



MARAC



THE MOBILE AMATEUR RADIO AWARDS CLUB, INC.

NO 198

NOV 1, 1986

MINUTES OF THE MARAC MONTHLY MEETING

The October MARAC meeting was held on Saturday, October 4, 1986 at the Holiday Inn East, St. Paul, Minnesota. The meeting was called to order by WBØTVL at 9:00 AM. Present were: WBØTVL, W9LHG, WØAKC, WAØRJJ, WØKIN, WØKNH, WØNNH and WØUPU.

The Secretary read the minutes of the September meeting. Motion to accept by WØNNH, second by W9LHG, approved.

Treasurer's report submitted by W9LHG. He explained that we would switch our checking account to the Maplewood State Bank as we would be charged little, if any, bank charges and the funds would be secure. A review of expenses and income was then submitted. Motion to accept by WØNNH, second by WØKNH, approved.

W9LHG then submitted an additional Newsletter and Awards cash flow summary for the period since the beginning of our fiscal year. After extended discussion, he stated that he would contact the Newsletter Editor for his suggestions and report at the November meeting.

The Secretary presented the summary of recent mail balloting for the revision of the Constitution and By-Laws: 314 ballots were returned. Of those, 305 voted in favor of the revision, 6 voted against the revision and 3 ballots were returned without any vote indicated. The President declared that the new revised Constitution and By-laws were now effective. WBØTVL and/or WAØRJJ, Revision Committee Chairman, will contact the MARAC Resident Agent in Kansas to determine whether or not we have to notify the Kansas Secretary of State.

WBØTVL, as Awards Chairman, stated that there had been some confusion regarding Second Time Around Awards. He stated that obviously all contacts claimed for Second Time Around must be made after the date of the "First Time" Award. This requirement will be made clear in the next revision of the Awards Information packet.

WBØTVL added that there had been a recommendation made to the Awards Committee to name the CW Net Control of the Year Award in honor of a deceased CW member. He will provide more details at the next meeting.

W9LHG made a motion that WAØRJJ be awarded a MARAC Merit Award for his work heading the Constitution and By-laws Revision Committee. Second by WØKIN, approved.

There being no further business, the meeting was adjourned at 10:15 AM.

The next MARAC meetings will be on November 1 and December 6 at the Holiday Inn East and starting at the usual time 9:00 AM.

Bill
Bill Olsen WØUPU
Secretary

FROM THE SECRETARY

If your mailing label indicates 1186, 1286 or 0187, it's time to renew. Dues with 1st class mailing of the Newsletter is \$11.00. Dues with 3rd class mailing of the Newsletter is \$8.00. Note also that 3rd class mailing is available within the continental U.S. only. Dues with the Newsletter mailed Air Mail to all continents other than North America is \$20.00. Please make your check or money order payable to MARAC and mail to the Secretary Bill Olsen, WBØUPU, 2221 Ogden Court, St. Paul, Minn. 55119.

Fulvio Fusco, ILEEW, MARAC # R-1871, is looking for a stateside QSL manager. If you would like to help him out, contact him directly at via IV Novembre 17-B/22, 18100 Imperia, ITALY or through the Mobile QSL Bureau.

MARAC FINANCIAL REPORT

CHECKING ACC'T AS OF SEP 1, 1986	\$ 879.59
INCOME	1,339.25
EXPENSES	1,562.56
CHECKING ACC'T AS OF OCT 1, 1986	656.28

SAVINGS ACC'T AS OF SEP 1, 1986	3,366.65
TRANSFER TO ACHECKING ACC'T	500.00
QUARTERLY INTEREST	51.65
SAVINGS ACC'T AS OF OCT 1, 1986	\$2,918.30

