



the **RA RA RAG**

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ROCHESTER AMATEUR RADIO ASSOCIATION, INC.

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No. 3

GOING, GOING, SOLD

You guessed it! The November meeting will be the annual auction. We will have the pleasure of watching auctioneers Dick Goslee, K2VCZ, and Ed Gable, K2MP, create happiness all around on **Friday evening, November 4**, beginning at 8:00 p.m. As in recent years, the auction will be held at the **Police and Fire Academy** on Scottsville Road. There is a sign on the East side of the road and the driveway is located just North of Burger King.

The doors will open at 7:00 p.m. for sellers to bring in their goodies and for buyers to inspect the bargains. Current RaRa membership is required to enter the building and you may pay your dues as you enter if you have not already done so. Each member may bring one guest.

The auction is meant as a vehicle for amateurs to exchange used equipment, so please leave the boat anchors at home or by the curb in front of your house. All equipment sold at the auction will be subject to a 10% donation of the selling price to RaRa.

Come out – watch the excitement – join the bidding – take home a treasure – support your club.

DO YOU KNOW W2GB?

George Batterson (W2GB) has moved to Tennessee with his son. On December 1st he will be 91 years old. Anybody who has been down to the Antique Wireless Museum and seen his spark gap transmitter in action can appreciate this. Anybody wishing to mail him a birthday card can send one to:

George Batterson
East Briarcrest Drive
Erin, Tennessee 37061

For those of you who wish to phone in your birthday congratulations, you can reach him at 615- 289-4089.

COAST GUARD AUXILIARY COMMUNICATIONS – RRRA NOVEMBER 18th MEETING

Mr. Karl Emilson, WB2EFV, Division Staff Officer, United States Coast Guard Auxiliary will be the guest speaker at the RRRRA November 18th Meeting.

Mr. Emilson will discuss the use of radio communications by the Coast Guard Auxiliary and in search and rescue operations.

The meeting will commence at 2000 hours (8 p.m.) sharp in the Pittsford Town Hall.

Following the meeting, Marcy, WA2URG, Chairperson for delectable palate tantalizing refreshments will oversee the dispensing of said delights.

-- Bob O'Connell, NF2Z

SILENT KEYS

BLANCHE H. NAIL
WB2DSR
September 19, 1988

BILL LANDON
K2CBD
September 25, 1988

MERRYL S. WEED
AG2A
September 25, 1988

JOHN MARCH, JR.
W2SNF
October 10, 1988

the **RaRa Rag**

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SILENT KEY

JOHN J. MARCH, JR

W2SNF

PRESIDENT RRRR

1924 - 1988

by Jim Collinsworth, N2JC

John was born in 1924 and spent his early years in Rochester, New York, where his father was an M.D. (podiatrist) with his office in the Powers Building. John is survived by his mother, Thelma March.

At the time of his death, John was President of Rochester Radio Repeater Association, Inc. The RRRR Repeater Fund has been named the W2SNF Memorial Fund, in John's honor.

For 33 years of his adult life, he worked and lived in the Greater Chicago area - residing in Melrose Park, Illinois. John held the call W9KFQ there.

The time came when he operated his own business in the mid-west.

John retired early and returned to Rochester, New York about three years ago. President of RRRR, Inc., this year, John enjoyed programming the controller for N2JC Repeater. He was a night owl and enjoyed serving as Control Operator of this 146.28/88 MHz repeater throughout the night-time hours. He was also a Control Operator of WB2DHB/R in Springwater, New York. John certainly enjoyed Hamfests, and you could find him at the Dayton Hamvention as well as at local hamfests.

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Amateur Radio News Service



FOR SALE: TS-430S with FM Module and MC-85 Desk Microphone - \$625.00; FT-727 Dual Band Handy-Talky with External Mic & cigarette lighter adaptor (the keypad is intermittent, prior owner dropped - TX/RX is fine!) - \$275.00; KLM BL10-160 2 meter amplifier 10w in 160w out FM/CW/SSB - \$150.00. Contact Evan Tupis, WB2ELB, at home: 716-638-8269, at work: 716-424-2560.

