

# PACK RATS'



# CHEESE BITS



CLUB CALL: W3CCX

MT. AIRY VHF RADIO CLUB, INC.

MT. AIRY VHF RADIO CLUB, "THE PACK RATS", PHILADELPHIA, PENNSYLVANIA  
NET FREQUENCIES: 50.125, 144.150, 222.125, 224.58/222.98, 432.110, 903.100, 1296.100 MHz  
AFFILIATED CLUB: AMERICAN RADIO RELAY LEAGUE

W3CCX

ARNS

Meetings: Third Thursday of each month at 8:00 PM  
Southampton Free Library, 947 E. Street Road  
Southampton, Pennsylvania 19866

SCANNED TO PDF BY BERT, K3IUV, 2013

VOLUME XXXIV

APRIL 1992

NUMBER 4

\*\*\*\*\*

## THE PREZ SEZ

I must start again this month with sad news. I have received word that Dave Zimmerman, W3ZD, became a Silent Key on Saturday March 14, 1992. Dave will be missed by all of us. I want to take this opportunity to extend our deepest sympathy to the Zimmerman family. Jane Zimmerman has indicated that a memorial service will be held on Sunday April 5, 1992. This will take place at the Lehman Methodist Church, 300 South York Road, Hatboro, Pa. The time of the service is 7:00 PM and all who knew Dave are encouraged to attend. There may be an opportunity for individuals to share personal remembrances, so collect your thoughts in advance. We will make every attempt to widely announce the service; we appreciate any assistance you can provide in this aspect.

March can be a month of surprises and for some it was. The club meeting was our famous Homebrew Night and the surprise for me was over 9 inches of snow on the roads at my QTH. I really understand the old saying "Beware the Ides of March". Not to worry, Bob WB2YEH did a great job as VP in running the meeting. I guess I'll have to wait 'till next year to show-off my secret project.

This year's homebrewers proved that hams can still build their own equipment, and build it very, very well. I want to thank our competent judges W3KKN, K3ESJ, and W3IIT who collectively indicated that the job this year was extremely difficult. Hearty congratulations go especially to the homebrew category winners and to all who continue the Pack Rats' devotion to improved knowledge and skill through building.

I will see you all at the next meeting.

73, William T. Murphy  
W0RSJ - FN20JR

Pack Rats CHEESE BITS is a publication of the Mt. AIRY VHF RADIO CLUB, INC. Philadelphia, Pa. and is published monthly. SUBSCRIPTION RATE - \$10.00 PER YEAR

We operate on an exchange basis with other publications. Anything that is printed in CHEESE BITS may be reprinted, unless otherwise stated, provided proper credit is given.

DEADLINE FOR ARTICLES AND SWAP SHOP IS THE 20TH DAY OF THE MONTH. NON-COMMERCIAL SWAP SHOP ITEMS - FREE OF CHARGE.

SUBSCRIPTION/ADVERTISING MANAGER:

WB2YEH, BOB FISCHER  
7258 WALNUT AVENUE  
PENNSAUKEN, NJ 08110  
(609) 665-8488

EDITOR:

WC2K, RICK CONNOR  
412 CARRANZA ROAD  
TABERNACLE, NJ 08088  
(609) 268-0736

TYPIST/PRODUCTION ASSISTANT:

JANICE CONNOR

CLUB TREASURER

WA3JUF, DAVE MASCARO  
1603 MINK ROAD  
OTTSTVILLE, PA 18492  
(215) 795-2648

AWARDS CHAIRMAN:

W2EIF, JOE KILGORE  
(609) 783-9478

TRUSTEE OF CLUB CALLSIGN - W3CCX

WA3AXV, RON WHITSEL  
(215) 355-5730

PACK RAT 220 FM REPEATER - W3CCX/RPTR

222.98/224.58 MHz, CHURCHVILLE, PA

OFFICERS: 1991 - 1992

PRESIDENT: W0RSJ BILL MURPHY  
VICE-PRES: WB2YEH BOB FISCHER  
REC. SECY: WA3AQA WALT ZUMBACH  
TREASURER: WA3JUF DAVE MASCARO  
COR. SECY: WB3JYO PAUL DREXLER  
DIRECTORS: WA3AXV RON WHITSEL (1 YR)  
K3EOD AL BOBLITT (1 YR)  
N3AOG DICK COMLY (2 YRS)  
WA3NUF PHIL MIGUELEZ (2 YRS)