NEW MEMBERS

R1943 WA2DWF Michael Saccento 90 Squaw Trail Middleburg NY (Schoharie)
 R1944 W6ISQ John Troster 82 Belbrook Way Atherton CA 94025 (San Mateo)
 R1945 WA4WIN Kenneth Lucas 21328 Long Branch Rd Rush, KY 41168 (Boyd)
 R1946 KA9FUG Richard Fontaine 1145 Peregrine Ct Palatine IL 60067
 (Cook)
 R1947 W6TZD Eugene Dvorak 4166 Lexington AV Chino CA 91710 (San Bernardino)
 R1948 KDBHA George Judy 10 Central Av Mechanicsburg OH 43044
 (Champaign)

(3)

ADDRESS CHANGES, NEW CALLS, CORRECTIONS

R1402 WB4FSX RT 1 Box 45 Webberville KY 41180
R1366 WORSR 18363 E ASrkansas Av Aurora CO 80017
R165 WN4M 1913 Hoe Ct North Fort Myers FL 33903
R398 WAS K9FBV NOW NG9V
R1723 N8FEB correct spelling of last name to CALE

COUNTIES NEEDED TO FINISH USA-CA

KA2CNG need the following counties to COMPLETE ALL COUNTIES:

Boise IDAHO -- Bureau, Moultrie ILLINOIS -- Benton, Switzerland INDIANA
Monroe, Shelby IOWA -- Harper, Lane KANSAS -- Alpena, Otsego, Sanilac
MICHIGAN -- Chouteau MONTANA -- Rolette N. DAKOTA -- Bailey, Foard TEXAS

Phone (607) 797-7891 after 2100Z weekdays or anytime weekends.

73 John.

COUNTIES TO FINISH A PARTICULAR STATE

WBOVNN Ron

AZ Gila Le Paz Pinal CA Amador Merced Plumas Santa Cruz ME
Androscoggin Aroostook MA Nantucket Suffolk NE Banner Cherry
Otoe Scotts Bluff Sioux NV Mineral NM Catron Grant Hidalgo
Luna Sierra OR Coos Gilliam Malheur Sherman Wasco UT Box Elder

N9DR Dick 217-428-1898

GA Floyd IN Martin k Pike MN Grant MO Stone Wane Wright NE
Gage OK Harmon Haskell SD McCook Miner VA Scott

N1API A1 203-634-0430

NM Catron Roosevelt Valencia NY Allegany Cortlad Franklin
Fulton Madison Naigara TOMPINKS Warren ND Bottineau Burke
Kidder La Moure McIntoh McLean Nelson Renville OR Lincoln
Tillamook SC Cherokee Hampton Oconee

W2PDM Stu 704-495-7736 (COLLECT)

KY Calloway Elliot Estill Garrard Green Jackson Larue
Livingstone Menifee Shelby Woodford MI Isabella Oceana Sanilac
Wexvord MN Big Stone Chippewa Yellow Medicine MS Adams Franklin
MO McDonald Perry MT Lincoln NE Franklin Harlan Stanton

K1Z1T Larry 207-439-1063

OH Clarmont Marion TN lake Pickett TX Kent Upton Hamilon VA
Stafford Taxwell Warren WA Ferry Okanogan Skamania WV Summer

NEW USA-CA HOLDERS

The folloing is the latest additions to the list of USACA AWARD holders;

#520 WA4CHI Bob 09/15/86

#521 NG9L Dick 10/02/86 ALL SSB

73, Dorothy, WB9RCY

***** DISCLAIMER *****

The following disclaimer is a permanent part of the MARAC Newsletter. "Opinions expressed in articles and letters are those of the author, and may not reflect those of the MARAC Newsletter or those of MARAC, Inc."