"INS AND OUTS OF DX QSLING"

November's RDXA meeting could just as well be subtitled "*How to Get That Rare QSL*". So many people have worked a "*rare one*", or one that was rare to them, and then wondered how on earth to get a QSL. And it ain't straightforward! But with a few practical pointers, it *IS* possible. Our speaker will be Walter Obenhofer, NQ2O (of NQ2000 fame!), who has several hundred confirmed countries and is an active proponent of QSLing.

We'll be discussing how to send your cards, as well as what to do to get one back. The many available QSL aids (DX bulletins, W6GO list, etc.) will be described, and we'll learn what they can do for you. How do you deal with foreign QSL managers? Can you use the bureau or not? When do you use IRC's versus "*Green Stamps*" (\$1 bills) (and some comments on the DX QSL manager controversy) will be presented. Speaking of that, another important aspect is how to do all this as cheaply as possible— for example, there are stamp services that sell foreign stamps that you can use on the return SASE's. And how to write those strange foreign addresses to make sure your card gets where you want it to (like the Russian stations that now have direct addresses instead of Box 88, Moscow).

In addition to the program, we also have many locals with a lot of DX QSL information, and we want to make this available to the casual DXer. Bring all your questions— there'll be lots of folks to answer them after the program (actually, this is true after any meeting!)

The meeting will be at its regular date, the third Tuesday of the month (November 15th) in the auditorium of the Social Services Building on Westfall Road.

— K1JUL

HAM RADIO AND ELECTION DAY

You may not think that as a Ham Radio operator you can do a lot on Election Day, but let me set you straight, YES YOU CAN!

As a Ham Radio operator you can do one thing on Election Day than millions of other people who deem it more important to pursue their own hobby for an extra five minutes on November 8th. You can do by going QRT with the rig.

That one thing is GET OUT AND VOTE!!! (Maybe we'll wind up with a more responsible FCC!)

— Jack, KA2PJN

RaRa CALENDAR FOR NOVEMBER

- 2 - West Coast Qualifying Run - 2100 PST
- 3 - CRRL Fall Sprints - 1296 MHZ -
starts 1800 EST
- Packet Group Meeting -
111 Westfall Road
- 4 - RaRa Auction - 7:00 p.m. -
Police and Fire Academy,
Scottsville Road
- 5- 6 - QST QSO Award Party - Phone -
1500-2200 Z each day
- 5- 7 - ARRL Sweepstakes - CW -
starts 2100 Z
- 5- 6 - Ten-Ten International Net -
CW & RTTY - starts 0000 Z
- 8 - DeForest broadcast AM,
Bronx, NY - 1916
- ELECTION DAY -
GET OUT AND VOTE!!!
- 9 - W1AW Qualifying Run - 2200 EST
- 10 - CRRL Fall Sprint - 2304 MHZ -
starts 1800 EST
- 11-13 - Japan International DX Contest
- 11 - VETERAN'S DAY
- 12-13 - QST QSO Award Party - CW -
1500-2200 Z each day
- European DX Contest - RTTY
- 15 - RDXA - 111 Westfall Road
- 18 - RRRRA Meeting - Pittsford Town Hall
- 18-20 - ARRL Southeastern Division
Convention, Houston, Texas
- 19 - Amateur Radio Exams - starts 8:30
a.m. - 111 Westfall Road
- 19-21 - ARRL Sweepstakes - Phone -
starts 2100 Z
- 22 - W1AW Qualifying Run -
starts 1600 EST
- 24 - HAPPY THANKSGIVING!!!
- 25 - First Amateur Trans-Pacific contact
U7HG - JUPU, 1923
(leftovers)
- 26-27 - CQ WW DX Contest - starts 0000 Z
- 27 - First Amateur Trans-Atlantic contact -
F8AB - W1MO, 1923

JUST ARRIVED: a fresh shipment of the bright, new official RaRa T-shirts. Available in sizes S through XL at \$4.50 each. Pick up one or two on Auction Night!

