The Minuteman

Volume 24 Issue 2 November 1994

The President's Corner

I want to thank all those who helped out at Boxboro this year....we had the most successful weekend we've ever had there. We took in over 40 new and renewing memberships, and checked almost 100 hand-held radios. Most of the people whose radios we looked at threw a buck or two in the kitty.

Once again, Walter, N1HBR, along with Frank, KB1FZ, made a major contribution to the effort — they collaborated to create a new membership certificate, along with a system that would allow us to generate it on the spot for those renewing or joining up for the first time. It was slick, and the certificate looks truly professional.

Also on board for the weekend were Frank, W1JDO, and Dottie, N1BHA. They took the whole weekend, mixing a romantic getaway at the hotel with running talk-in and doing invaluable public relations for the association.

Ed, N1NOM, was there early both days; both he and Clark, N1NVK, gave up their whole weekend to help out. On Saturday Ed teamed up with Chris, N1NVL, to do a great service for the group and for a fellow ham who was trying to get rid of a bunch of test equipment....They went for a two hour ride to take the items off the hands of a generous ham who, failing to sell his goods at a yard sale, decided to donate it all to the MMRA. A pretty generous thing to do for a man who has fallen on hard times....we plan to make use of some of the equipment and sell the rest at the flea sale in March. We'll return the proceeds to our benefactor. I'm not going to name him or describe his circumstances here out of respect for his privacy. Ask me in person should you want more information.

Clark, N1NVK, Chris, N1NVL, Bill, N1QPR, Dave, KT1X, did some time on the HT check table and generally helped out. Clark, N1NVK, helped Walter and I set up and test the talk-in station Friday night.

During the both days a lot of members came by, making a working weekend a pleasant social occasion as well. My thanks to all for making the whole affair a big success.

As those of you who were at the last meeting will remember, the membership approved the acquisition of another 440 repeater. The system in question was the 449.575 repeater sited in Westboro. Owned by W1OJ, the repeater is an ICOM system with an SCOM 5k controller and a ready-to-go frequency agile link. The link is controllable remotely — that means that we can make this repeater link to any other 440 machine within range of the link transceiver. It's an excellent system; we plan to site it in the Taunton area. There it will provide coverage over a wide area of southeastern Massachusetts and down to Providence. It will be linked to 449.925 full time, giving it the same patch access available to other linked repeaters.

(Continued on page 2)

Electromagnetic Interactions with Materials

By Dave Croll, KT1X

Part 2.

In this part of the series on electromagnetic interactions with materials, we will develop our introduction to concepts behind the electromagnetic phenomena of interest to hams in their daily activities. We will also look at some simple concepts important for understanding electromagnetic effects in biological materials.

As discussed in Part 1, the relative permittivity, or dielectric constant, is a measure of the interaction of materials with electric fields, such as those associated with electromagnetic waves. An analogous measure, the permeability, characterizes the interaction of the magnetic field of an electromagnetic wave with materials.

Materials can be affected by magnetic fields in several ways. These effects are determined by the electrons in the material, since electrons are magnetic. Two of these interactions are of minimal interest to hams, but deserve a passing reference. In both cases, the applied magnetic field induces a field in the material. In diamagnetic materials, the induced field opposes the applied field causing repulsion. In paramagnetic materials, it adds to the applied field causing attraction.

Ferromagnetic materials, which are named after the Latin name for iron, are of major interest to hams. In these materials, the application of a magnetic field induces a field, which adds to the applied field, causing an attraction. In ferromagnetic materials, the molecules can become aligned or organized to make this effect

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NOVEMBER MEMBERSHIP MEETING

WEDNESDAY, NOV. 16, 1994 - 1930 HRS

CAMPION CENTER, WESTON MA

PROGRAM:

HOW LOJACK WORKS

PAT CLANCY OF LOJACK

Association Update

Raffle

The President's Corner..Continued

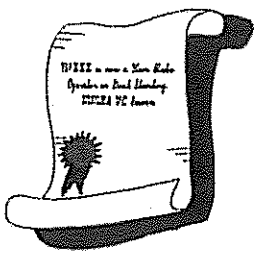
(Continued from page 1)

As of this writing the machine is at Bryan's (KA1YQB) house. He's doing some refurbishing and tweaking to make the machine ready for deployment. You might be able to reach the machine if you are down in the Milford area. He's also working on setting up the link during the test period.

Chris, N1NVL, is working on the siting; we have a couple of good prospective sites. We should know more soon, and we'll keep you advised — tune into the Tuesday night information nets for further news.

You should find our November meeting program of interest. Bill Dunn, N1KUG, has close contact through his job with the people who distribute and operate the Lo/Jack system. He has arranged for them to come to the meeting and tell us just how the system works. I'm sure we'll hear some interesting technical details, along with a few war stories about recoveries. So come on out to the meeting -- Wednesday, November 16 at 7:30 PM at the Campion Center in Weston.

We are including an updated roster in this issue, as we do each year. Members who have not renewed their 93-94 membership have an asterisk next to their call . **If your call has an asterisk, your patch codes will not work anymore...and you will not receive the Minuteman after the January issue.** So please renew....we need **your** support. The MMRA is the best ham repeater club deal around, and keeps getting better.