1986 MARAC County Hunters CW Contest - Results

Call	QTH	QSOs	Pts	Co's	TOTAL	Call	QTH	QSOs	Pts	Co's	TOTAL
MOBILES											
1. \$ K5LZO	58 Tx	2349	3316	467	1,548,572	31. WD4HRN	5 A1	125	145	99	14,355
2. KB5FU	65 (T)	1831	2439	387	943,893	32. W3XE	13 (T)	119	174	69	12,006
3. c KB5FU	37 Ms	1004	1310	248	324,880	33. AA4UX	9 (T)	103	148	72	10,656
4. c NF9K	28 ND	751	927	186	172,422	34. c W7IEU	6 Wa	83	145	69	10,005
5. c KB5FU	17 Ar	568	782	194	151,708	35. c AA4UX	7 Ky	98	137	71	9,727
6. KD9Q	23 (T)	554	710	182	129,220	36. c W3XE	9 Md	100	141	59	8,319
7. NGØT	20 (T)	354	624	196	122,304	37. c WD4HRN	6 Ga	101	115	60	6,900
8. W5WMU	26 Ms	526	663	167	110,721	38. K4UEE	4 Ga	85	93	44	4,092
9. KN7K	26 (T)	524	659	168	110,712	39. c N7CEE	3 Nv	48	96	41	3,936
10. c KN7K	22 Id	468	595	153	91,035	40. c WA2AOG	4 NY	46	100	37	3,700
11. K5MA	24 (T)	320	502	157	78,814	41. N7CEE	1 Az	43	67	37	2,479
12. c WA8ZDT	17 Mi	309	418	156	65,208	42. c W1TEE	3 Ct	38	74	33	2,442
13. c NGØT	15 Co	249	425	147	62,475	43. WB2ABD	4 NY	41	73	33	2,409
14. c KD9Q	15 Mo	338	444	138	61,272	44. N7CEE	5 Ut	40	70	34	2,380
15. AA5Y	21 Tx	315	470	128	60,160	45. K8KIR	18 Mi	42	74	32	2,368
16. c N4IV	19 NC	283	396	141	55,836	46. c K5MA	5 RI	48	29	72	2,088
17. W7GHT	23 (T)	268	358	138	49,404	47. c WD9GSU	4 IL	32	58	29	1,682
18. W7GHT	22 Id	264	354	137	48,498	48. KB5FU	2 Tx	37	49	32	1,569
19. K5OUK	21 Tx	242	379	122	46,238	49. c K8CW	3 Oh	41	47	31	1,457
20. c K5MA	12 Ma	225	355	125	44,375	50. c KN7K	3 Mt	41	49	24	1,176
21. K4UEE	9 (T)	259	321	122	39,162	51. K5MA	4 NH	30	46	24	1,104
22. WD4HRN	11 (T)	226	260	139	36,140	52. KU2Q	4 NY	35	54	20	1,080
23. K5NA	15 (T)	238	293	123	36,039	53. K5NA	1 NY	19	29	17	493
24. c KB5FU	9 La	222	298	115	34,270	54. K5MA	3 Vt.	17	29	13	377
25. WØIZV	13 Co	148	264	109	28,776	55. K5NA	Can.	12	28	12	336
26. c KD9Q	8 Ia	216	266	98	26,068	56. KN7K	1 Nv	15	15	13	195
27. c K5NA	14 Vt	197	236	107	25,252	57. W3XE	2 Va	11	15	9	135
28. c K4UEE	5 A1	174	228	105	23,940	58. W3XE	2 De	8	18	7	126
29. N7CEE	9 (T)	131	233	95	22,135	59. AA4UX	2 Oh	5	11	5	55
30. c NGØT	5 Ut	105	199	80	15,920	60. W7GHT	1 Wa	4	4	3	12
						61. K8OOK	1 Mi	2	2	2	4

PORTABLES											
1. \$ W7YS	2 (T)	363	751	290	217,790	5. c N7CEE	3 Nv	43	69	40	2,760
2. c NU4O	9 Ky	509	718	239	171,602	6. c NØFFZ	1 Co	34	70	33	2,310
3. c W5OBT	2 NM	101	146	74	10,804	7. W6TVP	6 Nv	35	69	32	2,208
4. W6TVP	7 (T)	55	103	49	5,047	8. W6TVP	1 Ut	20	34	20	680

