

PACK RATS'



MT. AIRY VHF RADIO CLUB, INC.

CLUB CALL: W3CCX

CHEESE BITS



MT. AIRY VHF RADIO CLUB, INC., PHILADELPHIA, PENNSYLVANIA ARNS
50.125, 144.150, 220.125, 432.110, 1296.110 MHz-W3CCZ-Repeater 222.98 MHz
Affiliated Club: AMERICAN RADIO RELAY LEAGUE
Meetings: Third Thursday of each month at 8:00 P.M.
Southampton Free Library, 947 E. Street Road
Southampton, Pennsylvania 19866

VOLUME XXXI

OCTOBER, 1989

NUMBER 10

THE PREZ SEZ

Well I must say it was great to see such a turn out for the first meeting at the library. Already we have 21 orders for club Tee Shirts and remember that if you want a shirt we will be taking orders at next month's meeting. So get in touch with me if you can't get to the meeting! \$8.00 with a pocket, call and name on the back, orange with black lettering.

The reports from the Hamfest Committee Chairman (WB3DNI+ Pat) and the VHF Conference Chairman (KB3XG - John) indicated that these events are coming together in the true Pack-Rat style. True organizers they are!

The 900 MHz club project is under way and at the meeting we had 14 pre orders for the No Tune transverters. Everyone that couldn't make it to the meeting please call me if you are interested in getting involved in this building project! Let's get ready for the January contest now and get those stations together. All input is needed for a successful club effort. If someone would be willing to volunteer for January Contest Chairman it would be appreciated. Please call Paul, WB3JYO for full details on the plan - he's had a lot of experience.

At this writing the hurricane is coming inland and I hope that everyone fared O.K.

I was looking at the Pack-Rat Directory the other day and going over the membership list. We have 85 voting members by the way! While going over the list I noticed that most of the membership lives within 10 air miles of the meeting place. So how come no one comes to the meetings? Why are you people club members? Do you people have a transportation problem; do you have ham radio burn out; or don't you like the other members? Come on, people, let's get the lead out - we're all big boys now and supposed to be able to get along with everyone. Come on out to a club meeting and give some feedback to get the club airborne again. Everyone has something to contribute and teach others. I really don't think the two meetings a year rule is a good idea for a strong input. (cont., page 3)

Pack Rats CHEESE BITS is a publication of
THE MT. AIRY VHF RADIO, INC.
Philadelphia, PA. and is published monthly.
SUBSCRIPTION RATE - \$5.00 PER YEAR

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

DEADLINE FOR ARTICLES IS THE MEMBERSHIP
MEETING: THE THIRD THURSDAY OF THE MONTH
SWAP SHOP ITEMS - NO CHARGE

SUBSCRIPTION MANAGER:

K3GAS, DOC CUTLER
7815 New Second Street
Elkins Park, PA 19117
215-635-1078

EDITOR: W3CL, HARRY B STEIN
2087 Parkdale Ave.
Glenside, PA 19038
215-887-5052

ASSISTANT

EDITOR: WC2k, RICK CONNOR
609-268-0736

PRINTER: WB2VLA, DAVID POWER
609-882-1040

TYPIST: JANICE CONNOR

AWARDS CHAIRMAN: W2EIF, JOSEPH KILGORE
609-783-9478

CLUB HISTORIAN: W3CL, HARRY B. STEIN

TRUSTEE OF THE CLUB CALL - W3CCX

WA3AXV, RONALD WHITSEL
215-355-5730

PACK RAT REPEATER 222.98/224.58 MHz - W3CCX
LOCATED IN CHURCHVILLE, PA.