GETTING ON THE AIR ...

Much has been said and written about amateurs not being on the air. All these people who get their license and then never use it. I am sure there may be some of us who don't get on the air on a regular basis. I am acertain that some of us haven't been on the air at all in the last month.

Perhaps there is another definition of active participation in Amateur Radio than transmitting. What if we broadened the definiton of active to include listening on the amateur bands or participating in amateur radio related societies or building or repairing communications equipment or reading about technological advance as it may be applicable to amateur radio?

I feel that these people also participate in amateur radio. I like my broader definition, because I occasionally like to get on the air (actually participate in a QSO) and I am glad that all these active people are not transmitting! I am sure if you have tried to work on most weekends, you are aware of the difficulty of trying to find a clear frequency!

So, instead of complaining about the lack of active amateurs, I think we ought to be celebrating the many and varied ways which Amateur Radio provides for active involvement. Who knows, maybe one of the listeners will respond to your CQ and a new friendship will begin.

— Dave Bernheisel, N2DPF

ARE YOU WEARING A JACKET?

As a kid I can bet that your mother always seemed to nag you about wearing a jacket whenever you went outside. That “nagging” for me turned into a force of habit even on the hottest of days. I never knew that when all that nagging would come to pay off...

Last spring when new RaRa jackets were offered, I chipped in for one, too, and began to wear it most everywhere I go. Force of habit, remember.

With the jacket, however, I find that I have become a human billboard for RaRa and Amateur Radio. It's quite strange when a person comes up behind you from out of the blue and starts to ask you about Ham Radio, until you realize you're wearing your RaRa jacket. It's quite unnerving at 6 a.m. when you're half-awake with a cup of coffee in one hand and a mouthful of one of the local donut shop's “Special of the Day”. But it's an experience I enjoy, no mater how disconcerting, and who knows how many hams it might create with a little simple “advertising”.

— Jack, KA2PJJ

THE RaRa RAG 20 YEARS AGO — NOVEMBER 1968

by Ed Gable, K2MP

The Annual Auction was announced with Bill Gaines, WB2QVB, doing the honors with the gavel. On the Ham Radio front the big news was the final implementation of “*Incentive Licensing*”. New sub-band restrictions go into effect on November 22, 1968, as does the new Advanced Class license. Bruce Kelley, W2ICE, was honored at the 1968 AWA Meet in Washington, DC. Gil Crossley, W3YA, ARRL Atlantic Division Director, presented an “*ARRL Outstanding Amateur*” award to Bruce for his dedication to Amateur Radio and in particular to the field of preserving radio's history. Coincidentally, this issue has a large article by Bruce Kelley continuing with part 2 of his writings on early (circa 1920's) Amateur activity in Rochester. Still excellent reading today. The Rochester VHF Group announced that new comer Tom Ball, WA2THS, was elected Vice Chairman. Dave Russell, WA2GIA, will be the next program speaking on converter front end overload problems. There was much discussion on a new band plan for six meters as incentive licensing made 50.0 to 50.1 Mcs an exclusive Amateur Extra and Advanced sub-band.

HANDY HT HOLDER

This is not a new idea but it seems timely to repeat with all the new HT's and similar sized scanners many of us carry around in our cars today. Automobiles are so ingeniously designed so that there is nowhere to put the HT or scanner while riding down the road and turning corners without the radios taking on the characteristics of a ping pong ball. For as little as 19¢, you can pick up one of those flexible plastic cup holders and jam your radio down in it. The hook on the holder adapts well to the window well opening next to the steering wheel and stays put. Better yet, cut about 1” or so out of the center loop of the holder. Cut a board (perhaps out of a 2x4) down to 1½ by 2½ as a former block. Put the block down between the new prongs you created and with a hair drier heat the prongs to form a square into a perfect fit for your HT. It will take a little time to bend the prongs under the heat, but a little patience pays off.

