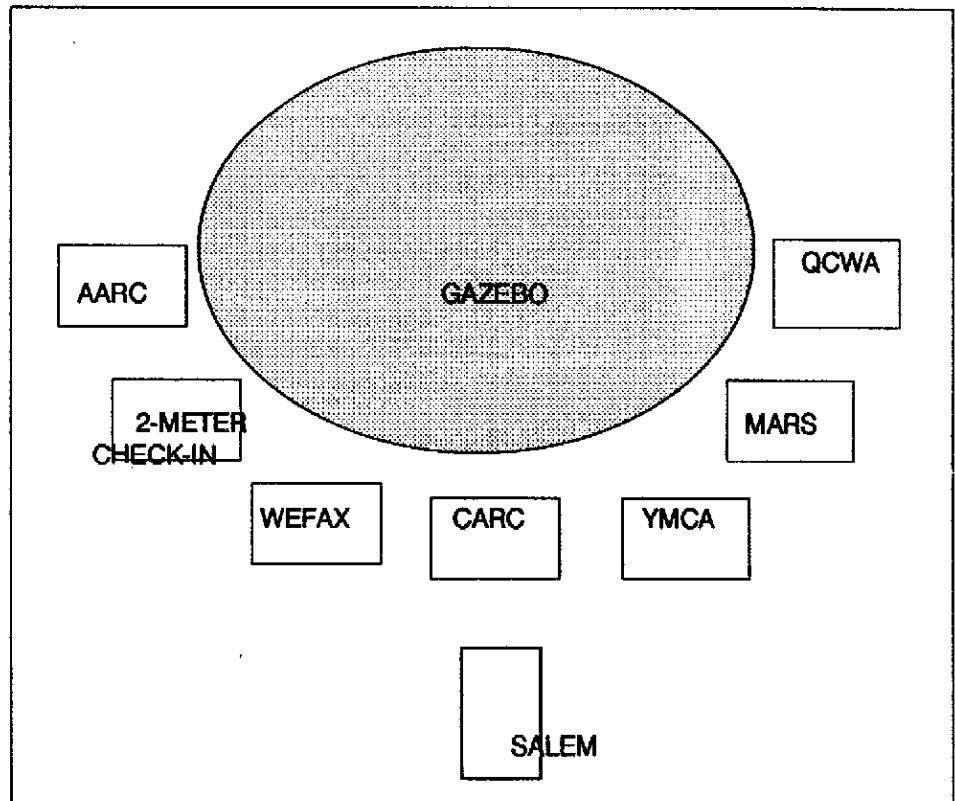
In addition to the regular crew, two newcomers will be Mike Goshorn N8KNU with a Weather Facsimile (WEFAX) station and Dave Glass W8UKQ with a QCWA table.

John Myers WX8G says the antenna party will be Sat., Sept. 11 at 9 a.m. All members who can help on the roof or with the ground crew are invited to attend.

On Friday, Sept. 17 at about 9 p.m., members will begin setting up for the show. Please meet at the back of the mall, near the movie theaters.

Final plans for the Mall Show will be discussed at the September meeting.

The only problem so far has been a lack of feedlines. Any member who has lengths of low loss RG-8 with connectors on it should contact John at 821-5513.



ZERO BEAT: The art of all parties being on the same frequency.

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Another safe running of Triathlon

Sunday, Aug. 15th was the ninth running of the Alliance Triathlon and it went off without a hitch, said Dan Mutigli N8LVO.

"Any time there's no injuries is a good Triathlon," Dan said.

Those helping out were: Gene Smythe N8JKZ, Net Control; Mike Duke N8XER, Mark Hanna N8RNG, Jim Lilley N8XTJ, Deron Boring N8XTH and Steve Huwig KB8NDM.

After the race, Mike N8XER, Jim N8XTJ, Gene N8JKZ and Dan N8LVO enjoyed a lunch at the Country Manor where Gene presented Dan with a ceremonial "168" tatoo for,

"Services rendered in the tracking and trailing of the last runner throughout the race."

Number 168 finished the race in 4 hrs., 7 minutes.

NEXT MEETING

Thurs., Sept. 2
7:30 p.m.