OFFICERS: 1989 - 1990

PRESIDENT: N3CX, DAVE HACKFORD
VICE-PRES: WB3DNI, PAT CAWTHORNE
COR. SECY: WB3JYO, PAUL DREXLER
REC. SECY: WA3AQA, WALT ZUMBACH
TREASURER: WA3YUE, BRUCE LOSS
DIRECTORS:

WA3AXV, RON WHITSEL (1 Yr)
K3GYS, GUS NICOLELLA (1 Yr)
WA3JUF, DAVE MASCARO (2 Yrs)
WA3NUF, PHIL MIGUELEZ (2 Yrs)

VHF CONFERENCE CHAIRMAN:

KB3XG, JOHN SORTOR
215-340-0847

HAMARAMA CHAIRMAN:

WB3DNI, PAT CAWTHORNE
215-672-5289

MONDAY NIGHT NETS

7:30 PM - 50.125 MHz
8:00 PM - 144.150 MHz
8:30 PM - 220.125 MHz
8:30 PM - 224.58 MHz
9:00 PM - 432.110 MHz
9:30 PM - 1296.1 MHz

NET CONTROL

W3CL
W2EIF
WC2K
K3GAS
WA3AXV
WA3NUF

* * *



THE AMERICAN RADIO RELAY LEAGUE

OST

HUGH A. TURNBULL, W3ABC

Director, Atlantic Division

6903 RHODE ISLAND AVE.
COLLEGE PARK, MD. 20740

(301) 927-1797



Pennsylvania Institute
of Technology
ENGINEERING

PAUL D. MERCADO

Chairperson, Drafting Design Department

215-565-7900

Rosa Valley-Notre Dame Campus
800 Manchester Ave., Media, Pa. 19063-4098

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

OCTOBER

- 1 Yonkers ARC Ham Fair will be held at the Yonkers Municipal Parking Garage in Yonkers, New York. Admission: \$4.00. Talk-in on 146.865/R or 440.15/R and 146.52.
- 7 13th Annual Mid-Atlantic VHF Conference will be held at the Warrington Motor Lodge, Warminster, Rte 611 and Street Rd., Warminster, Pa.
- 8 18th Annual Pack-Rat Hamarama will be held at the Bucks County Drive-In Theater at Rte. 611 and Street Rd., Warminster, Pa.
- 9 Columbus Day.
- 9 Yom Kipper.
- 12 Board of Directors meeting for the Mt. Airy VHF Radio Club will be held at the QTH of WA3JUF at 8:00 P.M. All interested parties welcome. Call 215-795-2648 for directions.
- 14-15 ARRL International EME Contest. Covers all bands above 50 MHz. Second weekend Nov. 18-19. See Sept. QST, page 84 for rules.
- 14-15 Pennsylvania QSO Party sponsored by the Nittany ARC.
- 14 34th Annual Syracuse Hamfest at the NY State Fairgrounds. Admission: \$5.00 at the gate. Talk-in on 146.31/91 and 147.90/30.
- 15 The Shore Area Ham Radio and Computer Fest will be held at Allaire Airport, Rte 34 Wall, N.J. Talk-in on 145.110/-6 and .52.
- 19 Regular meeting of the Mt. Airy VHF Radio Club at the Southampton Free Library on Street Rd. in Southampton, Pa. All VHFers are encouraged to come and enjoy the evening with us. You need not be a member.
- 21 Predicted peak of the Orionids meteor shower at 2346 UTC.
- 22 Penn Wireless Assn Tradefest '89 at the Yezzi Field in Bensalem, Pa. Admission: \$3.00 each or \$7.00 per carload. Talk-in on 145.52 or 147.00/.60.
- 29 RF Hill Hamfest at Sellersville, Pa.
- 31 Halloween.

* * * * *

THE PREZ SEZ (cont.)

Well that's about it for now and I hope to see you at the VHF Conference and Hamfest. Please come out to help, we need it - Call Pat WB3DNI at 215-672-5289. I haven't met a lot of you yet and the up-coming events are the places to relax and get the renewed interest.

Listen for the weak on
David Hackford, N3CX

PROPAGATION REPORT
Paul Drexler, WB3JYO

It's been another busy month for the serious VHFer. Propagation has definitely been above average - there's been a few good Auroras and lots to work on the bands.