MONDAY NIGHT NETS

7:30 PM - 50.125  
8:00 PM - 144.150  
8:30 PM - 222.125  
8:30 PM - 224.58/R  
9:00 PM - 432.110  
9:30 PM - 1296.100  
10:00 PM - 903.100

NET CONTROL

K3EOD  
W2EIF  
WC2K  
K3ACR  
WA3AXV  
WA3NUF  
N3AOG

COMMITTEE CHAIRMEN

LADIES' NIGHT: WA3YUE 215-666-1558  
JUNE CONTEST: N3CX 215-679-7293  
HAMARAMA: K3EOD 215-742-3312  
VHF CONFERENCE: KB3XG 215-766-2643



THE AMERICAN RADIO RELAY LEAGUE

**OST**

HUGH A. TURNBULL, W3ABC  
Director, Atlantic Division

6903 RHODE ISLAND AVE.  
COLLEGE PARK, MD. 20740

(301) 927-1797

1-302-478-2757

AMATEUR  
and  
ADVANCED  
COMMUNICATIONS

"Gisele"  
K3WAJ

G. B. WALLS 3208 CONCORD PIKE (RT. 202)  
WILMINGTON, DEL. 19803

Graphic Design Illustration Production



Lynne D. Whitsel

209 Frog Hollow Road  
Churchville, PA 18966  
215 355-5730

CALENDAR OF COMING EVENTS

By Harry Brown, W3IIT

APRIL

- 4 Pack Rat Ladies' Night. Cocktails, dinner, awards, and dancing. 6:30 PM at Chateau Granieri's, Willow Grove. (Located across from HamBurger's)
- 5 Memorial Service for W3ZD SK. Lehman Methodist Church, 300 South York Road, Hatboro, PA. Service begins 7:00 PM.
- 5 Daylight-Savings time begins (Spring foward!)
- 6 ARRL Spring Sprint 144 MHz 7:00 - 11:00 PM local time. See March QST page 101 for rules.
- 9 Pack Rat Board of Directors Meeting 8PM at the QTH of Bruce, WA3YUE. All interested parties invited. Call 215-666-1558 for directions.
- 12 Palm Sunday
- 12 PEN-DEL Hamfest in New Castle, Delaware.
- 14 ARRL Spring Sprint 222 MHz 7:00 - 11:00 PM local time. See March QST page 101 for details.
- 16 Pack Rat April general membership meeting at the Southampton Free Library at 8PM. Bring and/or invite your on-the-air buddies. All VHFers invited. Refreshments and program follow club business.
- 17 Good Friday
- 18 Passover
- 19 Easter
- 21 Lyrids meteor shower peaks at 2060 UTC
- 22 ARRL Spring Sprint 432 MHz 7:00 - 11:00 PM local time. See March QST page 101 for details.
- 24-26 Dayton Hamvention. If you've never been there you've never seen anything like it. If you're looking to buy it or sell it or see it...GO!

\* \* \*

\*

\* \* \*

Dear Pack Rats:

I want to thank you all for your support and kindness that you have given to me and my family during this most difficult period of our lives.

Harry truly enjoyed and valued your friendship and concerns and felt very close to each and every one of you. We will always treasure the good memories we have had over the years.

My family and I will always be a part of those associated with the Pack Rats.

73 and 88,  
XYL W3CL Sylvia and Marsha WA3TEM

Lewis D. Collins, W1GXT  
10 Marshall Terrace  
Wayland, MA 01778

FOR IMMEDIATE RELEASE

18th ANNUAL EASTERN VHF/UHF/SHF CONFERENCE

The 18th Annual Eastern VHF/UHF/SHF Conference will be held May 22-24, 1992 at the University of Hartford. The University of Hartford campus is located off US Route 44 a short distance west of downtown Hartford, Connecticut.

Hartford is centrally-located at the intersection of routes I-91 and I-84, within a two-hour drive of both Boston and New York City. Most major airlines provide service via Bradley International Airport, and AMTRAK provides frequent service from Northeast Corridor locations.

Friday night will feature an informal social gathering at a location to be announced. All day Saturday there will be technical talks by well-known VHFers and "rap sessions" for each of the VHF/UHF bands. A noise-figure clinic and contest will be held on Saturday afternoon.

On Saturday evening there will be a catered banquet, followed by the popular "VHF Trivia" quiz and additional informal social activities. Sunday morning there will be antenna gain measurements (220 MHz through 2304 MHz, weather permitting) and an informal swap-fest.