FIXED											
1. \$ K5ZD	Ma	960	2205	693	1,528,065	16. K7EQ	Ca	296	752	258	194,016
2. c AI9X	NM	872	1988	639	1,270,332	17. c W3ARK	Pa	255	621	238	147,798
3. c N7TT	Wa	727	1798	572	1,028,456	18. c K2SX	NY	300	638	218	139,084
4. c KS7T	Mt	657	1405	478	671,590	19. AK2H	NY	245	579	227	131,433
5. c AA4S	NC	607	1305	460	600,300	20. W2EZ	NY	236	588	212	124,656
6. c K8CW	Oh	528	1366	435	594,210	21. c NG9L	Wi	216	550	200	110,000
7. c WD4SIG	Tn	491	1241	414	513,774	22. WD9CIF	La	209	517	195	100,815
8. c W6CF	Ca	402	1064	374	397,936	23. c NØFMR	Ks	217	497	191	94,927
9. c WC5D	La	434	965	363	350,295	24. c WØFBB	Ne	178	403	171	68,913
10. c W5PWG	Tx	410	906	369	334,314	25. c K8CV	Mi	169	399	162	64,638
11. c K2TE	N	376	972	342	332,424	26. NØCLV	Ks	177	407	158	64,306
12. W6NNV	Ca	315	895	304	272,080	27. c VE3KK	Canada	156	407	148	60,236
13. N5QQ	Tx	307	781	293	228,833	28. WC6I	Ca	172	388	151	58,588
14. c WØUM	Mo	315	787	284	223,508	29. c WØII	Ia	183	356	162	57,672
15. c K2UPD	Ky	335	747	284	212,148	30. c NN7A	Az	175	372	153	56,916

31.	KØDEQ	Mo	155	351	142	49,842	46.	WB3CLW	Pa	71	121	59	7,139
32.	W5VGF	Ca	165	353	139	49,067	47.¢	WD9GSU	Il	44	135	45	6,075
33.	W5NR	Tx	156	325	145	47,125	48.¢	W3GN	Md	60	96	50	4,800
34.	W2CNF	Ma	134	306	126	38,556	49.	K9BG	Il	44	88	45	3,960
35.¢	W1TEE	Ct	120	318	118	37,524	50.	VE6BMX	Canada	28	68	28	1,904
36.¢	VO1QU	Newf.	139	288	128	36,864	51.	KC7YE	Wa	27	47	26	1,222
37.	KA4OVZ	NC	129	298	119	35,462	52.	W2HG	NY	26	48	25	1,200
38.	W2EMW	Tx	125	293	121	35,453	53.¢	OK1APV	Czech.	25	49	24	1,176
39.	KA1CLV	Ma	119	253	103	26,059	54.	W6PRI	Ca	29	53	21	1,113
40.	N4DW	Tx	120	248	101	25,048	55.	JA9YBA	Japan	22	26	21	546
41.¢	WD9BCG	Wi	86	234	85	19,890	56.	DL3DD	FRG	11	23	11	243
42.¢	K4BAM	Va	103	200	88	17,600	57.	KA3GXP	Pa	8	14	8	112
43.	NR8I	Oh	103	189	85	16,065	58.	KU2Q	NY	1	1	1	1
44.	WA2EYA	NY	73	178	71	12,638	59.	W5HNV	Tx	1	1	1	1
45.	AA6EE	Ca	94	122	83	10,126							

\$ = Awarded Plaque ¢ = Awarded State Certificate

(T)= Total score for Mobiles and Portables working from more than one state.

On Mobile and Portable entries, the number after the call sign is the number of Counties activated.

W7YS operated portable from the County/State Line of Apache Az. / Catron NM.