On August 28th, starting at 2230Z, we had a FB Aurora to the NE and Chicago areas, first starting on 6 and 2, and eventually providing propagation through 432. Without spending too much time on the air, I worked into the Chicago area and our FN54 buddy, Bill, W3HQT on 220! The Aurora eventually died at 0215Z on the 29th. On the morning of September 1, a typical Autumn tropo began which lasted throughout the following week. WD4FAB (FM15) had an S6 signal at 2 meters on the 1st and FM05 and FM06 were reported active. On the 6th, Rick, WC2K reports excellent propagation in to the far reaches of grids FN96, FN86, and FN76 on 2 and 432. Rick also worked K1WHS (FN43) on 2304 that same evening with S6 SSB signals both ways! Conditions for the September contest were just average, however, with little exciting to talk about. The only enhancement I observed was on Saturday afternoon, with good conditions to the NE. On the 18th we had another Aurora, starting around 2200Z on 50 MHz. Signals on 6 were very strong to 8 and 9 land, and VE1, 2, and 3. The opening later shifted south, with stations in VA getting into the 6 meter Aurora! The propagation was slow to move to the higher bands, but eventually contacts were reported on 220. WC2K was busy with the nets that night and heard the conditions fade away at around 0300Z, the 19th. Rick was in the process of shutting the station down for the night at 0400Z when the Aurora returned in a big way. Beginning at 0431 and continuing until 0707, Rick enjoyed having the band to himself and worked pile-ups of W5, W9, and WØ stations! Grids worked included EM48, EM29, EM39, EM16, EM25, EM26, EM27 and EN32. W3HQT was the only other NE station to keep WC2K company, and they eventually worked each other on 220. Just goes to show you - it ain't always over when you think it is!

CU in the next Aurora!

CONFERENCE/HAMARAMA UPDATE

John and Pat are ready for this year's Pack Rat weekend. Are you? An excellent program has been scheduled for Saturday:

0900	Optimum Linear Transverter Design	-Paul Drexler, WB3JYO
1000	EME, Then and Now	-Dr. Al Katz, K2UYH
1115	VHF/UHF/SHF Band Plans	-Bob Bennett, W3WCQ
1330	Laser Communications	-Bob Atkins, K1GT
1430	No Tune Transverters	-Bill Olson, W3HQT

Don't forget to bring along any homebrew equipment that you'd like to display in the conference room.

Breakfast for the hamfest crew WILL NOT be held at the Warrington this year. Breakfast WILL be at PERKINS FAMILY RESTAURANT, 705 York Rd. in Warminster. (¼ mile north of Street Rd. near Path-Mark, Rickels, and Arch Bishop Wood). Try to get there as close to 0500 as possible so we can be at the drive-in by 0600. We need help to manage this hamfest, especially with the parking of cars throughout the morning. If you've never been a part of the parking crew, please assist the club this year by giving an hour of your time. Join us for breakfast or report to the club table to pitch in for the Pack Rats. See you all on the 7th and 8th.

SWAP SHOP

FOR SALE: Kenwood TS-180S with CW filter, DC converter, speech processor, remote VFO (VFO-180), MC-50 mic. excellent condx \$650.00. Tempo S1 2 meter HT, 1.5W, leather case \$100.00.

CONTACT: Bruce Loss, WA3YUE
PHONE: 215-542-6405 (W)
215-947-4166 (H)

FOR SALE: IBM PCjr with 256K RAM, internal 300 baud modem, speech synth, RGB/EGA-CGA monitor, 80 col printer, mouse, software, and more. \$700.00. Heath Hero-1 Robot with support modules, accessories, and manuals, mint condx \$775.00

CONTACT: Sid Deitz, W2FDE
Trenton, NJ
PHONE: (609) 882-3950

FOR SALE: Heath SB-200 linear amp, new band switch, relay and meter + brand new set of 572B tubes \$450.00.

CONTACT: Chas Royer, K3BCV
847 Lacrosse St.
Allentown, Pa 18103
PHONE: 215-432-2805

AVAILABLE: Variable voltage regulator kits as described in July '89 issue of Ham Radio Magazine by author/designer Howard, K3HW.

CONTACT: Howard Weinstein, K3HW
PHONE: 609-596-3304

HELP WANTED: To assist Pack Rat in the removal of tower to be relocated at new QTH near Hilltown, Pa.