Alliance packet station is key to sending stories to Zero Beat

[JSM-V4.07A-§]

Hello N8LVO, Welcome to KB8NDM's V4.07 BBS.
Logged on port 1 at 23:15 UTC.
Date: 15.08.1993

FROM: KB8NDM
SUBJECT: KB8NDM Operating Schedules

Hello all users,

My bulletin board will be operating on 145.05 continuously for 24 hours each day, EXCEPT for 7:00 PM Tuesday to 7:00 AM Wednesday.

I plan to program and give my computer a little break at that time. IF you cannot connect to me at any other time, there is most likely a hardware problem or a severe lightning threat.

73 -- Steve KB8NDM

DATE: 15.08.1993
FROM: KB8NDM
SUBJECT: KB8NDM BBS Policy

I am writing this bulletin for the best interest of all involved. I hope

to make as few rules as possible, because I believe most of the amateur packet community is mature enough to know what is right and wrong!

RULES:

1) This BBS is available for use by ALL AMATEURS. Any valid amateur may use this station for any legal reason, be it satellites, computers, model trains, books, ARES/RACES, swap and shop, or anything else within FCC rules. My station coverage is from 40-80 miles, depending on direction, so you will have a rather wide area of coverage!

2) Swap and shop is allowed as long as the actual business agreements are made by other means. Primarily, this is for letting other amateurs know that you have HAM RADIO related equipment for sale. Estimated prices are allowed but no haggling via my board!

3) Clubs are welcome. Any club that finds my QTH a good one to post messages via can use it for messages between members.

4) OBEY ALL FCC REGULATIONS. If people abuse this station it will eventually go off the air!!!

73 -- Steve KB8NDM

THE ZERO BEAT -- A SNAPSHOT

Dan Mutigli N8LVO does the typing, editing, page layouts and camera-ready copies of the newsletter. He then takes the camera-ready copies to John Myers WX8G (the publisher) who makes 50 copies (front and back, collated, stapled, etc.) and then mails them with the help of his wife, Pam N8LAK.

EDITOR

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925 E. First St.
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44657
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MEETINGS

The Alliance Amateur Radio Club meets the first Thursday of every month at the Alliance Community Hospital at 7:30 p.m., employee's cafeteria. For more information on directions, try the 145.37 repeater.

TRI-COUNTY NET

The Tri-County News and Information Net meets every Thursday but the first Thursday of the month on the N8DZA repeater, 145.37 MHz at 9 p.m. Your net manager is Dan Mutigli N8LVO. For more information on conducting a net, call Dan at 868-6610.

TRUSTEES

Jack Bennett W8WEN
3591 Mountview Ave.
Alliance, Ohio 44601
821-9779

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6974 Rolling Ridge NE
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492-3754

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WHERE'S DX?

By Jack Bennett WSWEN

All times are in UTC. All contacts are CW, EXCEPT where noted with an asterisk (*)

NORTH AMERICA
7-17 HH2OM* 14.259 0174
7-16 VE3UWC/VE8 14.011

SOUTH AMERICA
7-21 LU4DIT* 14.003 0300
7-20 LU2ODR*28.039 2242

EUROPE
8-5 EA7EAT* 21.020 1701
7-30 Z31YVZ* 14.007 1911
7-28 ES1WN* 14.018 0237
(HB0/DK1CE* 14.003 0236

ASIA
8-5 4ZASZ* 14.015 0014
7-31 UW8WS* 14.027 0332

* = FIELD'S DX WSWEN

EARTH GROUND SCIENCE

By Robert Ruyle W0FCH

Many people take ground for granted. By pushing a copper rod into the earth, you think you have a perfect ground. This is far from true. Let us investigate this substance that is beneath us to see what factors affect the resistance of a ground.

Actually, the resistance of a ground comprises the resistance of the lead, the rod, the rod-to-earth contact and the earth surrounding the rod. The resistance of the lead, the rod and the rod-to-earth contact is insignificant when compared to the resistance of the earth surrounding the rod.

Bureau of Standards tests show that if the rod is free of paint or grease and the earth is packed close around it, contact resistance is negligible.

Now to understand earth resistance, picture the ground rod as being surrounded by successive shells of uniform resistance earth of equal thickness. (See Figure 1) The first shell, the one nearest the rod, will have the smallest cross section of soil at right angles to the current flowing out from the rod; so it will have the most resistance. The next shell will have a larger cross section and will have less resistance. As we keep adding shells further and further from the rod, the cross section of each shell increases and its resistance goes down until we finally reach a point where the addition of more shells adds next to nothing to the resistance of our ground.