MMRA VE Sessions

Second Saturday of Each Month
Marlboro Public Library, 10AM
Contact: Bill Wade, K1IJZ
617-891-9079 Evenings 6 to 10 PM,
Weekends 8 AM to 10 PM.
Accredited - ARRL VE Program

Electromagnetic Interactions with Materials Part 2....Continued

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persistent and, in some cases, permanent. Most common magnetic materials are ferromagnetic. For instance, the iron oxide particles used in magnetic recording media are ferromagnetic.

A material's ability to produce an additive magnetic field causes the net field produced to follow the contours of the material. This tendency is what is measured by the permeability of the material. Permeability has many important consequences. First, materials which have high permeability can be used to shield things from magnetic fields. Second, the permeability of a material is related to the inductance exhibited by a material. This is why iron cores and ferrite beads can add to the inductance of a coil.

The magnetic effects of permeability and the electric effects of permittivity (dielectric constant) have an interesting relationship of critical interest to those working with electromagnetic waves. To understand this relationship, we will briefly discuss results obtained from the famous electromagnetic equations of Maxwell.

Maxwell's equations are a mathematical statement of the basic properties of electric and magnetic fields and their relationship in electromagnetic waves. They represent an efficient mathematical way of stating important electric and magnetic principles discovered experimentally during the eighteenth and nineteenth centuries.

One interesting result from Maxwell's equations is that the speed of electromagnetic wave propagation is determined by the permeability and permittivity of the material (i.e medium) in which the wave is traveling. The permeability and permittivity of free space determine the speed of electromagnetic waves in free space (300,000,000 meters per second).

Permeability and permittivity have other effects. The dielectric constant (permittivity) and the permeability determine the capacitance and the inductance (per unit of length) of all materials. Even free space has associated values of capacitance and inductance.

An important aspect of the inductance and capacitance of any medium is that each medium will have a characteristic impedance, since the values of inductance and capacitance determine impedance. This is true whether they are lumped in components, as in typical audio and RF circuits, or are distributed, as in some microwave devices or in transmission lines and antennas. Free space has a characteristic impedance of 377 ohms!

Hams should remember that physical objects, such as antennas and tuned circuits, exhibit the phenomenon of resonance. When a circuit or an antenna is at resonance, it will accept or transmit energy maximally. The resonant frequency of the circuit or antenna is dependent on its capacitance and inductance. This is true whether the values are lumped in components, as in typical

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The Puzzle Corner

By Frank Morrison, KB1FZ

Congratulations to W1JAH, Jack, for coming up with the correct answer to problem 1, and to Geoffrey, WA1EGL for turning in correct solutions to all three questions.

The solution to the problem of the three men and the coconuts involves one equation in two unknowns, (1) the number of nuts originally gathered, N, and (2) the number of nuts each finally received at the final distribution, x. The following equation describes the situation as given:

When this equation is simplified, the following equation results:

$$\frac{1}{3}\left\{\frac{2}{3}\left[\frac{2}{3}\left(\frac{2}{3}(N - 1) - 1\right) - 1\right] - 1\right\} = x$$

This equation has more than one set of integer values for N and x which satisfy it, but we are interested in the smallest integer

$$8N - 81x = 65, \text{ or solving for } N,$$

$$N = \frac{65 + 81x}{8}$$

solution. This may be found by trial and error, i.e. by setting x = 1, 2, 3, ... in order and calculating the value of N for each x until the first integer value of N is found. When this is done, the result is N = 79 and x = 7, the desired answer. There are more logical and mathematically satisfying methods of finding this result, but it suffices for our purpose here.

The solution to Problem 2, the area of a circular segment (see Figure 1), goes like this. The area of a circle, which subtends an angle of 360 degrees, or 2π radians, is πR^2, where R is the radius. Hence the area of the piece of pie subtended by the angle A radians is $\frac{1}{2}AR^2$. The area of the segment is the area of the piece of pie minus the area of the triangle with base 2a and altitude b, thus the area of the segment is $\frac{1}{2}AR^2 - ab$. But $a = R\times\sin(\frac{1}{2}A)$ and $b = R\times\cos(\frac{1}{2}A)$. Hence $ab = R^2\times\sin(\frac{1}{2}A)\times\cos(\frac{1}{2}A) = \frac{1}{2}R^2\times\sin(A)$, giving the desired Area = $\frac{1}{2}R^2[A - \sin(A)]$.

The solution to Problem 3 (see Figure 2) is to show that the shaded areas are equal. Note that the radial increments are equal between all circles; let this increment become the unit of measurement. Counting the number of circles, you see that the area of the outer shaded ring is the difference in area between

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Materials....Continued

(Continued from page 2)

circuits, or distributed, as in simple antennas. Since the permeability and permittivity of the material and the physical dimensions of a device determine its capacitance and inductance, they together determine its resonant frequency.

An interesting phenomenon, whole body resonance, is explained by these concepts. Research has shown that in uniform RF fields, the human body absorbs energy effectively when the body length corresponds to 0.4 wavelength of the electromagnetic wave. This occurs optimally when the long axis of the body is aligned with the electric field of the wave. Clearly, the body is acting as an effective polarized receiving antenna!