The conference registration fee this year is \$24.00 prior to May 15, which includes annual membership in the Eastern VHF Society and a printed conference proceedings. Registration at the door will be \$30.00, so it pays to send in your money in advance! The Saturday night banquet will cost \$22.00, also payable in advance.

The registration chairman is David Knight, KA1DT, 15 Oakdale Ave., Nashua, NH 03062. Those who have attended in recent years will receive a preregistration packet. Otherwise, please contact W1EJ, KA1DT, or W1GXT for a registration form (A self-addressed, stamped envelope is appreciated!).

Housing will be available in dormitory rooms at the University. The room rates per night are \$30.00 per person, payable by May 15. There are numerous hotels and motels nearby for those wishing to make their own arrangements. Many have special weekend rates, if you ask when making your reservation. A list will be included with your registration materials.

Conference Chairman Tom Kirby, W1EJ, is soliciting papers to be published in the conference proceedings. You do not need to attend the conference to have your paper published in the proceedings. Contact Tom at PO Box 455, Pelham, NH 03076 for details.

The 18th Eastern VHF/UHF/SHF Conference is sponsored by the Eastern VHF Society and the NEVHF Association. The conference chairman is Thomas Kirby, W1EJ, ably assisted by volunteers from the New England VHF community and the Hamden County Radio Association.

## SWAP SHOP

FOR SALE: AM6154 432 MHz linear amplifier. Uses 8930 final tube. 120/240 VAC power supply. 10 watts input - 300+ watts output. Converted for 432 operation by N3CX. Complete and in excellent operating condx. \$350. Another AM6154, converted for 432 MHz, less tube, \$250.

CONTACT: David Hackford, N3CX Tel: 215-679-7293 (h) 215-483-2030 (w)

WANTED: Long-boom, high-gain, 223 MHz yagi. To improve my sig in/out of W3CCX/R.

CONTACT: Dave Martin, WB8ZAR Tel: 717-366-2220

FOR SALE: SSB Electronics transverters: 903/144, 1296/144, 2304/144. Yaesu FT221 2-meter multimode xcvs (2). Kenwood TS-700 xcvr. Kenwood TS-520s (2). Kenwood TS-830s (2). Solid state brick amps, medium power for: 144, 220 and 432. Mirage 100W brick for 432. 6-foot glass dishes. Astron 12VDC 50A supplies (3).

CONTACT: Rick Connor  
609-268-0736

## COMMERCIAL AD

LOOP YAGIS: 902 MHz 33 element \$89 kit, \$109 assembled and tested. 1296 MHz 45 element \$89 kit, \$109 assembled and tested. 1296 MHz 55 element "Super Looper" \$99 kit, \$124 assembled and tested. 2304 MHz 45 element \$75 kit, \$89 assembled and tested. Also available: element and hardware kits for above. 2 and 4-way power dividers. Discount on complete arrays. Solid state linear power amps, 13 VDC: 1296 - 8W in 35W out \$315, 1W in 20W out \$265, 4W in 70W out \$695. GaAs FET preamps: 902 MHz .8dB NF \$90, 1296 MHz .8dB \$90, 2304 MHz 1 dB max NF \$140. SHF SYSTEMS no-tune transverter kits, w/144 MHz IF now available for 903 through 3456 MHz. Write or call for complete catalog. DOWN EAST MICROWAVE, Bill Olson, W3HQT, Box 2301 RR-1, Troy, Maine 04907. For information and orders telephone (207) 948-3741.

## HOME BREW NIGHT 1992 WINNERS

- MOST UNIQUE - N3AOG, with his 1296 MHz water-cooled amplifier
- BEST DESIGN - WA3JUF 2304 MHz beacon transmitter
- BEST CONSTRUCTION - WA3AXV 5 GHz transverter
- MOST AMBITIOUS - WA3EHD 6-meter amplifier

## I N M E M O R I A M

It is ironic that Dave, W3ZD passed away within a month's passing of his friend Harry, W3CL. Dave had just moved out to Nevada so that he and his wife Jane could enjoy skiing, their favorite sport. Dave was taken from the slopes by helicopter to the Reno Hospital, where he passed away four days later. Dave was a very active member of the Pack Rats and may best be remembered for hosting the annual club White Elephant Sale at his "Zimmerman's Glen". Dave and Jane opened their comfortable home to the club members countless times for contest wrap-ups, Hamarama lick-and-stick sessions as well as executive board meetings. Dave once maintained a super VHF contest station for which he earned a stack of awards. He was known for operating multi-op using the club callsign W3CCX. Dave homebrewed a QST keyer just a few years ago for homebrew night, and turned many hardline connectors out on his basement metal lathe. Remember the best source of coax relays around? Dave was fair, generous, and always looking to help someone.