If you were to investigate how far from the ground center

this point actually is, you would find that 90 percent of the total electrical resistance is generally within a radius of six to 10 feet from the rod.

EFFECT OF SOIL COMPOSITION

Bureau of Standards tests show a soil of least resistance comprises refuse such as ashes, cinders and brine waste. An average ground in this material tested 14 ohms. Clay, shale, adobe, gumbo and loam soils come next with an average ground resistance of 24 ohms. Mixing these soils with varying amounts of sand, gravel and ashes shot the resistance up to 93 ohms. Finally, when only sand, gravel or rock was present with little or no soil present the resistance rose to 550 ohms.

(See Figure 2)

EFFECT OF MOISTURE

Another factor that has a great effect on the resistance of ground is the dampness of the earth. When the moisture content of the soil falls below 20 percent, the resistance goes up rapidly. For an example, a given sample of soil with 10 percent moisture has a resistance of 350,000 ohms per cubic centimeter. Increasing the moisture to 20 percent brings the resistance down to 10,000 ohms per cubic centimeter and increasing the moisture to 35 percent cuts this to 5,000 ohms per cubic centimeter. Moisture content of the soil varies from 10 percent in dry seasons to around 35 percent in wet seasons

See GROUND, Page 4

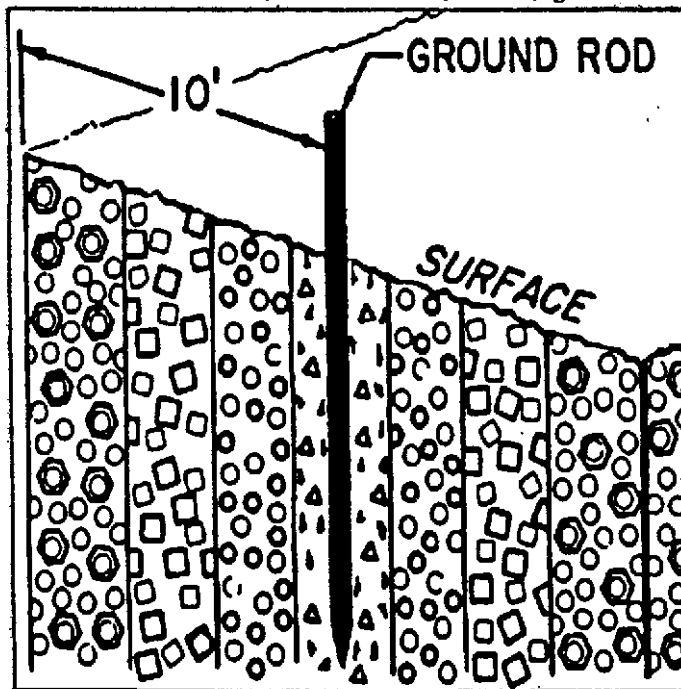


FIGURE 1

Latest FCC call signs as of Aug. 1, 1993:

	AREA 1	AREA 2	AREA 3	AREA 4	AREA 5	AREA 6	AREA 7	AREA 8	AREA 9	AREA 0
EXTRA	AA1HA	AA2OW	AA3FE	AD4HV	AB5OQ	AB6VF	AA7XP	AA8LZ	AA9HT	AA0OI
ADVANCED	KD1QE	KF2QK	KE3JJ	KQ4ZF	KJ5OP	KN6OS	KI7PL	KG8CS	KF9OO	KG0HJ
TECH/GEN	N1PUD	N2VYX	N3PTK	*	*	*	*	NBZUK	N9UIZ	NOXYO
NOVICE	KB1BCO	KB2QNJ	KB3AXR	KE4EAC	KC5BYC	KD6ZMC	KB7WKF	KB8PDB	KB9ITU	KB0LKT

GROUND, from page 3

averaging out at about 18 percent. This is why the resistance of a ground rod driven into the earth will often more than double from a wet spring to a dry fall.

EFFECT OF TEMPERATURE

Another item that greatly affects the resistance of ground is temperature. A great change takes place especially when the ground freezes. The resistance of a soil sample with a stable moisture content rose from 200 ohms per cubic centimeter to 500 ohms per cubic centimeter as the temperature fell from 70 degrees to 35 degrees Fahrenheit. When it dropped suddenly to 20 degrees it was more than 40,000 ohms per cubic centimeter. Where the ground freezes it is especially important to be sure the ground rod is long enough to reach below the frost line. In fact, the ground rod should be long enough to reach down a distance of two feet below the freeze level. This will usually put it into the ground that has a permanent moisture level and the temperature is stable too.