Why is a body length of 0.4 wavelength optimal? The answer is that the capacitance and inductance, which are associated with the body because of its permeability, relative permittivity and physical dimensions, make it resonant at 0.4 free space RF wavelengths. For an "average adult male" about 5 feet 10 inches (1.75 meters) tall, this corresponds to a frequency of about 60 MHz, close to TV channel 2 and near the 6 meter ham band!

The interactions of living tissues with electromagnetic fields have been studied for several decades and some aspects are well understood. For lossy, electrically conductive samples, such as tissues, the oscillating magnetic field of RF will inductively produce current loops in the sample known as eddy currents. These currents will give rise to energy loss (i.e. heating) in the tissue. The oscillating electric field of the RF will give rise to loss because of the dielectric effect discussed in Part 1. This dielectric loss produces heating, which is a major form of energy dissipation in biological tissues.

We will return to the subjects of dielectric and induction losses in the future, since they play a critical role in RF dissipation by biological materials in a variety of circumstances of interest to hams, as well as being significant in biomedical applications of RF, such as MRI imaging.

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1. Davidson, D. in **The ARRL UHF Microwave Experimenters Manual - Antennas components and Design**, The American Radio Relay League, Inc., 1990.
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3. Hecht, E., **Physics**, Brooks/Cole Publishing Co., 1994.
4. Shuch, H.P., in **The ARRL UHF Microwave Experimenters Manual - Antennas Components and Design**, The American Radio Relay League, Inc., 1990.
5. Young, H.D., **Fundamentals of Waves, Optics, and Modern Physics 2nd edition**, McGraw-Hill, Inc., 1976.

The Puzzle Corner...Continued

(Continued from page 3)

$\pi(169 - 144) = \pi 25 = \pi 5^2$, which is exactly the area of the inner shaded area with radius of five units.

The new problem for this month is one which is a little closer to our interests as hams. Many of you use a tuner to match your exciter or amplifier output to your antenna. Such a tuner, a C-L-C T-network, is shown in Figure 3. The antenna is represented by the load impedance $Z_a = R_a + jX_a$, where R_a is the antenna resistance and X_a is the inductive (positive) or capacitive (negative) mismatch, in ohms. If $R_a = 73$ ohms, $X_a = 100$ ohms capacitive for an input frequency of 14.2 MHz, $C_1 = 85.4$ pf, $C_2 = 210.1$ pF, and $L = 0.937$ mH, what are the values of the resistive and reactive components of the input impedance Z_{in}? Are there any disadvantages to this type of tuner? If so, what are they?

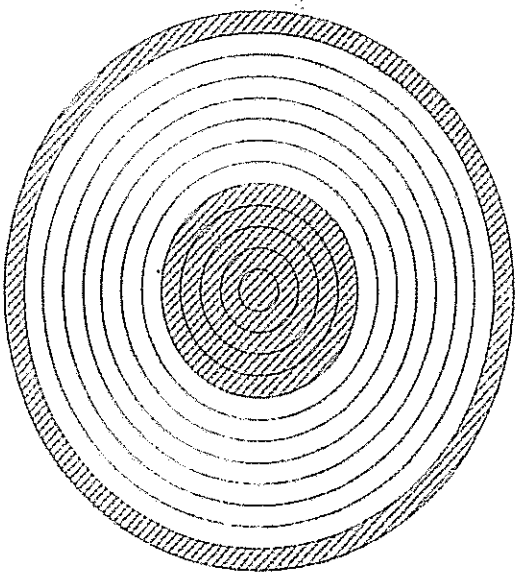


Figure 2

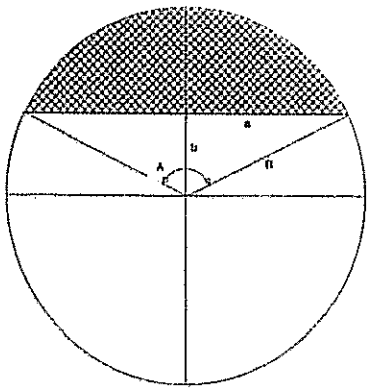
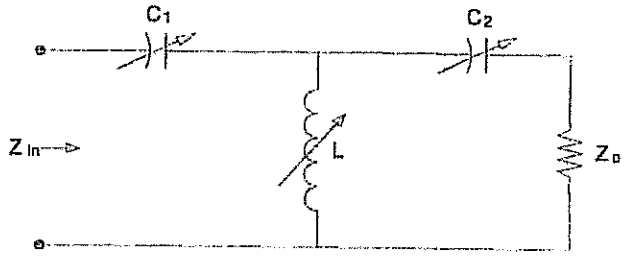


Figure 1



C - L - C Tuner

Figure 3

Repeater Report....

Weston—146.82: Bryan, KA1YQB, has fixed the power amplifier....he found some loose screws — the key one was the screw with an inter-board ground lead. Since he tightened it there have been no further drop-outs....let's hope that was it. It's set up for 90 watts out and runs cool as a cucumber at that power level. Bryan also did a lot of cleanup at the site. He moved a lot of stuff around, cleaning up the bench area, dumped a lot of trash and then went behind the repeater with some tie-wraps. It should be a lot nicer looking back there now....