THE RELATIONSHIP OF SENSITIVITY AND NOISE FIGURE  
by John Sortor, KB3XC

$$\text{Sensitivity (uV)} = 0.078 \sqrt{10^{NF/10} - 1}$$

$$\text{Noise Figure (dB)} = 10 \text{LOG}(166.5 \mu\text{V}^2 + 1)$$

I plotted the equations for sensitivity and noise figure to get a feel for the relationship between the two. I also converted sensitivity in microvolts to dBm for an easier comparison. I thought it was interesting that improving the noise figure from 1.0 to 0.4 buys you 4 dB in sensitivity. This task may be difficult and expensive. On the other hand, you can easily and inexpensively improve the noise figure from 3 to 1 dB and buy yourself 6 dB more sensitivity.

Sensitivity (uV)	Sensitivity (dBm)	Noise Figure (dB)	Noise Figure (dB)	Sensitivity (dBm)	Sensitivity (uV)
0.20	-121.0	8.84	3.8	-127.7	0.092
0.19	-121.4	8.46	3.6	-128.0	0.089
0.18	-121.9	8.06	3.4	-128.4	0.085
0.17	-122.4	7.64	3.2	-128.8	0.081
0.16	-122.9	7.21	3.0	-129.2	0.078
0.15	-123.5	6.76	2.8	-129.6	0.074
0.14	-124.1	6.30	2.6	-130.5	0.071
0.13	-124.7	5.81	2.4	-130.5	0.067
0.12	-125.4	5.31	2.2	-131.0	0.063
0.11	-126.2	4.79	2.0	-131.5	0.060
0.10	-127.0	4.26	1.8	-132.0	0.056
0.09	-127.9	3.71	1.6	-132.7	0.052
0.08	-128.9	3.15	1.4	-133.3	0.048
0.07	-130.1	2.59	1.2	-134.1	0.044
0.06	-131.4	2.04	1.0	-135.0	0.040
0.05	-133.0	1.51	0.8	-136.1	0.035
0.04	-134.9	1.03	0.6	-137.4	0.030
0.03	-137.4	0.61	0.4	-139.3	0.024
0.02	-141.0	0.28	0.2	-142.4	0.017

Sensitivity (dBm)	Noise Figure (dB)	Sensitivity (uV)
-124.0	6.35	0.141
-125.0	5.60	0.126
-126.0	4.90	0.112
-127.0	4.25	0.100
-128.0	3.65	0.089
-129.0	3.11	0.079
-130.0	2.63	0.071
-131.0	2.20	0.063
-132.0	1.83	0.056
-133.0	1.51	0.050
-134.0	1.24	0.045
-135.0	1.01	0.040
-136.0	0.82	0.035
-137.0	0.67	0.032
-138.0	0.54	0.028
-139.0	0.43	0.025
-140.0	0.35	0.022
-141.0	0.28	0.020
-142.0	0.22	0.018

# A 222 MHz non-repeater subband: Two views

*Note: In July, 1991, the ARRL Board of Directors voted to petition the FCC to set aside the 222.0-222.150 MHz segment of the 1.25 meter band for non-repeater use. Here are two views of that petition, which has been designated as RM-7869 by the FCC. At this writing, the FCC had not yet acted on the League's petition.*

## Why RM-7869 is needed

I believe the ARRL board did the right thing in petitioning the FCC to reserve 150 kHz (5 percent of the 1.25 meter band) for weak signal and other non-repeater uses. Here's why.

First of all, a non-repeater subband is nothing new: every VHF band had one until we lost part of the 220 band, including the 220-220.5 MHz non-repeater subband. Current FCC rules set aside 25 percent of six and two meters and 17 percent of the 450 MHz band for non-repeater uses.

Much has already been said about the fact that 220 SMA (the Southern California 220 repeater coordinator) voted to keep all 69 standard repeater pairs when we lost 40 percent of the band. That left little room for other users such as weak signal operators, who were given the bottom 10 kHz of the band--hardly usable with a repeater input centered at 222.020 MHz!