PLANNED MOBILE TRIP

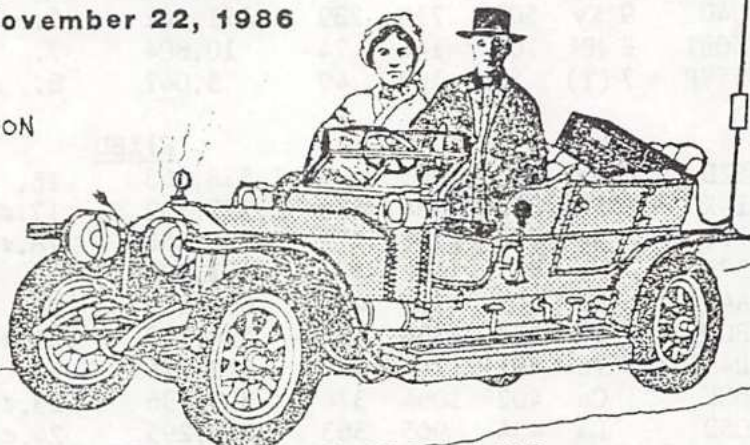
THE UNTEAM

November 22, 1986

WE'RE PLANNING AN AFTERNOON
OUTING TO:

SANTA CLARA
SANTA CRUZ
SAN BENITO
AND MONTEREY
COUNTIES!

20M SSB ± 1800 TO 2300 GMT



SWL-W6 BETTY PEARL
K6HZI FR. TERRY

Judge reduces life sentences of 2 who would not testify

CARLSBAD (AP) — Carlsbad District Judge Harvey Fort has reduced the life sentences he had given two men convicted of contempt of court, but said he disagrees with a state Supreme Court decision ordering him to do so.

Fort had sentenced Roch Y. Pothier and James Edward Cade to life imprisonment for refusing to testify against each other during their trials on charges of murder in the beating death of a Colorado man.

A mistrial was declared and Judge John Walker charged the two men with contempt. Fort presided over the jury trials that found the two guilty of the contempt charges and sentenced them to life in prison.

But the Supreme Court, in a unanimous decision, overturned the sentences in June and sent the men back to Fort for resentencing. Fort Tuesday reduced the prison terms to 18 years.

Fort said that although he

would not defy the high court's order, he did not agree with it.

"I cannot in good conscience do something that allows these two defendants (to go free) on a technicality and commit murders somewhere else, which, in the court's opinion, there is a good chance they may do," Fort said.

Lawyers for Pothier and Cade, both of Canada, said they are seeking dismissal of the murder charges on the grounds that the court had no right to grant a mistrial in the original proceedings.

The men were arrested Sept. 1, 1984, in connection with the beating death of Michael Mutnick, 39, of Denver. Mutnick's body was found about 15 miles south of Carlsbad.

The men had invoked their Fifth Amendment right against self-incrimination instead of testifying against each other in their separate trials before Walker. The state had offered them "use

immunity," which would have protected them from having their testimony used against them.

The high court, in ordering resentencing, said Fort had overstepped his "broad discretion" in contempt cases.

"The purpose of this criminal contempt proceeding is not to make defendants testify," Chief Justice William Riordan said. "They are being punished to vindicate the authority and dignity of the court."

"However, to uphold the dignity of the court, we believe life imprisonment is clearly excessive and against all reason."

Fort said he would further reduce the two men's sentences to two years each if they changed their minds and testified against each other.

He also said the men would serve out their terms at the Eddy County Jail instead of being returned to the state penitentiary.

For the benefit of those who may not be familiar with this situation: On Aug. 31, 1984, Mike Mutnick, KVØE, left Denver, CO on a planned county hunting trip through NM and West Texas. He picked up two young hitchhikers, 17 and 18 years old, who were arrested during the early morning on Sept. 1 driving Mike's car. They were charged with murder, conspiracy, and theft of an auto. The first trial, in March, 1985, was declared a mistrial as indicated above. I have confirmed that a new trial is now scheduled for Nov. 13-14, 1986, in Carlsbad, NM and I am again to be issued a subpoena to testify. When more information is available, I will provide an update.

I have all logs of KVØE. If anyone has unconfirmed QSO's, please send MRC's direct or through the QSL Bureau.

Buster NØCKC

From W9ZD

I came across this little known accessory that is available at GM Dealer's parts departments.