The top soil also has the most resistivity and is subject to wide variations in resistance with changing seasons. The greatest reduction in resistance is ordinarily encountered in going down the first six feet. An eight-foot ground rod in most cases therefore, will reach permanent moisture levels.

THE DIAMETER OF THE ROD

Thinking about these facts, one might think that the size of the rod would have something to do with a low resistance ground. A comparison was made between a one-half inch and a one-inch ground rod driven into the earth and it revealed that the one-inch rod with twice the diameter and four times the area, decreased the resistance only 7 percent.

In general, the rod need only be large enough and strong enough to withstand driving without bending.

HOW TO MEASURE GROUND RESISTANCE

Now you say if there is such a variation in ground, how can

I measure the resistance of my ground to see if it is adequate? There are several methods.

USING A MEGGER

A Megger is probably the easiest and the most accurate. Most of you may have not come in contact with this versatile test instrument. If you do not have one nor have a friend that has one, your best bet is to borrow one from the utility company or the telephone company. If you have access to military test equipment, the old PSM-2 is a good Megger.

To use a Megger, an auxiliary ground rod is driven some distance away from the ground to be measured. The Megger in use will tell you how far. By turning a crank or

pushing a button, you will generate an AC voltage that will cause the meter on the Megger to read the resistance of your ground in ohms. (See Figure 5)

USING AN OHM METER

Using an Ohm meter and two ground rods is another method. You say why two extra rods? Well, the ground that you are using now whether it be a water pipe or an 8-foot ground rod driven into the earth near your antenna has an AC and DC component. Therefore, we need two more sources so that we can take a series of readings and eliminate the AC and DC components and get a true reading.

(See Figure 6) After driving

the ground rods, label the rods A, B and C with A being the ground rod you wish to know the resistance of. Take a reading between A and B then reverse the leads and take a reading between A and B again. You need to reverse the leads to nullify the effect of the stray DC component.

Let's take a typical example such as the ground at my QTH. In measured readings between A and B, I found a stray DC voltage of 0.05 volts and an AC voltage of 0.16 volts and an average ohmic reading of 80 ohms. (still awake? -- Ed.) Between A and C it was 87 ohms and