Quincy—146.67: The SCOM 7K controller is here....all we need to do is get it installed. Mike will be setting up the backup repeater so he can take the active machine and install the controller. If we can schedule it, we plan a work party to improve the grounding at the site. We think the crunchies are being caused by lousy grounds...in any case, they've got to be fixed before we can do any serious diagnosing of other problems.

Marlboro—449.925: Bryan, KA1YQB, is going to take the dead amplifier to fix that one too....seeing as he's on an amplifier fixing high, he should make quick work of it. The machine is still putting out about 10 watts...even at that level, it can be heard all over the area.

General Note: Bryan has really been putting in a lot of effort on behalf of the MMRA; he's a good technician — he understands the theory. Give him something that's broken, some documentation and a little time and he can fix just about anything. This is the kind of participation we really need....there are a lot of members who could make the same kind of contribution. It sure would be nice if more of you could find the time to help out; then the work would be easier to get done in a timely fashion. Chris, N1NVL, Clark, N1NVK, Walter, N1HBR, Mike, KA1HKP, Bill, N1KUG, and Andy, N1BHI, could use the help. They are all busy guys and give as much time as they can to the MMRA. So jump in if you can; check in to the tech net some Tuesday evening, or otherwise let us know you're out there.

Roster of Current Members

NF1A	Arthur E. Pizer
WB1AAT	Michael Ryan
KD1AC *	Frank J. Caci
KD1AD *	Sue Caci
N1ADF	Arnold MacCollum
K1AGM	Paul McCaffrey
N1AJK	Ed Ostroff
KA1AL	Alan E Kunian
WB1ANP*	William Needham
WA1AOS	Joe Passafiume
WB1APS	Kenneth Taylor
W1AQI *	George Palmer
KA1AS	Albert S Bolduc
K1AUQ *	Russell W. Dearborn
KB1AVF*	Vincent H. Gannon
N1AVF *	William A. Holbrook
K1BAF	Aaron Fishman
K1BC	Robert C Clements
N1BDA*	Steven W Telsey
AA1BG*	Lawrence G. Fleming
WA1BGP	John K Ross
N1BHA	Dorothy Hilbrunner
N1BHI	Andrew L Morrison
W1BJS	Elmer M Goldman
WB1BRE	William Burden
WB1BUZ	Joseph M Garfield
WB1BVA	Frances B Garfield
N1BYG	Heidelise Als (Duffy)
N1BZT	Victoria C Duffy
WB1C *	Charles R. Mapps
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WB1CDR	Rev. Harry R. Mahoney
WA1CFX	Howard L Mintz
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K1CHY	Irwin C. Stone
WA1CMH	Murad Mooradian
W1CMR	Robert W Wilmarth
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N1COY	Robert R. Downer
N1CPV	Allen A Cramer
N1CRC *	Richard E Mullen
N1CRH *	Keith Stockton
N1CRK	Maurice B. Polayes
N1CSO	Edward J Gillespie
N1CTY	Robert H. Flumere
N1CW	Ray Shoop
AG1D	Dale A Zeskind
WA1DCL	Bruce Stacey
W1DDO	Robert Ruplenas
N1DDU	Jim Walsh
N1DDW *	Deborah Mullen
N1DEA	James R Henderson
N1DIZ	Dennis Ditto
N1DKZ *	Mike Goldberg
N1DM	Domenic M Mallozzi
KA1DO*	Andrew DeStephano
KA1DPW	David Goldblatt
WB1DQQ*	Alan D Talbot
AA1DT	Mark H. Leavitt
WB1DWK	Peter J. Markou
WA1DXI	Paul J Planchet
W1DYJ	Larry Banks
K1DZR *	Joseph P. Serra Jr.
K1DZS	Bruce J Davidson
KS1E *	Don Mabie
KB1EB	John H Antes
KA1EEC*	Eric S Johansson
WA1EGL*	Geoffrey A Talbot
W1EGV	James K. Hosford
N1EKV	Byron Blanchard
N1ELC	George Stringos
WA1ELQ*	Thomas Browning
KA1ELU	William E Stanwood
KA1ENP	Arthur T Thompson
AA1EP	John S. Allen
W1ERJ	Jerome L Hartke
WA1EVD	William H Emerson
N1EWB	Edwin J. Kroeker
W1EYI	Allan D White
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WB1FIY	Leo A Parker Jr
N1FKC	Francis J. Power
W1FOF	L Eloise McLean
N1FON	Alan Pond
N1FPW*	Wayne A Simpson
K1FQL	Martin Blustine
N1FQN	Donald V. Gallahue
KA1FW*	Walter R Ellis
N1FYX	Donald R. Boland 1st
KB1FZ	Frank P Morrison
KZ1G	Jon Titus
WA1GBN	Donald R. Taranto
WB1GCQ	John J O'Shea
KD1GD *	James Elgin
W1GE	Harold Ward
KA1GFN	Kenneth A Horton
KD1GG	Robert Levine
K1GHT	James M. Jacobs
N1GIC *	Chester J. Goguen
AA1GJ	Paul H. Hansen
N1GJO *	Thomas F. McLaughlin
WB1GMA	Thomas L. Qualtieri
W1GMQ	Leslie H. Spaiser
K1GOI *	Gerald A Horne
K1GRB	A Martin Kullen
N1GRD	Michael Hereth
WB1GSP*	T. J. Reale
N1GTB	Elaine R. Chase
W1GUF*	John B Hawkes
N1GWY	William T. Drago
N1GXY	Bob Smith
W1GYD	John J Bubbers
WA1HAI	Joseph W. Weisse
WB1HBB	Warren Rothberg
N1HBR	Walter S. Ching
WA1HEX	Steve Campbell
W1HIT	Arthur A Davis
W1HIV *	Patrick Harris
K1HK	Harold S Kost
AA1HL *	Richard E. Jones
K1HLZ *	Alan Carp
KA1HMW	John S. Manteiga
KD1HN	William W. Wilder
KB1HO	Ruff Read III
N1HRR	Dan M. Smith
KD1HT	Arthur Derfall
N1HUF	Barry M. Glassman
N1HYX *	Donald J O'Shea
N1HZG	James David
N1HZI *	Deborah Burns
N1HZJ *	Bruce Burns
AI1I *	Aubrey Benstead
KY1I	Robert P Hastings
KZ1I	David Metz
NG1I *	Frank MacKenzie-Lamb
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K1IAO	Hazen J Saltmarsh
N1IBB	Matthew Chao
N1ICN	James J. Clogher
WA1IDA	S Robert Salow
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K1IJZ	William R Wade
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KA1INO	Richard C Simonson
N1INY	Herbert R. Driscoll
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N1IPL *	Francesca Pitt
N1IUR *	Edwin B. Merrick
N1IUY	Armand R. Francoeur
AA1IV	Carolann Montgomery
W1IWA	George S. Schneider
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N1IWE *	Richard DeSisto
N1IWR *	Sandy Brooks
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KA1IYV	Joseph A Cibotti
KA1IYY*	Mary Jane Simpson
N1JAG *	Thomas Vallas
N1JAH *	John J. McCarthy
WA1JAR	Dean G. Gregorio
W1JBY	Bernard V Matarazzo
N1JCF *	Paul Chabot
W1JCI	Waldo H Clark
W1JDO	A Francis Hilbrunner
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N1JJH	Bruce R. Hickox
K1JLK *	Henry Corcoran
KA1JMF*	John A. Morley
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N1KCS	Marshall Schneider
KA1KCU	Ronald E Reder