In adopting a new 1.25 meter national band plan last July, the ARRL board specified 222.0-222.150 for weak signal work (such as DXing via moonbounce or tropospheric ducting). By its nature, that kind of operating requires a quiet band segment and nationally standardized operating frequencies.

In asking the FCC to replace the old non-repeater subband at 220 with a new, much smaller one at 222 MHz, the board realized that some repeaters would have to move to shared channels. But in fairness, the Board felt that each user group should have some access to what was left of the band.

With FCC action on RM-7869 pending, 220 SMA has offered to renegotiate with other user groups. But even the fairest voluntary plan cannot protect a non-repeater subband: uncoordinated repeaters are showing up almost everywhere they are not prohibited by law, including segments of 450 that are reserved for amateur television under the voluntary band plan. *Ironically, an uncoordinated repeater has also shown up at 222.005 MHz, wiping out the entire 10 kHz weak signal subband now recognized by SMA.* Only an FCC rule can preserve a non-repeater band segment.

The ARRL Repeater Directory lists more than 900 coordinated repeaters in Southern California, including 173 on 220. Many are used for public service or digital communications--or liaison among members of a club. That is very important, but we have only a limited amount of spectrum, and some small portion of it should be preserved for other uses too.

I believe RM-7869--or something like it--is necessary because all user groups should have some access to the 1.25 meter band, because everyone should share fairly in the adjustments that became necessary when we lost 40 percent of the band, and because voluntary band planning cannot protect other users from uncoordinated repeaters.

-Wayne Overbeck, N6NB

## RM-7869 is not the answer

While we support the League's (voluntary) national 222 MHz band plan, we can not support the ARRL petition (RM-7869) that asks the FCC to mandate a 150 kHz subband for "weak-signal" operations. The ARRL national band plan had the support of the Membership Service Committee and the VHF/UHF Advisory Committee, understanding local band plans have priority. However, the separate Board motion (with your SW Director voting against it) that caused this action did not have the support of any of the League's committees. Surely, fellow hams, particularly members, should have first been given a chance to provide their input.

Should the FCC grant the 150 kHz subband it would cause great hardship in Southern California; at least 18 local repeaters would be affected. When the 220 MHz Spectrum Management Association of Southern California (220 SMA) revised their band plan for the loss of 220-222 MHz, they first widely advertised their general meeting where anyone with any interest could be heard; membership is open to all hams. The process took over a year. Their effort included surveys being sent to all known local users. At the final general meeting there were well over 100 amateurs with almost every conceivable mode being represented. The band plan passed almost unanimously. It was based on limiting repeaters to the remaining 69 pairs (222.02-223.38 inputs/223.63-224.98 outputs). Note, the loss of 220-222 MHz displaced over 70 repeater systems and over 100 auxiliary links in Southern California.

If "weak-signal" were given 150 kHz, this would be about 50% more spectrum than what they had in the 220 SMA band plan BEFORE we lost the bottom 40% of the band. Nevertheless, the new 220 SMA band plan is open to change. In fact, the 220 SMA has set up a meeting to include "weak-signal" representatives as well as the many other non-repeater interests to take another look at the local band plan. Even though there is very little "weak-signal" activity, it is important that their need is determined and as best as possible accommodated. Let us give the amateurs a chance to work it out among themselves first before asking big brother FCC to do it for us.

Finally, the timing of this petition is bad because of the much more pending ARRL petition that requests FCC for limited use of 216-220 MHz (RM-7747). Not only would band-planning be affected, but the granting of the RM-7747 petition itself might be jeopardized. Now, it is your turn...let the FCC (via the FCC Office of the Secretary, Washington, DC 20554) and your ARRL Board (see page 8 of QST) know your feelings and thoughts.

-Sandra Mae Heyn, WA6WZN

## SETTING THE RECORD STRAIGHT

*The February, 1992 issue of The Communicator, the ARRL Southwestern Division Newsletter (which goes to about 15,000 ARRL members), included pro and con columns on RM-7969, the proposal to reserve five percent of the 222 MHz band for non-repeater use. The con article, signed by Sandi Heyn, the wife of Southwestern Division Director Fried Heyn, contained a number of distortions and half-truths, including the following:*