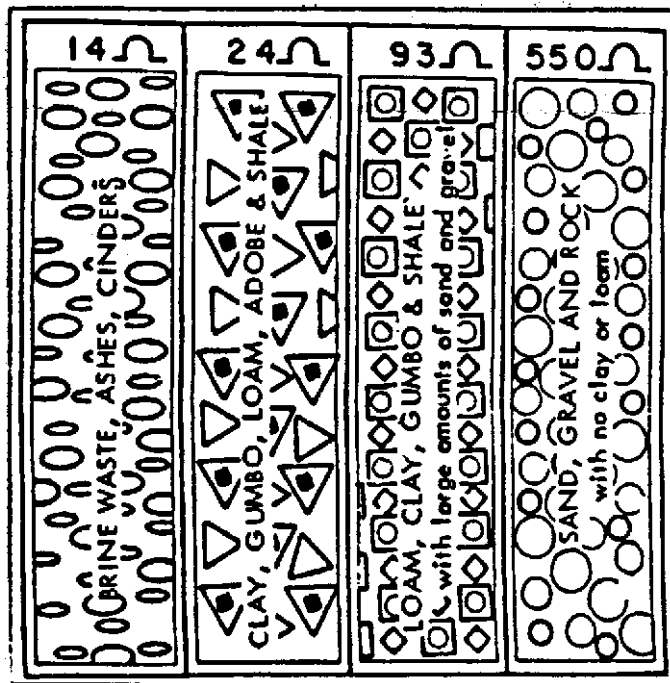
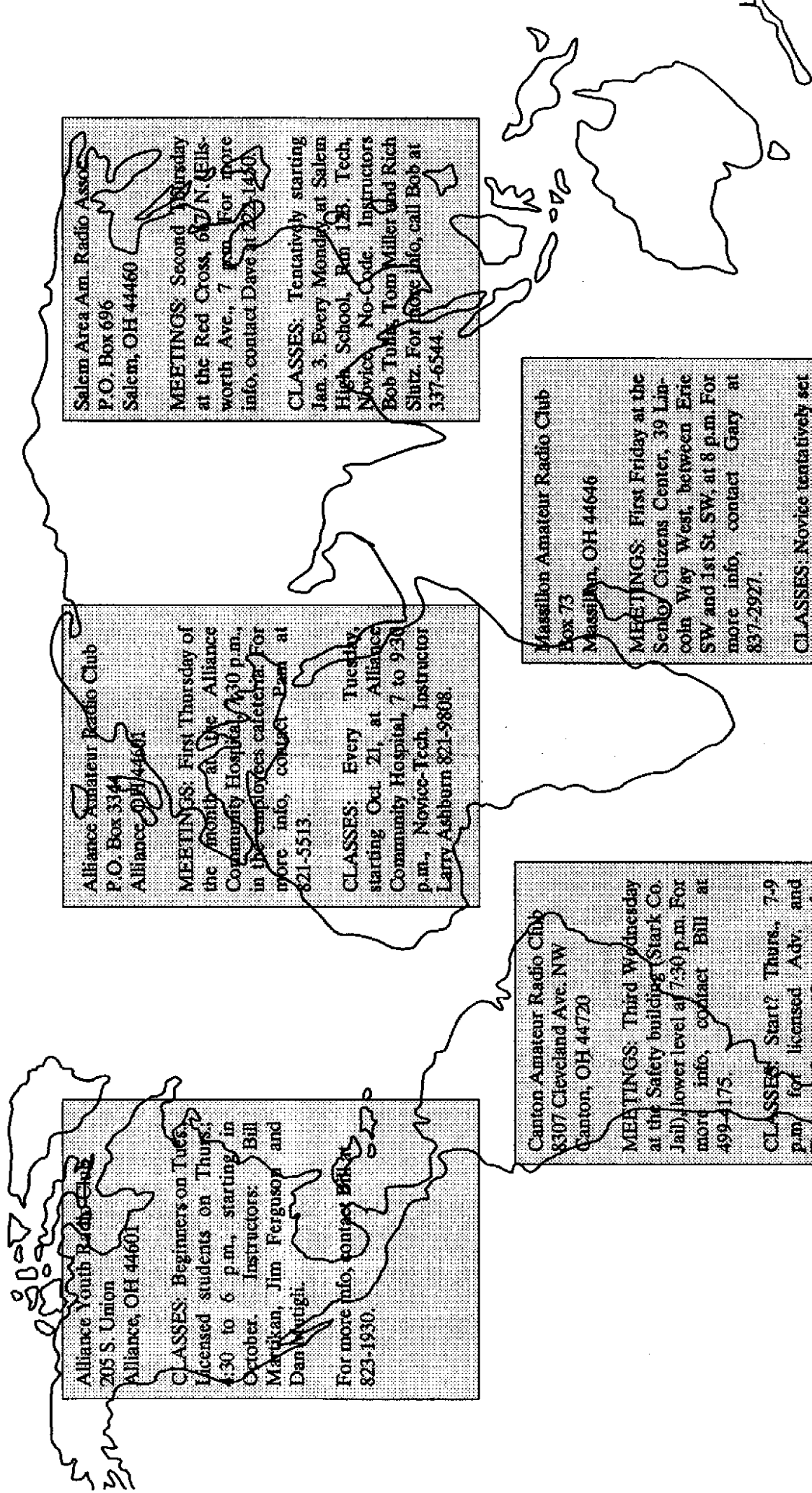


FIGURE 2

WORK THE THE WORLD WITH AMATEUR RADIO



Alliance Youth Radio Club
 205 S. Union
 Alliance, OH 44601

CLASSES: Beginners on Tues. Licensed students on Thurs. 4:30 to 6 p.m., starting in October. Instructors: Bill Marigan, Jim Ferguson and Dan Mungli.

For more info, contact Bill at 823-1930.

Alliance Amateur Radio Club
 P.O. Box 3344
 Alliance, OH 44601

MEETINGS: First Thursday of the month at the Alliance Community Hospital, 7:30 p.m., in the employees cafeteria. For more info, contact Pam at 821-5513.