CONTACT: Bill Jaxheimer, K3ESJ
PHONE: 215-348-4163

COMMERCIAL ADS

LOOP YAGIS: 902 MHz 33 element \$82 kit, \$99 assembled and tested. 1296 MHz 45 element \$82 kit, \$99 assembled and tested. 1296 MHz 55 element "Super Looper" \$99 kit, \$119 assembled and tested. 2304 MHz 45 element \$67 kit, \$80 assembled and tested. Also available: element and hardware kits for above. 2 and 4-way power dividers. Discount on complete arrays. Solid State linear amps, 13VDC: 1296 MHz, 8W in 35W out \$305; 1W in 20W out \$155. Coming soon, 65W solid state PA for 1296. GaAs FET preamps: 902 MHz .8 dB NF \$80, 1296 MHz .8 dB NF \$80, 2304 MHz 1 dB max NF \$125. Universal 1 GHz LO kit \$48 less crystal; 700-800 MHz LO kit \$48. Xtals available. Write for complete catalog. DOWN EAST MICROWAVE, Bill Olson, W3HQT, Box 2310 RR-1, Troy, Maine 04907. For information and orders, call (207) 948-3741.

HAM RADIO MAGAZINE is the leader in Amateur Radio state-of-the-art! Projects for every interest. Plus Joe Reisert, W1JR. Act now. Don't miss another exciting issue! HR Magazine, Greenville, NH 03048. (603) 878-1441.

MICROWAVE PARTS FOR SALE: All prices shown are POSTPAID. Check with a ham callsign accepted. 10 GHz Gunn sources: all work the same, all run on + 7.5 VDC, put out about 5mw, come on 10.525 GHz, tune down to 10.1 GHz or lower with no modification. They include a detector diode to allow for transceive operation. SOLFAN style \$20. ROUNDHORN style (lightest, either 5" or 8" long) \$20. Most units with mount tabs, or Gunn sources with out horns or detector diodes. Also have odd units around, like FLATPLATE units or SQUARE-HORN units. SASE if interested. Spare Gunn diodes for all above \$5 each. Beginner Microwave" 10-page booklet describes fuzzbuster-busters, listening through walls, dopler, and our experiment using K-Mart and auto radios for audio links. Don't expect too much! \$2 postpaid. SHF MICROWAVE PARTS CO., 7102 W. 500 Street, La Porte, Indiana 46350.

FOR SALE: Kenwood TS-530S xcvr HF, \$609. Gonset Communicator 6 meters \$49. Palomar noise bridge \$75. MFJ 949B Versa antenna tuner \$95. Swan 2 meter xtal controlled xcvr \$100. Realistic DX-360 shortwave AM-FM portable/AC \$95. CONTACT: Tony Musero, K3UKW, 1609 Iseminger St., Phila., Pa, 19148-1010 or call (215) 271-8898.

* * * * *

The following have been removed from the Pack Rat membership rolls: N3AHI, N2AQJ, WB3IGR, WB3IND, WB3KES, K3KVS, AC3T, WA3YDZ, and AA2Z.

VHF/UHF CONTEST SOFTWARE

Pack Rat Dave Mascaro, WA3JUF has developed an outstanding contest computer program for VHF/UHFers. Called "MULTILOG/VHFLOG", the software accommodates both single and multi operator contest logging in the ARRL VHF/UHF contests. For the single operator, the program can be operated in real time and provides very easy entry of callsign, and report. Band changes are simple and fast, duplicate QSO's are flagged, time is stamped on each QSO. The program produces a log (duped), check sheet, equipment list, operator information, and summary sheet complete with statement of integrity. It is generated in the format accepted by the ARRL. Contest aids on the program disk include beam headings for grid squares and stored bearings of stations which the operator enters to memory. At the conclusion of the contest, the operator is completely finished with his scoring and logging! An after-the-contest program is provided for multi-op stations into which log entries can be entered, duped, scored, and summarized. I've tested a number of other contest logging programs which have all been cumbersome at best. After playing with Dave's program today, I find it a real winner and true method to eliminate the penciled log sheet. This is a "must have" accessory for the VHF contester with Apple or IBM compatible computers.

TA4/G3SDL ON 6 METERS

Dave, TA4/G3SDL will be the first licensed 6 meter operator from Turkey in an operation planned from September 29 through October 9, 1989. He will maintain a beacon on 50.095 MHz and operate on 50.110 and 50.130 MHz. He will monitor the international 6 meter liason frequency 28.885 MHz as well. This would be a great catch - sure hope we get some early F2 propagation!