*\*The statement that weak signal operators only had 100 kHz of the band under the SMA band plan before the 220-222 reallocation. In fact, Part 97 of the FCC rules reserved the bottom 500 kHz of the band for non-repeater use: repeaters and auxiliary links were specifically prohibited below 220.5 MHz. All of the "repeaters" and auxiliary links that SMA coordinated between 220.100 and 220.500 were illegal. SMA blatantly ignored Part 97 for a decade in coordinating these activities in that part of the band.*

*\*The statement that SMA surveyed "all known local users" in formulating its band plan. In fact, no active weak signal operator received the survey, not even the ARRL vice director--who has repeatedly proclaimed his interest in weak signal operating in election campaign statements sent to every League member in the division.*

*\*The implication that the SMA band planning meeting where weak signal operating was given only 10 kHz was conducted openly. Granted, anyone who wished to could have joined this repeater coordinating body, but virtually no weak signal operators had chosen to do so--and only those who were already members before the band planning meeting were allowed to vote on the band plan. Those who went to the meeting and joined SMA on the spot could not vote! Even if representatives of the weak signal community had attended the meeting, they would NOT have been allowed to vote on the band plan.*

*\*The statement that the loss of 220-222 MHz "displaced over 70 repeater systems" in Southern California. The 1991-92 ARRL Repeater Directory listed not one repeater below 222 MHz in Southern California. What was displaced was private remote bases, not "repeaters."*

*\*The statement that RM-7869 "did not have the support of any of the League's committees." That is grossly misleading; it was not opposed by any of the League's committees, either! The proposal was never referred to those committees for consideration because action was needed immediately to deal with the imminent loss of the weak-signal subband (at 220 MHz) on August 27, 1991. The motion that led to RM-7869 was approved by a 13-1-1 vote of the ARRL Board of Directors. Only Fried Heyn voted against it.*

*\*The statement that RM-7869 would somehow jeopardize RM-7747, which proposes limited access to 216-220 MHz for nationally coordinated digital links. RM-7747 does not seek 216-220 MHz for general amateur use; it would provide absolutely no spectrum for weak signal use. If anything, RM-7869 underscored to the FCC that fact that amateurs need more spectrum at 1.25 meters; it did not in any way undercut RM-7747.*

*\*The appeal for amateurs to write the FCC about RM-7869--in a newsletter mailed in mid-February, 1992. Fried and Sandi Heyn knew full well that both the comment and reply comment deadlines for RM-7869 had long since passed, and that letters sent to the FCC at that late date could not lawfully be made as part of the record.*



# DOWN EAST MICROWAVE

MICROWAVE ANTENNAS AND COMPONENTS

BILL OLSON  
W3HQT

BOX 2310 RRL  
TROY, ME 04987  
(207) 948-3741

CRAIG HENDERSON  
N8DJB

Ph. (419) 352-4465  
Hrs. 10-5



C. A. T. S.  
Rotor Parts & Repair.



7368 S.R. 105

Pemberville, OH 43450



215-288-0325

# W3HK

GEORGE S. VanDYKE, JR. P.E.

1737 Scattergood St.  
Phila., PA 19124

## The R.F. Connection "Specialists in RF Connectors and Coax"

K43QPG

Joel Knoblock  
301/840-5477  
Fax 301/869-3680

Order Line 800-783-2666  
Suite 11, 213 N. Frederick Ave.  
Gaithersburg, MD 20877

(302) 328-7728  
ORDER LINE 800-441-7008



### Delaware Amateur Supply

"AMATEUR SALES AND SERVICE"

PAUL WA3QPX  
KATHY KA31YO

71 MEADOW ROAD  
NEW CASTLE, DELAWARE 19720

(215) 858-6800 DAY  
(215) 343-2448 NIGHT

INDUSTRIAL  
COMMERCIAL  
RESIDENTIAL

### WARRINGTON ALARM CO.

LOCKSMITH • BURGLAR • FIRE

BOB HERSHMAN

417 DAVISVILLE ROAD  
WILLOW GROVE, PENNA. 19080-3493

215-342-5982

WA3HIT

Paul and Betty Killing

INCOME DIVERSIFICATION

5830 Weymouth Street -Phila., Pa.19120

Gerry Rodski - K3MKZ

717-868-5643  
6-10 PM

SSB ELECTRONIC U.S.A.  
Call for Catalog

124 Cherrywood Dr. Mountaintop, Pa 18707

609-541-0120

### Bob Fischer Company, Inc.

AERIAL LADDERS • UTILITY EQUIPMENT

BOB FISCHER  
PRES.