CLASSES: Every Tuesday, starting Oct. 21, at Alliance Community Hospital, 7 to 9:30 p.m., Novice-Tech. Instructor Larry Ashburn 821-9808.

Salem Area Am. Radio Assoc.
 P.O. Box 696
 Salem, OH 44460

MEETINGS: Second Thursday at the Red Cross, 617 N. Ellsworth Ave., 7 p.m. For more info, contact Dave at 822-1430.

CLASSES: Tentatively starting Jan. 3. Every Monday at Salem High School, Rm 126. Tech, Novice, No-Code. Instructors Bob Tullis, Tom Miller and Rich Slutz. For more info, call Bob at 337-6544.

Canton Amateur Radio Club
 8307 Cleveland Ave. NW
 Canton, OH 44720

MEETINGS: Third Wednesday at the Safety building (Stark Co. Jail) lower level at 7:30 p.m. For more info, contact Bill at 499-1175.

CLASSES: Start? Thurs., 7-9 p.m. for licensed Adv. and Extra. Sat., 10-noon for beginners up to Gen. Instructor Brad Kelley. For more info, contact Brad at 478-8106.

Massillon Amateur Radio Club
 Box 73
 Massillon, OH 44646

MEETINGS: First Friday at the Senly Citizens Center, 39 Lincoln Way West, between Eric SW and 1st St. SW, at 8 p.m. For more info, contact Gary at 837-2927.

CLASSES: Novice tentatively set for the end of January, 1994. Every Wed., 7 to 9 p.m. Instructors John Edel and Gary Kline. Contact Gary at 837-2927.

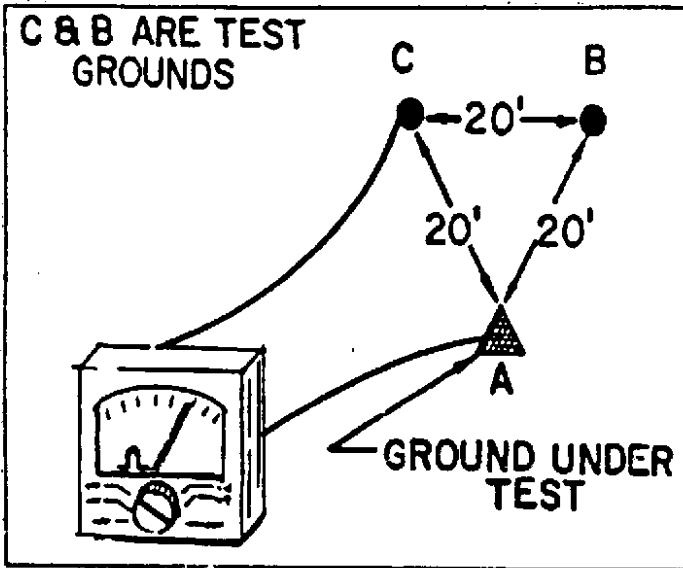


Figure 6

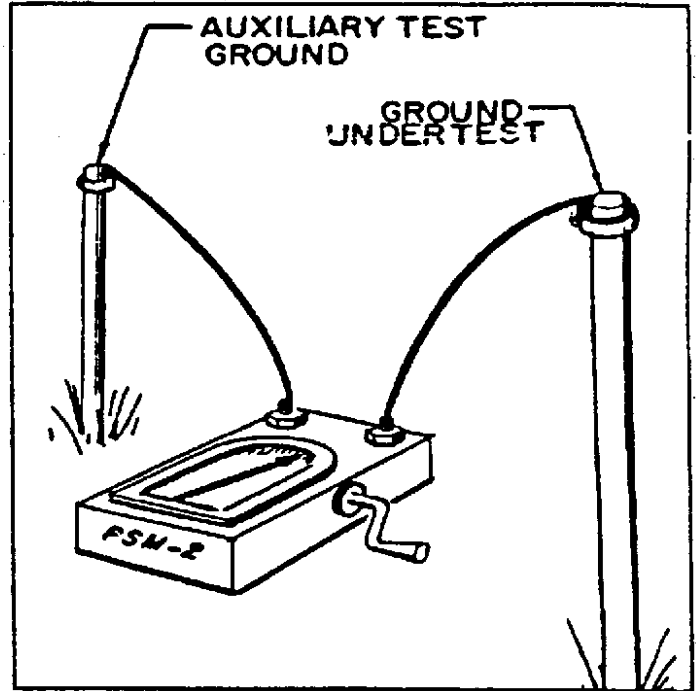


Figure 5

A plus B = 93	B plus A = 67	A plus B 80
A plus C = 103	C plus A = 71	A plus C 87
B plus C = 83	C plus B = 113	B plus C 98
A plus B = 80 A plus C = 87 2A plus B plus C = 167 - B plus C = 98 <hr/> 2A = 69 A = 34.5 ohms B = 45.5 ohms C = 52.5 ohms		