KA1KHH	Jonathan Belinowiz
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N1KLL	James Cryan
N1KMM	Richard F. Buckley
K1KMN	Frederick Dixon
KD1KO *	Kenneth J. Shampine
W1KSK	Robert L Ungvary
N1KTT	Robert Boucher
N1KUG	William E. Dunn Jr
N1KZC	Arthur K. Minasian
N1LAH	Ralph T. Devlin
N1LBP *	Gregory C. York
K1LCQ	Joseph F O'Brien
N1LHL	Scott R. Dunham
W1LHV	William T Frizzell
N1LIS *	Jonathan L. Pevner
N1LJE	Stan Jacobsen
N1LLI *	James Palmer
N1LMI *	Dennis J. Maroney Sr
N1LMT	James A. Buckley Jr
W1LMV*	Richard C Bejtlich
KD1LP	Neal Dowling
N1LPZ	Andrew Black
N1LRT	Paul Katz
N1LUM*	David N. Spalding
KD1LV	Reid A. Squier
KB1LY	Joseph R Smulowicz
KK1M	Kenneth P Kibilda
K1MBO*	David Potter
K1MCH	Glenn Gustavson
WA1MDO	Tom Porada
N1MGU	Karen Ditto
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N1MLP	Diane Grossman
N1MLQ *	Eric Mabie
N1MLU	David Wade
N1MLV	Rose Wade
K1MOQ	Frank H Duffy
N1MXO	Bert Flower
KO1N	Irving Geller
NC1N	Charles H. Ross
WE1N	Francis W. Kaseta
K1NDF	Neal Lipson
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N1OBM*	Eliud Ortiz Jr.
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N1OCS	Joe Rich
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N1OFX	Robert Jack
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N1OIL	Paul Hopkins
W1OJ	Roger Perkins
N1OOG *	Mark Sullivan
WA1OQK*	Jack Clayton Jr
K1OQX	Perry R Lipson
N1OSG	Andrew W. Bartlett
KA1OUI	Gerald J. McGarry
N1OWA	John Cameron
K1OYD	David Coyle
AF1P	Edward C. Pavone
K1PBL	Robert M Fraser
N1PCH	James M. Carelli
N1PFZ *	Edward Dextraze
N1PGA	John Vogel
N1PJC *	Edward Cappadona
N1PMF*	Robert J. Colameta
WA1PNZ*	Louis R. Raneri
N1POW	Richard E. Driscoll
KA1PPG	Neil Grossman
W1PRI	Robert A Waters
N1PTT *	Robert Green
N1PXD	Carol S. Wilson
WA1PZK	Helmut H. Pichler
N1PZX *	William Hennessey
KR1Q *	Kjeld Hvatum
N1QAN*	Brian Dextradeur
WA1QCZ*	Paul Melia
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W1QEC	William G Hooper Jr
KA1QEK*	Peter Bretschneider
N1QEV	Paul F. Silvestri
W1QFD	Anthony J Yuoska
N1QFL *	Robert Penchuk
W1QGL	William R Weiss Jr
N1QIG	Lou Mascia
N1QII *	Jenny McGee
N1QIR	Martin B. Offenhauer
N1QLU	Matthew R. Kivela
N1QMK*	George Fitzpatrick
KA1QNR*	George E. Battit
N1QPR	William Northup
N1QZL *	Lee E. Vormelker
KA1QZN	Steven Bachner
AF1R	Ian MacLennan
KC1RI *	Judith Nelson
N1RLP	Patrick Fasanello
WA1ROE*	Hyman Stramer
N1RSA *	Nicholas A. Lauriat
N1RTS	Sheldon Rothstein
KA1RVY*	Sandy Harmon
N1RXW	Gary P. Brefini
N1RYL	Brian P. McCaffrey
N1RYM	Richard Sacks
KI1S *	John Rhoads
N1SBZ	Gene Favret
N1SGA	Ken Cooper
N1SHD	Robert W. Liscoe
N1SHF	Kenneth Fitzgerald Jr.
W1SI	Hunter Harris
N1SLN	John C. Keane
W1SM	Edward R Myrbeck Sr
WA1SNH	Peter T Baldwin
KC1SO	Lawrence W. Black
WA1SWK*	Peter Draymore
W1SYA	Redmond Sheets
KD1T	Rudolph M Stucchi
W1TCD	Carter P. Pfaelzer
K1TCV	Roger N Tessier
N1TEW	Nancy Walsh
N1TEX	Benjamin J. Zeskind
N1TEZ	Janet P. Goodrich
WN1TKD	Harold Alman
KA1TKZ*	Kendell C. Uloth
W1TMO	David Crocker
KD1TN	Jonathan A. Moerschel
KA1TOR	Michele H. Mooradian
KA1TOS	Douglas Browne
KA1TOX*	Tom McGee
KA1TQS*	Zovig Mooradian
K1TTY	James P. McCaffrey S.J.
KA1TUZ	Richard C. Doherty
W1TYY *	Justin L. Altshuler
NN1U	A. Paolantonio
WW1U *	Roger Burns
K1UCY	Allan G Dunn
WA1UEF	Winston J. Bridge
W1UF *	L Dennis Shapiro
WA1UGW	James E Shepherd
KD1UJ	Douglas A. Hamilton
K1UKM	Irving C. Davis
K1UPY *	Philip Henneberry
KA1USL	Lee J. Gartenberg
K1UVD	Joe Aversa
W1UVE	A Stewart Johnson
WA1UVR	John Morrison
NU1V *	Eric E. Hahn
KA1VLO*	Jack Forman
KA1VMC*	Chris Talbot
KA1VMQ*	Russell D. Hulbert
WA1VWE	Carl Turnquist
K1VZI	Lee Richard Herterich
AJ1W	Julius Jerry Rosen
WA1WDQ	Donald F Mofford
K1WFZ *	John E Tremblay
WA1WGX	Shanie Alman
WA1WIG	Gerald O Goodrich
WA1WIS*	Jay I W Moskow
K1WIX *	Carl Eric Ellingson
W1WME	Ralph D Stetson
WA1WPI*	Doris Fisher
K1WQ	Kristen N Johnson
W1WRV	Edward W White
KA1WRW	Carol Levine
W1WSN	Stephen G. Rudin
WA1WUU	Daniel O Gentile
KT1X	David H. Croll
W1YHY*	Lance O Hobson