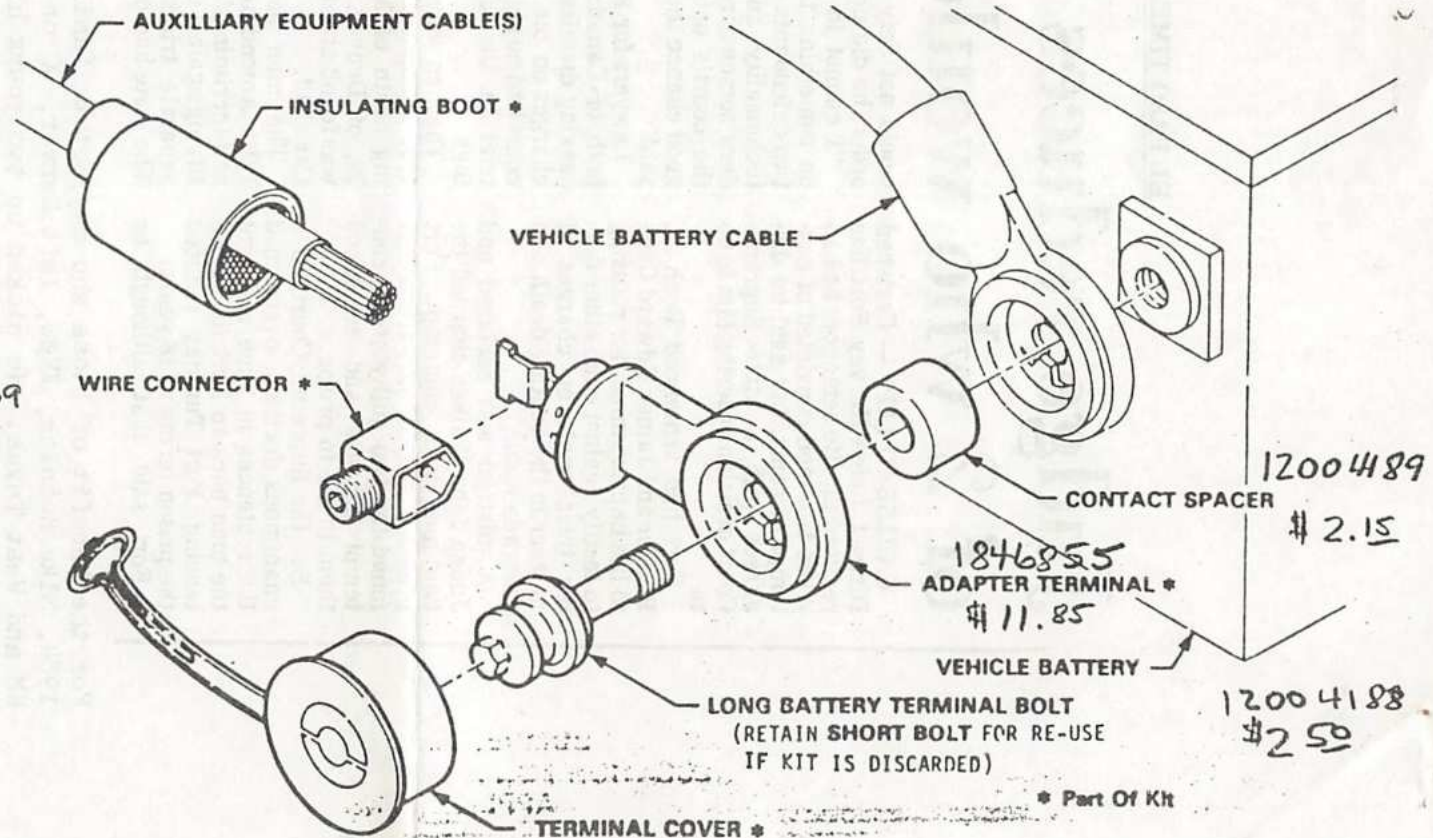
It was in the manual for installing mobile telephones and other radio equipment

Thought you might want to advise the MARAC members that this is available and makes the connection to the battery a lot easier than trying to squeeze a wire onto the battery terminal.

Regards, Lou Wenisch W9ZD

Auxilliary Electrical Equipment GM Recommended Installation

AC-Delco Side Terminal Adaptor
Package 1846855, when com-
bined with the longer battery bolt
12004188 and spacer 12004189
will provide the simple, tight, cor-
rosion resistant connection
illustrated.