Figure 7

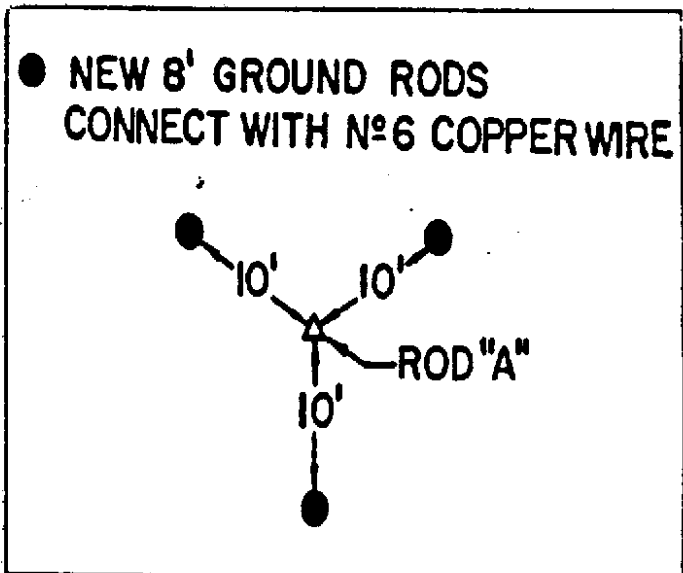


Figure 8

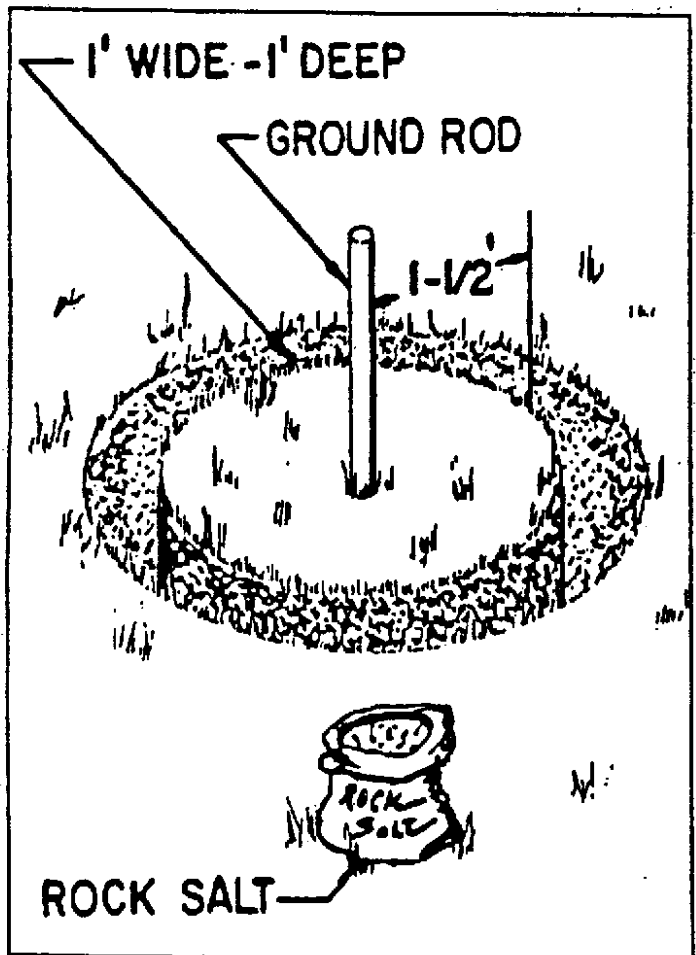







Figure 9

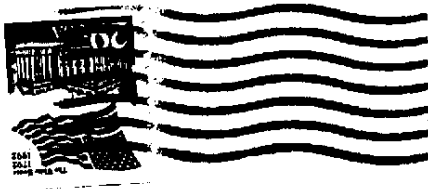
ALLIANCE ARC SEPTEMBER 1993

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			1 COLUMBIANA CO. Q & A NET 146.805 9 P.M.	2 AARC MEETING 7:30 P.M. ALLIANCE COMMUNITY HOSPITAL 	3	4 AMATEUR RADIO WEEK 5 P.M. 146.805
5	6 KBBGIA BIRTHDAY  GOOD NEWS & INFO NET 9 P.M. 147.315	7 AARC NOVICE CLASSES KFBZG BIRTHDAY STARK CO. ARES NET 147.12 7 P.M.	8 WIBT BIRTHDAY 	9 SAARA MEETING 7 P.M. SALEM RED CROSS TRI-COUNTY NET 145.37 9 P.M. 	10	11 ANTENNA PARTY AT WAREL 9 A.M. AKRON & RAVENNA VE EXAMS AMATEUR RADIO WEEK 5 P.M.
12 BUTLER HAMFEST 147.96	13 COLUMBIANA CO. TRAFFIC NET 8 P.M. GOOD NEWS & INFO NET 9 P.M.	14 NOVICE CLASSES STARK CO. ARES NET SWAP & SHOP NET 147.015 7:30 P.	15 CARC MEETING 7:30 P.M. SAFETY BUILDING COLUMBIANA CO. Q & A NET 	16 YOUNGSTOWN VE EXAM TRI-COUNTY NET 9 P.M.	17	18 MALL SHOW V.E. EXAM AT CANTON 9 A.M. AMATEUR RADIO WEEK 5 P.M.
19 MALL SHOW	20 COLUMBIANA CO. TRAFFIC NET 8 P.M. GOOD NEWS & INFO NET 9 P.M.	21 NOVICE CLASSES STARK CO. ARES NET SWAP & SHOP NET	22 COLUMBIANA CO. Q & A NET	23 TRI-COUNTY NET	24	25 AKRON VE EXAM AMATEUR RADIO WEEK 5 P.M.
26 CLEVELAND HAMFEST & VE EXAM AT BEREA	27 COLUMBIANA CO. TRAFFIC NET 8 P.M. GOOD NEWS & INFO NET 9 P.M.	28 STARK CO. ARES NET SWAP & SHOP NET	29 COLUMBIANA CO. Q & A NET	30 TRI-COUNTY NET		

WBURKQ
Dave Glass
217 W. Simpson St.
ALLIANCE OH 44601

TO:

Rec'd 6-27-93
Date Mailed: AUG. 28, 1993
Unit Price: \$0.315
Copies: 50



ALLIANCE AMATEUR RADIO CLUB
P.O. BOX 3344
ALLIANCE, OHIO 44601

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ALLIANCE, OH
ZERO BEAT

SEPTEMBER 1993

Postscript

By Dan Mutigli N8LVO