VISITORS - SEPTEMBER 21, 1989 MEETING

AA5AH - Bob Newhart - Camden, NJ
XYL - Judy Newhart - Camden, NJ

CHANGES OF ADDRESS

KB2XG, John Sorter
5290 Stump Road
Pipersville, Pa 18947
Tel: 215-766-2643 (H)
215-354-1635 (W)

K9ES, Eric L. Smitt
107 Atlantic Blvd
Indian Harbour Beach,
Florida 32937

TID BITS

- Condolences to Pete Cummings, W3CIL on the recent loss of his XYL, Carol.
- The Fall issue of the QCWA Journal included a report from the Delaware Valley Chapter No. 5. A photo shows W3HK, George Van Dyke presenting a meritorious award to W2HX, BB Wentzel for his many contributions to the Chapter and amateur radio. Our good wishes, BB.
- EPA Section Manager, Kay Craigie, KC3LM is a candidate for Vice Director of the Atlantic Division. Her election to office would provide some needed local representation to the ARRL.
- Eric Smit, K9ES is relocating to Florida to pursue a new business. He will be located 1000 ft. west of the Atlantic Ocean, 40 miles south of Cape Canaveral. He plans to set up on 50, 144, 220, and 432 with his 56 ft tower. Good luck and keep in touch, Eric. Look for Pack Rats on 6 meters in January VHF SS!

SIX METER DX BEACON LIST
From Northeast VHF News

As the F2 6 meter DX season warms up, Pack Rats will find the following beacon list handy for operating the band:

FREQ.	CALL	GRID	LOCATION	ERP (W)	ANTENNA	MODE	NOTES
50.005	H44HIR	RI00	Solomon Is.	25			
50.005	ZS1SIX	KF25	S. Africa	25	Dipole		
50.009	ZS6PW	KG44	S. Africa	15			
50.011	JA2IGY	PM84	Mie, Japan	10	Gnd Plane	AlA	Ø
50.013	P29BPL	QI30	Pt. Moresby	30	Dipole		Ø
50.015	SZ2DH	KM18	Athens, Grce	10	Yagi	AlA	
50.018	ZS3VHF						
50.020	CX1CCC						
50.020	GB3SIX	IO73	N. Wales	100	Yagi	FlA	Ø
50.020	JA6ZIH	PM51	Kyushu	10	2 x squalo	AlA	Ø, 1
50.023	ZS6LW	KG44	Rossllyn	50	Yagi		
50.025	OH9...	KP.	Finland				
50.025	ZS6LN	KG46	Pietersburg	150	Yagi		
50.028	JA7JMA	QM07		10	Yagi		
50.029	CT0WW	IN61	Joao Pesdueira	40	Dipole	FlA	Ø
50.033	ZD8VHF	II22	Ascension Is.	50	Vertical	FlA	Ø
50.035	LU8YYO						
50.035	ZB2VHF	IM76	Gibraltar	200	Yagi	FlA	N
50.038	FY7THF	GJ34	Kourou	100	Gnd plane	FlA	Ø
50.040	CX8BE	GF15	Montevideo	10	Yagi		
50.045	OX3VHF	GP60	Simiutaq	20	Gnd plane	FlA	Ø
50.050	GB3NHQ	HO91	Bar Potters Bar	40	Turnstile		Ø
50.055	ZS6DN	KG44	Irene				
50.057	KH6HI	BL01	Oahu, HI				
50.060	GB3RMK	IO77	Rosemerkie	40	Dipole	FlA	Ø
50.062	PY2AA	GG66	Sao Paulo	25	Gnd plane		Ø
50.063	GB3NGI	IO65	N. Ireland	18	Dipole	FlA	Ø
50.066	GJ4HXJ	IN89	Jersey, C.I.	10	Halo	FlA	Ø, 3
50.075	PY2AMI	GG66	Sao Paulo	5	Gnd plane		Ø
50.075	VS6SIX	OL72	Hong Kong	30	Gnd plane		Ø
50.075	ZS5SIX	KG50	S. Africa	10	Halo		
50.078	TI2NA	EJ79	San Jose	20	Dipole		Ø
50.080	HC8SIX	EI59	Galapagos	4	Vertical		Ø
50.083	LU1DMA	GF06	Buenos Aires	20	Yagi		5
50.085	9H1SIX	JM75	Malta	50	Yagi	FlA	Ø, 6
50.086	VP9MO	FK86	Plymoth	10	Yagi		Ø
50.091	ZF2KZ	EK99	Grand Cayman	100			
50.099	TI2CF	EJ79	San Jose				
50.100	LU2FMO	FF96		4	Yagi		
50.100	HC2FG	FI07	Guayaquil	8	J-pole		Ø
50.100	VP5D						
50.100	KG6DX	QK23	Guam	40	Yagi	AlA	7
50.105	ZS3E	JG89	Namibia				
50.110	A61XL	LL74	United Arab Em.	50	Yagi		
50.120	4S7EA	MJ97	Sri Lanka	50	Yagi		
50.321	ZS5SIX	KG50	S. Africa	6	Halo		Ø
50.490	JG1ZGW	PM95	Tokyo	10	Dipole	AlA	Ø
50.499	5B4CY	KM54	Cyprus	15	Gnd plane	FlA	Ø
50.880	ZS4SA						
50.904	ZS1STB	KF05	Stilbaai	25	Dipole		