MEMBERS SPEAK!!

Well, it's been a long time since I attained USA-CA #112 back in 1973. Recently my interest has been renewed, and it's nice to hear a lot of familiar calls, and have a lot of the stations still remember me. I have decided to go ahead and try for 2nd time around, but it will be more difficult this time, since I'll only be on evenings and weekends. One of the things that has held me up the last few years is the enormous amount of paperwork associated with the USA-CA. I have been working on some computer software for the IBM-PC and compatibilities that will help with the logging. If anyone out there is interested in what I'm doing in this area, just drop me an SASE and I will let you know. I look forward to hearing all of you on the net, a trying for another go around. Happy hunting to everyone. ND

Sincerely, and 73,

Rich
Richard L. Brocaw, K5VYT

The COUNTY LINE ROADRUNNER is a monthly publication of the Mobile Amateur Radio Awards Club, Inc. (MARAC). MARAC's stated purpose is to promote mobile amateur radio efficiency and portable operation: recognize and award outstanding accomplishments in amateur radio with emphasis on mobile operation, both phone and cw and to promote good will and fraternalism among amateurs. MARAC also serves as the communication and social arm of the county hunters. The newsletter Editor is KOAYO, Bob Dyson 8943 S Overhill Circle, De Soto Ks. 66018.

Current MARAC dues and membership information can be obtained from the Secretary, WBOUPU, Wm Olsen 221 Ogden Ct, St Paul, Mn 55119. All information for inclusion in THE COUNTY LINE ROADRUNNER should be in the Editor's hands prior to the 20th of the month preceeding publication. All articles are subject to being edited to fit the space available and are printed at the discretion of the Editor. Items in THE COUNTY LINE ROADRUNNER may be copied, provided credit is given.

Traveling to Canada?

If you're traveling to Canada, you must have your original FCC license with you. If you have any problems, ask a customs officer to refer to Memoranda D2-1-1 and D19-4-2. These will remind the officer your license is valid and your equipment entering as personal luggage. Beaver Valley ARA, Darlington, PA

NiCds NiCds NiCds

A few years ago when I obtained my first and only hand held 2 meter F. M. transceiver, a Santeo ST 144, I did not think I would use it all that much, in fact I questioned my sanity. After all, how do you send and receive CW on a box like that? At any rate, I bought it and was content with the little trickle charger that came with it since the manufacturer claimed that the NiCd battery could be recharged in about 16 hours. The Santeo uses 8 "AA" size NiCd cells wired in series rated at 9.6 volts (no load) and capable of 500 mah. The 16 hour recharge penalty did not seem all that bad and this arrangement seemingly worked OK for several years. Incorporated within the liquid display is a "BATT" indicator which begins to flash when the battery voltage drops below a predetermined value. Ideally, NiCds should be discharged to near zero capacity and then fully recharged to 100% capacity, thus no "memory" is likely to develop.--"Memory" is a loss of capacity and is often characteristic of NiCd cells if the full discharge-charge procedure is not followed. In other words, the capacity of the battery keeps getting smaller and smaller. Well, anyway, this trickle charging method seemed to work OK for several years until late this winter I began to observe that the "BATT" indicator would begin to flash soon after the charger was removed. At first I thought the indicator circuitry went bad. A few tests proved that the trouble was that the NiCds were not being fully charged. The little charger is rated at 12 volts at about 50 ma. Since open cell voltage is only 1.2 volts per cell, the 12 volt charger would only raise it to an average of 1.5 volts, and evidently as the cells aged, this simply was not high enough to drive enough current thru the cells to achieve a fully charged battery.