In just one short month, we will be electing a new slate of officers. Well, SOME new officers. President Pam ~~OR~~ already declared that she is not running again.

Now it's my turn to declare that I will not seek a third term as secretary of the club.

What is an officer? I always thought an officer was somebody who for whatever reason took the job, understood that he or she should attend every meeting; do his/her job to the fullest of his/her ability; and be available to the other Board of Directors for consultation and direction -- I guess I'm a dying breed.

Tom Bert KB8MFV informs me that, "This Week in Amateur Radio" is in jeopardy of folding. This two-hour radio broadcast can be heard on 146.805 every Saturday at 5 p.m.

Community Video Associates, Inc., the collection of amateurs in the New York area have strived to keep the show going but are running out of money. If you listen to the broadcast and think it's valuable, send a donation to: Community Video Associates, Inc., P.O. Box 8592, 1398 Academy Station, Albany, NY 12208-0592.

The schedule of broadcasts for this month is included in the calendar, as "Amateur Radio Week."



Prez Says

By Pam Myers N8IAK

I'd like to thank those of you who helped before, during and after the key show in August. It was a success, although we were a little disappointed at the turnout from our own club members. Special thanks to Donovan Whitaker K8OMO, Jack Bennett W8WEN and Jim Ferguson N8DZA for contributing their time.

The September meeting will be devoted almost entirely to the Mall Show and getting ready for it. Please plan to attend our most important show of the year, which tries to show the public what Amateur Radio is all about. We need 100 percent attendance at the meeting and the Mall Show for it to be a success.