CURRENT MEMBERS CONTINUED....

WA1YMD*	Robert F. Dugas
W1YPC	Gerald M MacNabb
KA1YQB*	Bryan H. Cerqua
KC1YR	Sharon M. Gartenberg
K1YSO	James Gessner
W1YTK*	Paul Simmons
WA1ZJE	Robert S. Feltmate
W1ZLG *	John Moran
W1ZOC	Arthur C Toneatti Jr
KA1ZOV	Ralph N. Dean
WA1ZRQ	Joseph A Pinto
KA1ZUG*	Mary Dyko Chamberlin
K2GP *	Gordon H. Piper
W2ILM	Paul S Zonderman
N2IOF	Charles Read
WA2MAK*	Todd Gross
AI3E	Dwight Sipler
WB3EJA	Art Hall
WA4QJN	John A. Whealler
WB5TVA	William Metzger
KA6BUV	Alfred E. Williams
WD8LOC*	Stuart H. Pitt
WB9MUP*	Kevin Keller
W9UPB	Peter J. Schram

*** - The Asterisk indicates that the member on that line has not renewed as**

Flea Market Update

We have a confirmed date for the MMRA Flea Sale with the town of Westboro. The date is March 19, 1995 — that's a Sunday. The location will be as usual, at the Westboro High School. We have the cafeteria and the mezzanine area, along with three classrooms for a VE session.