A short time later I happened to visit one of the local radio emporiums in connection with viewing a new product line. While there, I happened to mention this battery problem to a representative of that establishment. I was told in an authoritative manner that I had a defective NiCd pack and that for only \$38 plus tax he could solve my problem. Well, \$38 sounds high for a battery pack even months later. So I thanked him, and deferred purchase at least for the time being. When I got home, I recalled a QST article on a NiCd power charger. A little hunting and I found it in the December 1982 issue. I ended up buying the author's circuit board and assembled the charger. It is simple to use, just apply 12 to 30 volt DC into it and your battery pack to its output and in a few hours you have a fully recharged battery pack. When first connected, the charger will put out 500 or more MA and as the voltage builds up in the pack, the charger begins to reduce output until at end of charge there is only a few Ma trickle charging. Thus you achieve a rapid charge but with no danger of over charge and the resultant damaging heating and cell venting.

If you are into NiCd batteries and are looking for long term battery life I suggest you explore the charger as described by AA6PZ in the QST article.

The guy in the radio store? I haven't had the need for a return visit, but I'd guess he is still waiting with a replacement NiCd pack in his hand.

A Ground is a ground: WRONG!!

Joe Myers, KD4A

I recently saw a series of articles in a radio industry trade magazine which had all of the often-seen wisdom about antenna lightning protection. We should all take steps to protect our antennas, house, and equipment from lightning. But there are a lot of details in the "how-to" that would be easy to miss. These fine points that are not always thought of were what impressed me about these articles. I will try to list most of the major points from the series. For those of you interested in more details, the articles appeared in the September 1984, December 1984, and May 1985 issues of Mobile Radio Technology.

1. If a tower is over 150 feet high, even side-mounted antennas are subject to direct lightning hits.
2. Side-mounted antennas can be protected by extending horizontal rods out from the tower above and below the antenna.
3. The higher the point on the tower where the coax leaves the tower going toward the equipment, the higher the voltage will be which is induced on the coax due to lightning.
4. Shunt fed antennas on towers do not protect ground mounted equipment.
5. Guyed towers with properly grounded guys will reduce lightning vulnerability, since they lower the tower inductance.
6. The coax shield should be

grounded at the base of the tower.

7. The ground conductor should enter the ground as close to the base of the tower as possible, with no sharp bends.

8. The quality of a ground is determined by the inductance in addition to the DC resistance of the ground path.

9. Solid wire or straps should be used instead of braid or stranded wire. (Braid and stranded wire should have high mutual inductance.)

10. Dissimilar metals should not be placed in contact with each other; especially copper and galvanized steel.

11. Rust on a ground rod can be tolerated, but not on connections. Corrosion, even on the ground rod, must be avoided. Do not place chemicals around ground rods to increase soil conductivity. Most any chemical used will only temporarily improve conductivity, but will cause corrosion which will do more harm than good.

12. Only the first 5 to 10 feet of a ground rod is effective. So multiple, shorter ground rods are more effective than one long one.

13. Buried radials of bare wire make a good ground system, either alone or in conjunction with ground rods.

14. One ground rod at the base of a tower in poor conductive soil is not adequate. (A single 3 foot ground rod in 1000 ohms per meter soil could yield an effective ground of only 765 ohms.)

15. An adequate ground should be no more than 10 to 50 ohms.

16. A second ground rod placed at least five feet from the first will reduce the ground resistance by almost 40.

— From *Open Wire Telephone Pioneer* ARC, of Alabama. □

Pass it on . . . WORLD RADIO

TELEPHONE INTERFERENCE caused by RF can be eliminated, in most cases, by installing 2.5 mh. 75 ma. choke in series with each of the phone lines. The choke must be installed inside the phone or very near it to be effective. A very good art "Stopping Telephone Interference" appeared on page 46 of March 1968 QST.

WBØFBY

The County Line Road Runner



PUBLISHED BY MOBILE AMATEUR RADIO AWARDS CLUB, INC.

THE COUNTY LINE ROAD RUNNER

Editor, R. Dyson, K0AYO
8943 S. Overhill Circle
De Soto, KS 66018

Member



1764 NODRX 0387 F
SHELDON MANN
1618 WEST PINE ST
STILLWATER, MN 55082

A ROAD RUNNER IS A
VERY FAST BIRD!!