28TH & LINCOLN AVE.  
CAMDEN, N. J. 08105

## ZD Engineering

Specialists in CATV Hardline  
Matching Transformers-Power Dividers  
and Related R.F. Devices

144 MHz-1296 MHz...

TO FIT 1/2, 3/4 AND 7/8 INCH HARDLINE

PAUL H. DARWACTOR  
(419) 424-8785

W8ZD

605 Baisley Ave.  
Findley, Ohio 45840

## DESTINATIONS INC.

A FULL SERVICE TRAVEL AGENCY

### HARRIET SOLTOFF TRAVEL CONSULTANT

616 SOUTH THIRD STREET  
PHILADELPHIA, PA. 19147

RES. (215) 947-4483

MONSIEUR-THUR 7-10P  
SAT. 8-10P

Day-Nite (215) 455-2121

## FERTIK'S ELECTRONICS.....

Components & Equipment

LEON FERTIK

5400 ELLA STREET  
PHILADELPHIA, PA. 19120



RICHARD E. COMLY

TOOL, DIE & MACHINE CO., INC.  
2065 BENNETT RD. PHILA., PA 19116

(215) 676-1300  
FAX 934-5237



(609) 268-0736

RICHARD CONNOR



## RECON Communications

- COMMUNICATIONS TOWER MAINTENANCE
- ANTENNAS, FEEDLINES, TOWERS INSTALLED
- TOWER PAINTING, RE-LAMPING, RE-GUYING
- RF SYSTEM TROUBLESHOOTING
- LIGHTNING PROTECTION, GROUND SYSTEMS

Emergency Service

412 Carrenza Road  
Tabernacle, NJ 08066

(302) 328-7728  
ORDER LINE 800-441-7008



### Delaware Amateur Supply

"AMATEUR SALES AND SERVICE"

ROB WA3QLS  
GAIL KA31YN

71 MEADOW ROAD  
NEW CASTLE, DELAWARE 19720

(215) 745-6173  
(302) 886-7630  
(215) 342-8832



### COMPU-SIMPLE, INC.

COMPUTER APPLICATIONS FOR SMALL BUSINESS

ELLIOTT T. WEISMAN  
Consultant

P.O. BOX 7161  
WILMINGTON, DELAWARE 19803

## RUTLAND ARRAYS

For the finest VHF/UHF antennas  
1703 WARREN ST.  
NEW CUMBERLAND, PA 17070

Call or write for our new catalog!  
(717) 774-5298 7-10 pm EST

### Hopkins & Yampolsky, P.C.

ATTORNEYS AND COUNSELLORS AT LAW  
1814 SPRUCE STREET  
PHILADELPHIA, PENNSYLVANIA 19103

STEVEN N. WHITE  
WA3IAO

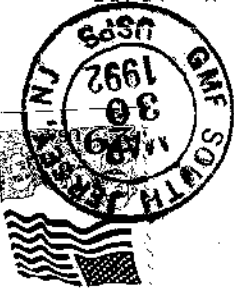
TEL. (215) 545-1300

FIRST CLASS

BACK RATS

DICK HUNTZINGER  
W3FQD  
130 FAIRHILL RD.  
CHURCHVILLE, PA 18966

M 12/92



MEETING  
NOTICE



MT. AIRY  
VHF  
RADIO  
CLUB,  
INC.

412 Carranza Rd  
Tabernacle, NJ  
08088  
Cheese Bits

ICOM

CES  
SEI

Saxton

CDE

nite

GILFER

TPL

B

Weller

Miller  
hy-gain

DRAKE

LMB

callbook

waldom

Marky

communications specialists

Larsen Antennas

ASTATIC

If we're  
judged by the  
company we  
keep, we should  
do pretty well!



"W2AU"

HAM-KEY

ROHN

"HAM" BUERGER, INC.  
Electronic Equipment Distributor

"Right in the middle of a lot of good company!"

DIRT

MISCO

Vector

DAIK

VIBROPLEX

NFC

417 DAVISVILLE ROAD  
WILLOW GROVE, PA 19090  
215-659-5900

HUSTLER

phelps  
blade  
Communications Equipment

TEN-TEC

TRW

Service Since  
1956

MA

AMEGO

BOMAR

Comar

TAB BOOKS  
Regency

AMPHENOL

COVER CRAFT

AMP  
SPECIAL  
INDUSTRIES

TELEX

SPRAGUE

Xcelite

Wilson Electronics Corp.

BW

ICR