(continued)

SIX METER DX BEACON LIST

(continued)

FREQ.	CALL	GRID	LOCATION	ERP (W)	ANTENNA	MODE	NOTES
51.020	ZL1VHF	RF73	W. Auckland	25	Vert.dipole		Ø
52.100	ZK2SIX	AH5Ø	Niue				
52.200	VK8VF	PH57	Darwin				
52.320	VK6RTT	OG89	Wickham	25	J-pole		Ø
52.325	VK2RHV	QF57	Newcastle				Ø
52.345	VK4ABP	QG26	Longreach	10	Vertical		Ø
52.350	VK6RTU	PFØ9	Kalgoorie				
52.370	VK7RST	QE37	Hobart				
52.410	VKØMA	MC12	Mawson				
52.420	VK2RSY	QF56	Dural	25	Turnstile		Ø
52.425	VK3RGB		Gunnedah				
52.435	VK3RMV	QF12	Hamilton				
52.440	VK4RTL	QH3Ø	Townsville				
52.450	VK5VF	PF94	Mount Lofty	20	Turnstile		Ø
52.460	VK6RPH	OF78	Perth				
52.465	VK6RTW	OF84	Albany				
52.470	VK7RNT	QE38	Launceston				
52.485	VK8RAS	PG66	Alice Springs				

NOTES:

- Ø - Operational 24 hours/day N - not currently operational P - Proposed
- 1 - Callsign due to change to JA6YBR
- 3 - Awaiting official license. Callsign will be GB31ØJ.
- 5 - Computer controlled. QRV from 1800 to 0300 UTC.
- 6 - Beam heading chosen on a seasonal basis. (UK from May-August)
- 7 - Operates on 50.100 when not attended, 50.110 when operator in shack.

This data was compiled by G4UPS and G4DGM with minor changes and additions by G4IJE and VE3IMT. Further corrections and additions were provided by W2CAP/1. Editorial corrections were made by W1GXT. This list was last updated on May 20, 1989 at the 15th Eastern VHF/UHF Conference, Nashua, NH. Please send any changes or corrections to VE3IMT, W2CAP/1, and W1GXT.

ARRL SEZ OK TO LOG DISKETTES

From the ARRL Letter

The ARRL Contest Branch can now accept entries for the ARRL November Sweepstakes and other ARRL sponsored contests on IBM compatible MS DOS formatted diskettes, either 5¼ or 3½ inch. Log information must be in a true ASCII file. The summary sheet may also be in an ASCII file, but paper summary sheets are preferred. The log file should take on the layout of the official forms containing band, date, time on/off, time UTC, reports sent and received, multipliers, new multipliers, and points. For additional info, call Billy Lunt, KR1R, Contest Manager, at ARRL Headquarters.

CONTRIBUTE TO CHEESEBITS

The editors and columnists of Cheesebits welcome information in the form of technical articles, editorials, letters, operating news, product news, coming events, and photos pertaining to the VHF/UHF/SHF weak signal modes. Send operating reports to WB3JYQ, scheduled events to W3IIT, and all other material to WC2K. Contributions to your newsletter are accepted from all members and subscribers and are appreciated by all.