This year we started our planning earlier...so we want to take advantage of the opportunity to make this year's flea market a big success. Along those lines, we have been talking to Lentini Communications about being there. At Boxboro Alex Lentini indicated that he can come — so we'll have one of the better commercial vendors in New England at our event. Hopefully nothing will intervene and cause his plans to change.

So mark March 19 on your calendars. As usual, we will be looking for people to help out, so as the date approaches, we will be soliciting volunteers for the flea market.

We'll have quite a club table this year. Along with items we have retired, donated equipment will be available. If you have anything you want to get rid of that you might be willing to donate to the club, let us know.

Since word of mouth (or microphone) is a key way to get the word around, talk it up — even though we are months away, the more that is said about the event, the better our chances for a good turnout.

KA1UR....Silent Key

It is with great sadness that we must announce that Kathy, KA1UR, has passed on. Kathy was one of those amateurs who devoted much of her life to her hobby, and to the well being of her fellow hams.

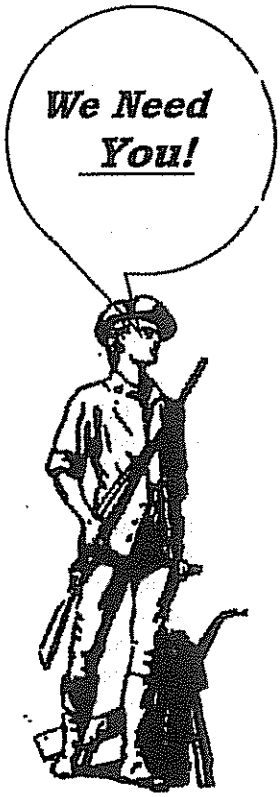
She was well known to all who use the Waltham repeater; she was the main force behind the 'Going Home Show,' making the homeward commute safer and more fun than it would have been without her.

Kathy was known on HF as well as on VHF; she was an outstanding CW operator and traffic handler. But she was known more for her undoubtable spirit and good cheer even in the face of severe personal adversity.

A lot of us were privileged to have met her in person. Anyone with more than a passing acquaintance with Kathy couldn't help but appreciate her friendship.

All of us extend our sympathy and best wishes to Kathy's family and close friends. We'll miss her too.

73's, Kathy.....



Get Well Soon, Dave.....

Dave Crocker, W1TMO has been ill lately. We understand that he had a bout with pneumonia and was hospitalized. He may be back home by the time this issue goes to press, but since pneumonia knocks the stuffing out of its victim, Dave is probably still recovering from its effects. In case you didn't know, Dave is our ARRL section manager, and is one of those guys who works his fanny off for the good of the hobby. So take a few minutes to wish him well. His home, packet and Email addresses are below:

Dave Crocker, W1TMO
80 Spring Rd
Needham, MA 02194
Packet: W1TMO@KA1TUZ
EMail: DCrocker@World.STD.COM

W1GSL Flea Market Listings - as of 10/30/94, Through July

New England Area Ham - Electronic Flea Market *** DATES *** 1994
All events are Ham Radio/ Electronic related except ~_____~
****

1994	Contact	Source
12 Nov Plymouth MA	Mayflower RC @Mem Hall 9-3 sell@8	Jon WS1K 508 746-0162 F
13 Nov Branford CT	SCARA @Mid sch S$20@7 B$5@9	Brad WA1TAS 203 265 9983 F
19 Nov Billerica MA	1200RC @Bull HN Auction b@11A	Eliot W1MJ 508 851 0183 F
11 Dec Fall River MA	** Canceled **	Tom WA1LBK 508 674 4163 +
15 Jan Yonkers NY	@Lincoln HS $5@9 $25/T@7	Otto WB2SLQ 914 969 1053 F
21 Jan Nashua NH	NE Antique RC $5@9 $1@10 @ Res Ctr	Church 617 923 2665 F
4 Feb Gardner MA	MARC Auction@1 s@12@AmLegion ElmSt	Paul N1IPG 508 632 9432 +
18 Feb Marlboro MA	AlgonquinARC @MS $2@10 $15/T@7	Ann KA1PON 508 481 4988 +
25 Feb Milton VT	RANV @HS	Mitch WB2JSJ 802 879 6589
26 Feb Westford MA	Radio XXVI @Regency Antique $4@8:30	A.R.C. 508 371 0512 +
5 March Northampton MA	MtTomARA @Smth VoT	Jim K1MEA 413 527 3199 +
12 March Bristol CT	ICRC @eastrn HS rt229 B $4 S $10/T	Al N1JWF 203 747 1925
19 Mar Westboro MA	***Minuteman Repeater Association @High School***	
	Walter N1HBR 508 489 2282 +	
26 Mar Poughkeepsie NY	Mt B ARC @Arl HS $8/T@6 $5@8	Ken KL7JCQ 914 485 9617
2 April Southington CT	SARC @DePaolo JrHS $10@8:30 $3@9	N1GCV 203 621 6191 F
8 April Portland ME	UofSM @gym $6@6:30 $4@8 x6bI295	KA1FI 207 846 9090 +
9 April Framingham MA	@ HS $14@8 $10tg $5@9 $2@10	Lew K1AZE 508 879 7456 F
16 April Cambridge MA	FLEA at MIT	Nick 617 253 3776 F
	buy $2@9A sellers $10/sp@7A $8in adv	
	Season Pass Special All 7 Months for $35/space	
	3rd Sunday Each Month April thru October	
22 April Nashua NH	NE Antique RC $5@9 $1@10 @ Res Ctr	Church 617 923 2665 F
28-30 April Dayton OH		
12,13 May Rochester NH	Hoss Traders @FG x13 rt16 $20@9A $5@3PM fri	Joe K1RQG
20 May Forestdale RI	RIFMRS @VFW rt146 8A flea+auct	Rick K1KYI 401 725 7507
21 May Cambridge MA	FLEA at MIT	Nick 617 253 3776 F
	3rd Sunday Each Month April thru October	
31 May-2 June Boston MA	ELECTRO @ Hynes "Electronics trade show"	800 223 7126 F
18 June Cambridge MA	FLEA at MIT	Nick 617 253 3776 F
16 July Cambridge MA	FLEA at MIT	Nick 617 253 3776 F
22 July Nashua NH NE	Antique RC $5@9 $1@10 @ Res Ctr	Church 617 923 2665
28-30 July Manchester NH	ARRL NE Div Conv B$8	Al N1FIK 603 487 3333 F+