North Florida ARS via World Radio
via Metroplex

WANTED: Manual for Allied Model A-2515 Communications receiver. Irv Goodman, AF2K, 671-4430.

CONTESTING

Hello! I am the **new contest chairman** for the Rochester VHF Group and I would like to discuss some rules (ARRL) concerning club competition. Does everyone know that a club or group member **must** be listed in the regular score listings to be counted for a club? I guess this implies you have to send in an official log (**on time**) to be counted, not a check log or one that's subject to disqualification. Also, many conditions must be met.

1) At least three different entries from members must be submitted.

2) All members wishing to be included in the club score **must** indicate the club name on their summary sheet. Also the club secretary **must** send in a list of **all** club members eligible to compete for the club and meet the mailing deadline.

3) All stations and **all** operators **must** (they use this word a lot) reside within **175** miles of the club center.

4) All members **must** attend at least 2 club meetings per year to be eligible to submit an entry. If however you have not been a member for a year's time or you are joining for the **first** time then you **must** attend **one** meeting prior to the start of the contest.

5) A **guest** at a single-op station (you invite a friend over or import a ringer to work the contest and this person performs all the operating, logging, etc.) **both** the guest operator and the station licensee **must** be members of the same club in order for that score to count for that club.

6) Now get this!!! At **multi-op** stations, at **least 66% must** be members of the same club for that score to count for the club.

7) Last but not least your club **must** be affiliated with the ARRL.

Well as you can see we do have some ARRL rules to follow in the Club competition. I think we have to check out everything to insure that if your club is eligible for a gavel that you meet the contest sponsor's criteria. There are three categories for club competition, unlimited (51 or more logs) medium, (50 and under) and local (10 and under). Last year for instance the Rochester VHF Group was in the Medium category with 27 eligible logs submitted for the January Sweepstakes and we ended up in second place because one of our multi-op stations forgot to check off the yes box on their summary sheet for club competition and we lost 87 K points. If your club is planning to enter in a ARRL club competition sponsored event please be sure to follow the above conditions

whether it is an HF or VHF contest. For more details check out January 88 *QST*.

Please don't forget about the area club competition for the Rochester CUP during the January 1989 VHF Sweepstakes. This cup is sponsored by the Rochester VHF Group and awarded to an area club (RaRa, RRRRA, GENESEE VALLEY REPEATER ASSOCIATION, DRUMLINS, RDXA, GRAMS, KODAK AR CLUBS, XEROX AR CLUB, ETC.). Any and all area clubs are welcome to participate. The Rochester VHF Group and its members are ineligible. Don't forget about the **FM only** awards. The Group sponsors three handsome plaques and you **don't** have to be a member of the Rochester VHF Group to be eligible for these fine awards. Last year WB2SUN won 1st place and K2SA was 2nd. I am not sure who ended up in 3rd place. The club has as many as 25 individual awards for its members and a nice door prize or two if we can get vendors to donate a prize. If you would like to join the VHF Group please contact WA2TMC, Bruce Sidari, for details. Club dues are only \$5.00 per year and you will receive 10 issues of our VHF Journal. Please start thinking about participating in this years sweepstakes events in November on HF and especially the January VHF Contest. This years contest will be held the weekend between the NFL Conference Championship games and the Super Bowl game so you won't miss out on football or the contest. 73 for now and GL on whatever your interest are in Amateur Radio. **Not 2 Well Known.**

-- Wayne King, N2WK

FREE to first caller - Moseley TA33 Beam, 3 elements and boom. Needs new mounting hardware. 10-15-20 Meters. Call Dave, K2ZCD, 663-4020.

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FROM SPREADSHEET TO DUPESHEET

by Ev Tupis, WB2ELB

In this age of computers, it's difficult to find an office without one. They range in size from a cheap clone for less than \$999 from one of the scores of computer houses, through the big bucks PC that started the quest for MS-DOS, the IBM PC. Then there is the innovative office that may have an Apple Macintosh in one of its several different forms. For the purpose of this article, I will focus on the MS-DOS based PC's. When we focus in on this type of PC, we see one software package that may well be the most popular application package ever made ... Lotus 123. Lotus is an electronic spreadsheet with built-in graphics and rudimentary word processing and is widely used in the business world for all sorts of financial forecasting, estimating, and general number crunching. We are going to let Lotus do our final Dupe checking for our contest log.

The first thing to do is to execute the 123 program. When we are at the spreadsheet, we need to label the columns appropriately. We will need the following information: Band, Date, Time, Call, Grid. Go ahead and label cells A1 through A5 that way. Next is the most tedious of all work ... keying your logbook into the computer. For demonstration purposes, I am going to use the spreadsheet as it appears below:

	A	B	C	D	E
1	Band	Date	Time	Call	Grid
2					
3	50	6.11	18.00	K2OS	FN13
4	50	6.11	18.06	WG2A	FN13
5	50	6.11	18.13	WD4RFT	EL95
6	50	6.11	18.17	N4BBC	EL98
7	50	6.11	18.23	WA4ELB	FM29
8	144	6.11	18.03	K2OS	FN13
9	144	6.11	18.20	N4BBC	EL98
10	144	6.12	13.22	N2TW	FN13
11	144	6.12	13.24	K2OS	FN13
12	432	6.11	18.26	K2OS	FN13

A couple of things should be noted. I use the period (.) to separate month and day in dates, as well as hour and minutes in time. This is because my computer has a numeric keypad to the right of the keyboard, and it is more convenient to use the period than it is to use the dash or slash. This poses only one problem albeit temporary. If I enter 18.20 for the time 18:20, the computer will drop the trailing zero and will display the value as 18.2 instead. This annoyance can be easily rectified (I love using electronic terms in everyday speech) by forcing the offending column to display numbers to 2 decimal places. The following steps describe doing this: / Range Format Fixed 2 «RETURN» C3.C12 «RETURN» C3.C12 is

the range of cells that I wanted to automatically display 2 decimal points. BEFORE YOU DO ANYTHING ELSE, SAVE YOUR WORKSHEET TO DISK. You may even want to print it now.

Your next action is the most critical. You need to SORT your spreadsheet by CALL. To do this, you will need to define the area of your spreadsheet that will be affected by the sort, and the values that you will sort by. In the example above, your keystrokes to accomplish this sort would be: / Data Sort Data-range A3.E12 «RETURN» Primary-key D3.D12 «RETURN» A «RETURN» Go. The first Data-range defines the cells that will be affected by the sort. More often than not, this will be your entire worksheet. The Primary-key defines the cells on which the sort will be based. The Go statement at the end tells the computer to actually perform the sort. The reason that you saved your worksheet before doing the sort is because it is difficult, if not impossible, to re-construct the worksheet to its presorted form.

The next diagram will show you how the sorted spreadsheet would appear.

	A	B	C	D	E
1	Band	Date	Time	Call	Grid
2					
3	144	6.11	18.03	K2OS	FN13
4	50	6.11	18.00	K2OS	FN13
5	144	6.12	13.24	K2OS	FN13
6	432	6.11	18.26	K2OS	FN13
7	144	6.12	13.22	N2TW	FN13
8	144	6.11	18.20	N4BBC	EL98
9	50	6.11	18.17	N4BBC	EL98
10	50	6.11	18.23	WA4ELB	FM29
11	50	6.11	18.13	WD4RFT	EL95
12	50	6.11	18.06	WG2A	FN13

Notice that our sorted spreadsheet highlights a logging error with K2OS! You have worked him twice on 2 meters. It's easy to print this out, and use it to strike out the dupe from the original log (Don't erase it, just draw a line through it and note it as a dupe!).

As an enhancement, when you do the sort, just after defining the Primary-key as the column containing the callsign, try defining the Secondary-key as the Band. This will cause all Dupes to occur next to each other once the logbook is sorted, making identification easier.

So what do you think? Granted, big-time operators will cringe when they read this. They'll say "You should keep a dupe sheet up to the minute WHILE you're contesting, not as an afterthought!" If you want to be a Big-Time oper-

ator, then that is absolutely right! But, if you are not a big-time op, but still want the security of a dupe checker, without the time to put into writing one from scratch, then this may just be for you. Give it a try, make some changes, streamline it if you would like. If you do, write in to the Journal and let the rest of us know what you are doing and how you are doing it. Good dupe-ing to you!

Personal information about the author:

Ev Tupis was first licensed as WN2ELB in 1976 and presently holds an Advanced Class license. He is presently employed by Heath/Zenith Computers and Electronics in Rochester, New York as a Systems Engineer with 10 years in the field. Past amateur radio milestones include 2 years as the Contest Chairman of the Rochester VHF Group (1984-85, 1985-86), during which the VHF Group won the prized January Sweepstakes Gavel (for the first time ever!) from the ARRL for #1 club score in the medium competition category. In addition, Ev was the editor of the VHF Journal for the 1985-86 year.

OF ALUMINUM ANTLERS AND ETHER or Antennas According to the VHFer

by Ev Tupis, WB2ELB

Every now and then, someone comes up with the idea that it would be a neat thing to put their antenna up another 5 or 10 feet. I just crossed paths with someone the other day that told me that they were considering raising their 2 meter SSB antenna another 8 feet from 52 feet to 60 feet.

At first thought, the extra 8 feet would seem to be a good bet, after all, 8 feet is over a full wavelength at that frequency. (Just think of the improvement your 80 Meter dipole would enjoy if you were to raise it 1 wavelength above the ground!) Then it hit me! At 52 feet, the antenna is already about 8 wavelengths high! What good would it do to put it 9 wavelengths high!?

The New ARRL Antenna Book gives us some insight: At a height of 52 feet, the operator had an effective line-of-sight range of about 9.6 miles. By raising their antenna by 8 feet to 60 feet, their effective line-of-site range extends to about 10.9 miles; this equates to a 1.3 mile improvement in line of site distance. Does it sound as though it is worth the effort? Read on ...

Any self respecting 2 meter SSB operator knows that, even though 'optical line-of-site' may be only a dozen miles away, your effective communications range may extend to several hundred miles (even with modest power!). The key to determining the impact of changing your antenna

height is in calculating your overall Station Gain. This procedure is explained in detail in Chapter 23 of the new ARRL Antenna Book and the November 1961 issue of *QST*.

There are eight factors involved in station gain: path loss, receiver sensitivity, transmit power, receiving antenna gain, receiving antenna height gain, transmitting antenna gain, transmitting antenna height gain and required signal-to-noise ratio. Notice that antenna height gain appears twice, once at the receiving end and once at the transmitting end. It would appear as though antenna height accounts for 25% of your entire stations performance!

In order to make the calculations easier, we will need to assume the following specifications:

Receiver Sensitivity:	3 dB
Coax Line Loss:	2.5 dB
Transmit Power:	120 watts (+21 dBw)
Receiving Antenna Gain:	14 dBd
Transmitting Antenna Gain:	14 dBd
Required Signal to Noise Ratio:	6db
Antenna Height:	52 feet
Antenna Height Gain:	2dB

It may be interesting to note that the ARRL Antenna Book says that "*Beyond 100 miles the height gain is nearly uniform...*". The height gain advantage is only 2db for a 50 foot high antenna and 4 db for an 80 foot high antenna! After plugging these figures into the formulas for effective range calculation, we find that our medium power 2 meter operator could count on a communications range of around 325 miles "*as the crow flies*". This 325 mile radius includes territory in 14 states (if you live in Rochester, NY) and takes in Boston-NYC-Philadelphia-Washington DC corridor (25% of the US population)! With just a little propagation enhancement, 8 more states come into range! Yet, back to the original point...

If this operator raised their antenna another 8 feet, for a total height of 60 feet, what would be the result? It's easy to see that all of the rest of the factors would stay the same (rx & tx antenna gain, rx noise figure, tx power, etc.). Only two factors could change within the range calculation formula: feedline loss (another 8 feet of line) and antenna height gain. There is obviously little difference between the height gain of a 50 foot antenna and an 80 foot antenna (2dB vs. 4dB) so there is even less of a difference (dare I say negligible) between the height gain of a 52 foot antenna and a 60 foot high antenna; and the extra 8 feet of coax may wipe even that away! The operational range of the 60 foot high antenna installation is, according to calculation, essentially the same as a 52 foot antenna!

Suppose, though, there is a 55 foot high building within 1000 feet to the southeast!?! Of course, in this case, by raising their antenna above the building (even 5 feet), the operator will hear stations that they never new existed!

Does that mean that if the building were 2000 feet away, it wouldn't be a factor? It's not easy to say, but here is a quick and easy method of determining whether or not an object is an obstruction or not: Get yourself as close as you safely can to the antenna. Extend your arm horizontally in front of you, as if you were holding on to a wrung of a ladder and clench your fist. Pan across the horizon with your fist. Your clenched fist takes up about 10 degrees of your field of view from one eye. If you encounter an object that is larger than 1 fist width, consider it to be a dummy load to your signal in that direction. If you can get above it, economically, do so. Keep in mind that obstructions to the VHF operator include foliage. A couple of poorly placed trees can really suck the ether dry of signals; especially if they are wet!

I hope this has been some good food for thought for those who are already on VHF as well as those thinking about it. Just remember: antennas effect at least 25% of your stations performance, make yours the best it can be.

VCR EXPLOSION

There are now more VCR's in use than there are cable subscribers! Nielsen rating service estimates VCR penetration has reached 58.1 percent Vs. cable's 51.7% penetration. Rating services are now measuring videocassette playback.

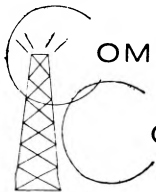
W5YI Report via Metroplex

FOR SALE: Mint Heath H-89 Computer, 48K with 3 Disk Drives. CP/M OS, Microsoft Basic, 25 Disks, Magic Wand WP, and Manuals. \$75 or BO. Heath Self Learning Course "Programming in Microsoft Basic" \$25. Wally Kincaid, W2PG, 865-2606.



W2YJ

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RaRa RAG 8

DIRECTORY

It's getting close to the time to print the annual RaRa Directory of all licensed amateur radio operators in the 144 - 146 zip code area. To make sure you are listed correctly please take a minute and check the mailing label on the envelope that your RAG was delivered in. Is all the information correct? If there are any errors please fill out the form shown below and return it ASAP.

Call: _____

Name: _____

Address: _____

City: _____

State _____ Zip: _____

Please return by November 7, 1988 to:

RaRa Directory Editor

Richard A. Goslee

24 Elaine Drive

Rochester, NY 14623-5306

STICKER REMOVER

Ever had trouble removing decals from your transceiver, car window or other pieces of gear?

Even price tag stickers can be tough to get off and decals leave that sticky goo that attracts dirt and grime.

This tip from the finish folks at Ranger Boat Company can make sticker and decal removal quick and easy. Use a common hair dryer and gradually heat the entire decal. After the decal peels off use simple white vinegar or WD-40 to remove any sticky residue. Wash with soap and water.

*From the Ham Radio Guide
Portsmouth, VA, WB4BAB, Editor
via SPARC-GAP and The Groundwave*

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