DOWN EAST MICROWAVE

MICROWAVE ANTENNAS AND COMPONENTS

BILL OLSON
W3HOT

BOX 2310 RR1
TROY, ME 04987
(207) 948-3741

73 Amateur Radio's Technical Journal

PO BOX 931
FARMINGDALE, NY 11737

\$25 one year \$53 three years

NE 7-8329

GEORGE S. VAN DYKE, JR., P.E.
CONSULTING ENGINEER

W3HK

4807 CONVENT LANE
PHILA., PA. 19114

High-Tech Electronics

5 So. Easton Rd.
Glenside, PA 19038
(215) 886-5100



ELECTRONIC PARTS DISTRIBUTOR FOR:
RADIO • TV • VCR • COMPUTER
AUDIO-VIDEO • PHONE ACCESSORIES

WHOLESALE

RETAIL

ARLENE SULTHAUS

BILL SULTHAUS

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



Delaware Amateur Supply

"AMATEUR SALES AND SERVICE"

PAUL WA3QPK
KATHY KA3IYO

71 MEADOW ROAD
NEW CASTLE, DELAWARE 19720

(215) 859-5900 DAY
(215) 843-2448 NIGHT

INDUSTRIAL
COMMERCIAL
RESIDENTIAL

WARRINGTON ALARM CO.

LOCKSMITH • BURGLAR • FIRE

BOB HERSHMAN

417 DAVISVILLE ROAD
WILLOW GROVE, PENNA. 19090-3493

215-342-5982

W3SHIT

Paul and Betty Rilling

INCOME DIVERSIFICATION

5830 Weymouth Street - Phila., Pa. 19120

The Ham Radio Publishing Group



Greenville, NH 03048 (603) 878-1441

HAM RADIO - the Technical Ham's
Magazine. Ask for a free sample
copy or our Book Catalog.

CALL DOC CUTLER (K3GAS)
FOR YOUR ELECTRONIC NEEDS

NEW, RECONDITIONED, OR AS IS.

LOW PRICES

by appointment

215-635-1078

BARISH SALES ASSOCIATES

Carl Barish

11661 S.E. First St.
P.O. Box 4247 • Bellevue, Washington 98008

(206) 646-9900

Telephone Products for the Industry

DESTINATIONS INC.

A FULL SERVICE TRAVEL AGENCY

HARRIET SOLTOFF
TRAVEL CONSULTANT

616 SOUTH THIRD STREET
PHILADELPHIA, PA. 19147

RES. (215) 947-4483

BROWSING-THURS. 7⁰⁰ - 9⁰⁰
SAT. 9⁰⁰ - 4⁰⁰

Day-Nite (215) 455-2121

FERTIK'S ELECTRONICS

Components & Equipment

LEON FERTIK

5400 ELLA STREET
PHILADELPHIA, PA. 19120



52 Stonewyck Drive
Belle Mead, New Jersey 08502
(201) 874-6013
Telex 5106014312 (PX Shack)
Easylink 82930060

IVARS LAUZUMS
Director KC2PX



MICROWAVE MODULES LIMITED



(609) 694-1717

G & G Communications, Inc.

ROBERT COOK
Shop Manager

RT. 4 BOX 124
FRANKLINVILLE, NJ 08322

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



Delaware Amateur Supply

"AMATEUR SALES AND SERVICE"

ROB WA3QLS
GAIL KA3ITN

71 MEADOW ROAD
NEW CASTLE, DELAWARE 19720

(215) 745-6173
(302) 575-7530
(215) 342-8832



COMPU-SIMPLE

COMPUTER APPLICATIONS FOR SMALL BUSINESS

ELLIOTT T. WEISMAN
Consultant

P.O. BOX 7161
WILMINGTON, DELAWARE 19803



MOST OTHER MAJOR LINES.

Jenkintown & Glenside Electric Co.

MAJOR APPLIANCES • TV

220 YORK ROAD
JENKINTOWN, PA.
Turner 4-0375 - 4-1050
WA 7-4325

LES GEISSEL



AMERICAN RADIO RELAY LEAGUE
EASTERN PENNSYLVANIA SECTION

KAY CRAIGIE KC3LM
SECTION MANAGER

128 Berkeley Road
Devon, PA 19333
(215) 688-5045