LAST UPDATE 10-30-94 de W1GSL
Source F= Flyer T= tentative early info + = new info this month
A= ARRL D= W1DL WR NV 73 CQ QST = Mags
This list has been compiled from many sources. While we believe the info to be accurate the author can not be responsible for changes or errors. Check with the sponsoring organizations for more details. This list will be posted monthly to USENET. Mailed copies are sent when additions are made.
****
Additions/ Corrections via Internet w1gsl@mit.edu

TCPIP w1gsl@gw.w1mx.ampr.org

AX.25 w1gsl@wa1phy.#ema.ma.usa

US Mail W1GSL POB 82 MIT Br Cambridge MA 02139
SASE for updated copy as issued.

MMRA Information - Repeaters, Officers and Board Members

MMRA Repeaters:

Marlboro	146.61	N1BHI/R	FTL	P	
Marlboro	449.925	N1HBR/R	FTL	P	
Quincy	146.67	KA1HKP/R	PTL	P	
Quincy	224.40	N1KUG/R	FTL	L	PL - 103.5 in, none out
Weston	146.82	KA1AL/R	PTL	P	
Weston	224.70	N1HBR/R	FTL	L	
Hopkinton	223.94	N1BHI/R	FTL	L	
Stoneham	146.715	N1NVL/R	PTL	P	PL - 146.2 out, none in.
Stoneham	446.725	N1NVK/R	PTL	L	PL - 88.5 in, none out

[FTL = Full Time Linked PTL = Part Time Linked]
[L = Patch available via link] P = Local Autopatch]

MMRA Officers:

President:	Andy Morrison, N1BHI	To Contact Officers
Vice President:	Walter Ching, N1HBR	or Board Members
Secretary:	Frank Morrison, KB1FZ	Call MMRA Voice
Treasurer:	Ian MacLennon, AF1R	Mail Line:
Clerk:	Clark Conti, N1NVK	
Directors:	Tom Qualtieri, WB1GMA	508 - 489 - 2282
	Al Kunian, KA1AL	Toll Free from
	Chris Conti, N1NVL	508 and 617 Areas
	Mike Ryan, KD1OA	
Newsletter Editor:	Andy Morrison, N1BHI	
Associate Editor:	Walter Ching, N1HBR	

MMRA Membership Meeting - Nov 16
Wednesday, 7:30 PM
Campion Center
Weston, MA

Important MMRA Club Information:

Membership Meetings:	3rd Wed of Sept, Nov, Jan, Mar, May at Campion Center, Weston at 7:30 PM
	Meeting Dates for 1994-95 Season: September 21, November 16, January 18, March 15, & May 17.
Board Meetings:	3rd Wed of Oct, Dec, Feb, Apr. Meetings are open and members are welcome.
	If a visiting member wants to be on the agenda, please contact Andy Morrison beforehand.
MMRA Voice Mailbox	(508) 489-2282. -- This is a local call from any 508 exchange phone, and is a free call from both 617 and 508 areas.

Newsletter Information	September issue	November issue	January Issue	March Issue	May issue
Mailing Date	Sept 14, 1994!	Nov 9, 1994	Jan 11, 1994	Mar 8, 1994	May 10, 1994
Submission Deadline	Sept 10, 1994	Oct 26, 1994	Dec 28, 1994	Feb 22, 1994	Apr 26, 1994

The MMRA is dedicated to Amateur Radio and the public service. The MMRA is a registered non-profit Massachusetts corporation. Membership is open to all amateurs. Annual dues are $25.00 individual, $35.00 family.

Mail Return Address:

MMRA
P.O. Box 2282
Lexington, MA 02173

TO: