

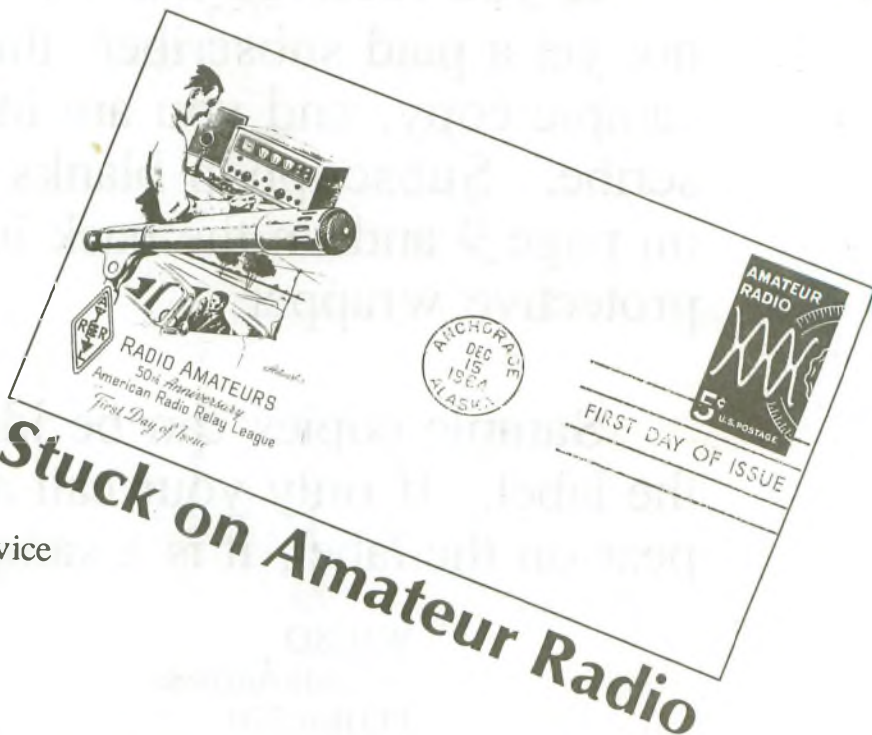
Worldradio

Year 20, Issue 11

May 1991 • \$1.25

FEATURES

- A funny thing happened on the way to Saudi Arabia
- Colvin update
- Hams beware — May lose additional bandspace
- My Three Sons
- Radio rescues — *Talaria* (2nd of 2 parts)
- Reflections of an Emergency Coordinator
- Stuck on Amateur Radio
- VP2MO knighted for Hugo service



COLUMNS

- Aerials — Mobile antennas
- Amateur Hi — Mike Flaherty, WA6UBW
- Amateur Satellites — KO5I interview
- Amsat-Oscar schedule — June schedule
- Contests — FL, MI, NV QSO; MARAC County Hunters CW
- County Hunting — Why?; USA-CA award; Net; Contests
- Digital Bus — Traffic handling; "Fire in the Valley"
- DX World — 100N; IOTA; ET; FH; JX; PY0S; TY; 3X; DXCC; QSL information and routes
- FCC Highlights — Packateers; Baxter cited again
- Hamfests — May, June
- MARS — Phone patch etiquette
- Mobile — Hand-held batteries
- New Products — B. A. Fox; Electron Processing; MFJ; Microcraft; Optoelectronics; Smallwood
- Off the Air — Condo zoning dispute; Bootlegger; Morse code — a privilege
- Product review — MFJ-207 HF SWR analyzer
- Propagation — Influences
- QCWA — Board of Directors ballots; W3DM Silent Key; '91 convention; scholarships; Chapter historians; QCWA Journal audio tape
- Search & Rescue — Simplify communications, paperwork; leadership responsibilities; breakdown J-Pole; Grab & Go bag
- Special Events
- Station Appearance — Gary Pierson, WW7Q
- 10-10 — Convention; Scholarships; 4th District director change; New OM/XYL award; Membership status
- Traffic — MARS; PSHR; 80M Novice band; traffic handling; ARL sixty-seven: Packet; MD/SC; packateer comments
- VE Exams — May & June
- Who's Who — Sandi & Fried Heyn, WA6WZN & WA6WZO

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Stuck on Amateur Radio

LENORE JENSEN, W6NAZ

One of the myriad ham radio activities of Sandi, WA6WZN, and Fried, WA6WZO, Heyn is their collecting special issue stamps honoring Amateur Radio. At the ARRL southwest-ern conventions you are apt to see their display.

"We're not philatelists," Fried explains, "but part of the fun, we have discovered, is learning a little about stamp collecting; it's like searching for rare DX. We first became interested when a math student of mine gave me a present of a nicely framed block of the United States issue honoring Amateur Radio on the 50th anniversary of the American Radio Relay League (ARRL)—December 15, 1964. We now have about 4,000 of these five-cent stamps.

"Also, on my first trip to ARRL headquarters as a new Vice Director, I was intrigued with the display of worldwide stamps by the then ARRL president, beloved Vic Clark, W4KFC. There are now 31 countries that have issued a total of 50 'pure Amateur Radio postage stamps.'

"That does not include Norfolk Island, which has a set of three new ones this year. While finding all the stamps is not easy, most of them go for less than \$1; the US issue (unused) usually does not cost more than 20¢."

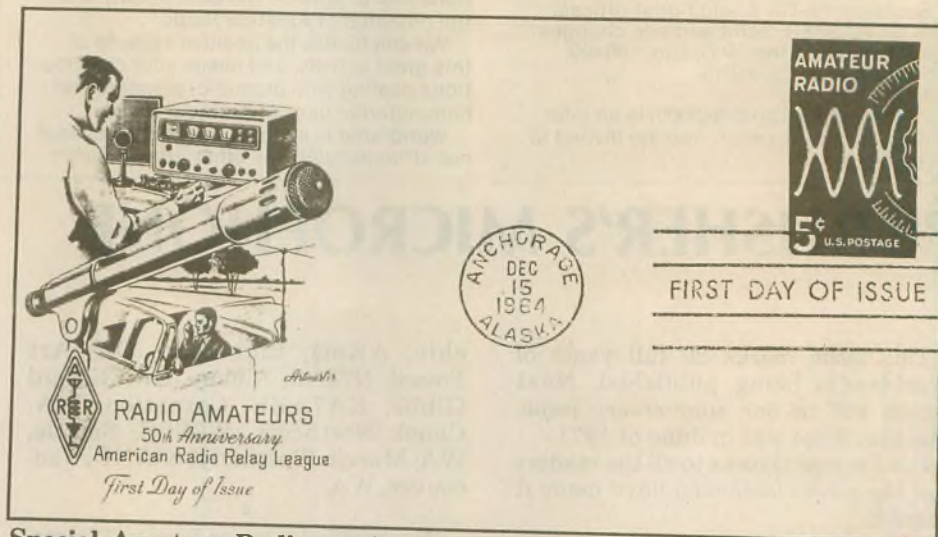
Anyone wishing a copy of WA6WZN/WA6WZO's list of directly related Amateur Radio stamps should

send them an SASE at 962 Cheyenne, Costa Mesa, CA 92626. In order to purchase any, they suggest an SASE for his price list to Phil Sager, WB4FDT, 411 S. Sparta, Ruston, LA 71270.

Also, local stamp stores, shows, organizations and various publications are most helpful. There is even a

tions, as well as stationery and post cards. We recommend finding the 1988 November and December issues of CQ, in which the column, "Bill's Basics," by Bill Welsh, W6DDB, is devoted to the whole subject."

Fried is in his eighth year serving as ARRL Southwestern Division Director, and his friends marvel how he and Sandi manage to find the time for their many, many ham radio activities. (please turn to page 6)



Special Amateur Radio stationery and envelopes, even special cancellations are available as well as loose stamps.

magazine, *Ham-Stamps*, put out by Manfred Bussemer, DL4UE.

Sandi notes, "Like looking for new awards in DX, you can easily expand your collecting into related areas. In addition to loose stamps, there are special items such as envelopes with different cachets and special cancella-

CONTENTS

FEATURES

Out of Africa—the Colvins return from DXpedition — 7
Radio rescues — *Talaria* (conclusion) — 10

Reflections of an Emergency Coordinator — 16
Stuck on Amateur Radio (Who's Who) — 3

COLUMNS

Advertisers' Index — 67
Aerials — 54
Amateur Hi — 19
Amateur Radio Call Signs — 8
Amateur Satellites — 48
Contests — 58
County Hunter — 24
Digital Bus — 27
DX Prediction — 33
DX World — 30
FCC Highlights — 8
Hamfests — 56
MARS — 43
MART Classifieds — 65
Mobile — 36
10-10 International News — 47

New Products — 60
Off the Air — 22
Product Review — 20
Propagation — 38
Publisher's Microphone — 4
QCWA — 42
QRP — 50
SAR Communications — 40
Special Events — 18
Station Appearance — 19
Traffic — 52
VE Exams — 62
When will AMSAT OSCAR-13 be in range? — 64
Who's Who — 3

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PUBLISHER'S MICROPHONE

This issue marks 20 full years of
Worldradio being published. Next
month will be our anniversary issue.
The first issue was in June of 1971.

Our deepest thanks to all the readers
and the advertisers who have made it
possible.

Here's a listing of the ultra-
brights—the latest to become **World-
radio Super-Boosters** (Lifetime Sub-
scribers). Read this list carefully.
Should there be any from your area,
render them the respect due at the next
club meeting.

Scott Maurice, N4KNW, Monroe,
MI, who is now known as EL2MS, get-
ting his mail at Addis Ababa while
looking out for our interests with the
DoS; Dave Buda, WI2Q, Kearny, NJ;
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K6MLU, Quartz Hill, CA; Cal Cornils,
KI6NY, Napa, CA; Garry Parrish,
AA6GW, Berkeley, CA; Joyce Ginoc-

chio, AK6Q, Richmond, CA; Art
Powell, N7IAR, Albany, OR; Richard
Gibbs, KA7AEF, Carnation, WA;
Chuck Northcutt, W7SRZ, Seattle,
WA; Marvin Weatherly, KL7NU, Van-
couver, WA.

We received a letter from a 72-year-
old K4 (on the air since 1936) who said
we should have a special lifetime rate
for those over 70. We're open for any
comments or ideas.

Also a letter from 90-year-old Marie
Garrison, N5KGC, who spoke of the
"inexpressible joy" that Amateur
Radio brings to her.

There are presently about 105,000
Advanced Class licensees and about
120,000 General Class licensees. When
one considers the great increase in
available spectrum space available to
the Advanced licensees, it is puzzling
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What if (fantasizing) the General ex-
am (there being no Advanced) included
everything that is on today's Advanc-
ed exam. Certainly, practically every-
one would have just kept studying and
taken the enlarged-scope test in order
to become an Amateur. So, do it now.

For those of you who have school-
aged children at home, it would do
them good to see Pop (or Mom) crack-
ing a book.

Marcogram, the bulletin of the Mon-
treal ARC, ran an article about Allied
WWII POWs on Borneo. A British
sergeant converted a civilian's hearing
aid into a radio receiver. A hand-driven
generator was built from whatever
could be scrounged in the prison. How
many of us could do that today?

QRPers Robin Ford, NI9R, and
Lowell Corbin, KD8FR, just got mar-
ried at East Lansing, MI. They will be
at the Dayton Hamvention. (Will you
be at this most spectacular event? As
usual, **Worldradio** will be there with a
contingent of five.) See you there!

Harold Collins, Chief, USAF MARS,
wrote in about our article about
Mildred O'Brien, W6HTS, AFA6QT,
and said, "She is one super lady and we
are very proud of her."

The many MARS (Desert Storm
related) articles appearing in the news-
papers may pique some interest among
prospective Amateurs. The question
remains, as always, "how will they find
us?"

While the iron is hot, clubs should
send notices or articles to their local
newspapers about licensing classes.
Suggest to your local media (including
TV) a picture story of students (of all
ages) learning about Amateur Radio.

—Armond, N6WR

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FT-6200

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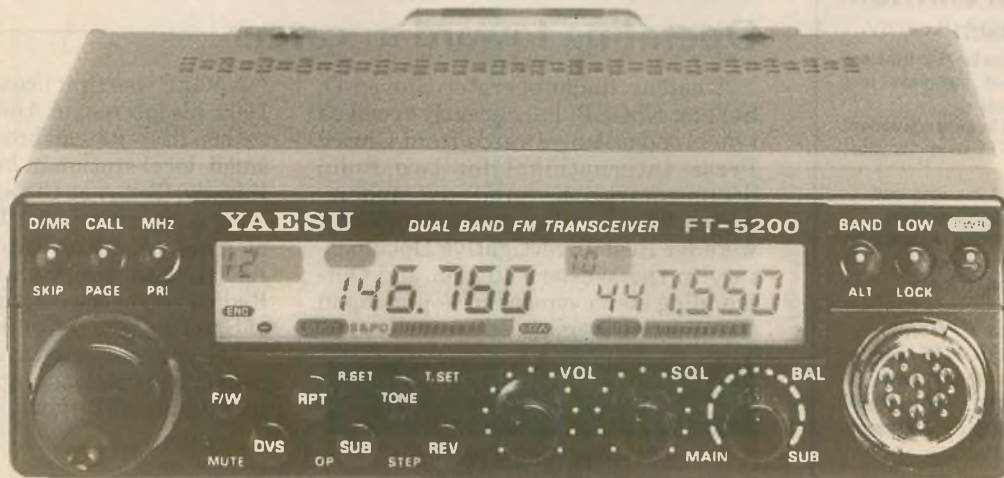
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Dimensions (WHD): 5¹/₈ x 1¹/₂ x 5¹/₁₆ in. (w/o knob)

Weight (approx.): 2 lbs. 3 oz.



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Stuck

(continued from page 3)

They've been married 30 years, living in Orange County about 50 miles from mid-Los Angeles. Distance has never deterred them from attending countless various club meetings, such as those of the Los Angeles Area Council of Amateur Radio Clubs, of which Sandi is currently Vice Chairman.

Each has held offices in nearly every club they've joined—enthusiastically taking on much responsibility. Sandi is now the editor for the Orange County Council, of which they've both served as Chairman. She's been national President of YLRL, and they've both been the ARRL Section Manager of the Orange Section, which includes four counties. There's not enough space to list all their clubs!

Their introduction to Amateur Radio occurred in 1973 when Sandi worked as an electronics technician for Collins Radio (later to become Rockwell) and noticed a friend, Geraldine Cooper, WA6QFO, reading *QST*. Ere long, Sandi and Fried earned their Novice tickets; now both are Extra Class.

Their daughter, Margret, is N6KFC. All three are life members of ARRL.

They've earned many honors for



Sandi, WA6WZN, and Fried Heyn, WA6WZO.

public service work, both have DXCC and Fried is on its Honor Roll. The home station works 160M to 1.2 GHz and the towers holding antennas reach 85 feet.

"We have slow scan, RTTY, ATV and packet radio; we don't claim to be experts in anything, but we do thoroughly enjoy operating when time is available."

Their telephone rings a lot due to his heavy responsibilities as a director, work which he takes very seriously. There are many necessary trips to Newington, Connecticut, for directors' meetings. He goes laden with collected opinions and suggestions from the thousands of ARRL members in his



Fried and Sandi are two heavily involved Amateurs.

division, as do all directors.

Why do Sandi and Fried take on so much, attending so many club meet-

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9130	30 meters	9110	10 meters
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9117	17 meters		

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Operating toward a career

Amateur Radio operator Steven O. Sellers, N5GZP, has recently received two broadcasting awards from United Press International for two radio documentaries he produced and reported. The awards presented to Sellers were for Best Investigative Documentary in the Western Region and Outstanding Achievement in Reporting in the Western Region.

N5GZP was first licensed at age 12 in 1962; his interest in Amateur Radio led to his first job in broadcasting at a small, local station in his hometown of Kenedy, Texas at the age of 15.

Steve is active on 10M, and he is a member of 10-10 International, the ARRL and the Palomar Amateur Radio Club in the North County region of San Diego, California.

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ings, conventions, hamfests, etc? "Because of the wonderful friendships we've made. And because we feel that the Amateur Radio service should stay strong; it is important to our country and must stay that way!"—cover photo of Fried and Sandi Heyn's stamp collection courtesy of Lee Wong, WB6GV, Hacienda Heights, CA. □

Out of Africa—the Colvins return from DXpedition

Dear Friends,

We finished a six-month DXpedition in Africa today (Feb. 17, 1991). All of our operations on this trip were rare countries. To summarize, in the order of operation:

5H0QL (Dar-es-Salaam, Tanzania)—about three active Amateurs in the country; 7Q7KG (Malawi)—no stations in country until just before our arrival; C9QL (Mozambique)—no fully licensed Amateurs for 15 years before our arrival; ZS9/W6KG (Walvis Bay)—only two active Amateur stations upon our arrival; 9U5QL (Burundi)—no active stations several years before our arrival.

We made several side trips to countries where either time, fighting or non-availability of licenses prevented operation. These were The Congo, Zaire, Rwanda and Uganda.

All this made us very much wanted by hams worldwide. The pile-ups were enormous, but we enjoy them and have learned on both phone and CW to copy stations with many others calling on top of them.

We made a total of nearly 40,000 QSOs, and our half-year operation was a great success. Our list of countries visited now totals 218. We qualified for DXCC in more than half of these countries. 73 es 88 Lloyd, W6KG, and Iris, Q6QL, Colvin. □



I THOUGHT HERB'S TOWER WAS TALLER THAN THAT?

Field Day - 1991

The last full weekend in June (28, 29 and 30) is the annual ARRL sponsored Field Day. Don't miss it!

Radio Amateurs have been called on for too many real emergencies in recent years—and have performed admirably. But, it's the constant practice of setting up and operating emergency portable stations that keeps all of us ready to help when we are called. □

(Pure) Amateur Radio postage stamps as of 1990 per WA6WZN and WA6WZO

country	Scott #	year
Argentina	1287	1980
Ascension Island	303(+303A)	1982
Bolivia	638	1979
Brazil	1533	1977
Bulgaria	3207	1986
Chile	D631	1982
Colombia	813	1973
	C735	1983
Costa Rica	C633	1975
	C634	1975
	C635	1975
Czechoslovakia	910	1959
Djibouti	528	1981
Dominican Republic	773	1976
	C246	1976
	C286	1979
	C320	1980
East Germany	1391	1972
Israel	964	1987
Japan	1312	1977
Jordan	1156	1983
	1157	1983
	1158	1983
	1159	1983
	1160	1983
Jugoslavia	809	1966
Liberia	1061	1987
	1062	1987
	1063	1987
	1064	1987
Luxembourg	767	1987
New Caledonia	C211	1987
Nicaragua	1296	1983
	1297	1983
Oman	306	1987
Peru	860	1985
Poland	993(993A)	1961
	2088	1975
Romania	2013	1968
Russia	4084	1973
	4733	1979
	4917	1981
San Marino	1051	1983
Solomon Islands	512(512A?)	1983
Sri Lanka	655	1983
Switzerland	679	1979
USA	1260	1964
Uruguay	1157	1984
Venezuela	1323	1983
Norfolk Island	?	1991

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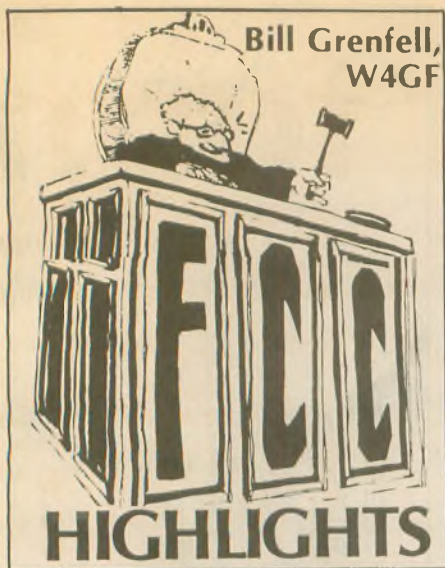
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In an event that even captured the interest of the *New York Times* (02/14/91), the FCC's Norfolk, Virginia, office cited 11 Amateur packet operators for violation of the Part 97 restrictions against business communications. They are alleged to have transmitted a message from an anti-war organization. Three of the 11 received letters that are equivalent to notices of violation, according to the Norfolk Engineer in Charge (EIC), Jerry Freeman. He investigated a legitimate complaint and found that the complaint was correct. The engineer also said he is not on a hunt for violative packet operations, but added

that with the new no-code Technician license, many new people will be getting into ham radio—another reason why Amateurs will have to "... clean up their act." According to AMSAT President Emeritus Tom Clark, W3IWI, the citations "... may well spell the end to much of Amateur packet radio." Clark was one of those cited by the FCC. He described the FCC's "demand" for a response within 10 days as "chilling."

This appears to be the first time that the Commission has enforced the rules against operators of packet stations who retransmitted an allegedly violative bulletin that originated at another station. A debate has raged for years over whether operators of intermediate stations in a packet network should be held responsible for compliance of messages they transmit. The FCC, however, has steadfastly maintained that each Amateur operator is responsible for complying with Part 97. The letter sent by Freeman to the several Amateurs, dated Jan. 25, 1991 said, "I have received a report that indicates that you may have operated your Amateur Radio station in violation of Section 97.113(a) of the Commission's Rules. It appears that you used the Amateur Radio Service to facilitate the business activity of The Coalition to Stop US Intervention in the Middle East."

EIC Freeman's \$300 forfeiture notices were reported to have been sent to the licensees of Amateur stations N4HOG, WB0TAX, WA4ONG, WA3ZNW, KA3CNT and WA3TSW,

as well as N3LA and WA3QNS. The packet message (the transmission of which caused issuance of the violation notices) asked readers to call a 900 number or business office or FAX numbers to voice their opinion about the Persian Gulf crisis. Of course, 900 numbers generate revenue for the provider of the number. The packet message did not mention the \$10 fee assessed by the phone company against callers of the 900 number. (*W5YI Report*, 2/1/91)

International Amateur Radio Network (IARN) founder Glenn Baxter, K1MAN, has again been cited by the FCC for alleged violations of Part 97. Although several other Amateurs have been cited and fined for violative operations on the HF bands, Baxter's \$3,400 fine total now registers the highest dollar amount. Baxter contends the FCC does not have the authority to levy fines with only Notices of Apparent Liability (NAL). Baxter's 45-minute broadcasts are transmitted 44 times a week on 80, 40, 20 and 10M. He has paid none of the forfeitures and has threatened the FCC with a lawsuit. The first violation notice, sent last August, did not carry a fine. It was followed by several NALs, each of which carried monetary forfeitures. In a period extending from September well into January '91, at least seven forfeiture notices were issued for communications concerning business and broadcast activities and at least one for interfering with an on-going exchange of Amateur Radio communications. (*W5YI*, 1/1/91) □

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Amateur Radio Call Signs

Amateur Radio operators often ask the FCC what call signs have been assigned lately. This list shows the last call sign in each group to be assigned for each district, as of March 1, 1991.

For more information about the call sign assignment in the Amateur Radio Service, see Section 97.17(f) of the FCC Rules, or write to the FCC, Consumer Assistance Branch, Gettysburg, PA 17325-7245.

Radio District	Group A	Group B	Group C	Group D
0	Am. Extra	Advanced	Tech./Gen.	Novice
1	AA0DU	KF0PY	N0NBL	KB0IMG
2	WQ1G	KC1ZT	N1INM	KA1YIH
3	AA2DQ	KE2ZX	N2LUS	KB2MJZ
4	WK3I	KD3WA	N3IXS	KA3YNP
5	AC4DL	KN4XB		KC4WKA
6	AA5XE	KI5NX	N5SFY	KB5OZX
7	AB6BI	KK6XE		KC6SFQ
8	AA7HS	KG7NL	N7QKP	KB7MVZ
9	AA8DF	KF8LW	N8NNB	KB8LY
North Mariana Is.	WZ9I	KF9BW	N9KQN	KB9GIH
Guam	AH0K	AH0AH	KH0AN	WH0AAP
Johnston Is.	KH2R	AH2CI	KH2FA	WH2AMU
Midway Is.	AH3D	AH3AD	KH3AE	WH3AAG
Hawaii		AH4AA	KH4AG	WH4AAH
Kure Is.		AH6LA	NH6YI	WH6CLR
American Samoa	AH8D	AH8AE	KH7AA	WH8ABA
Wake Wilkes Peale	AH9A	AH9AD	KH8AI	WH9AAH
Alaska		AL7MV	KH9AE	WL7CBG
Virgin Is.	NP2K	KP2BV	NL7WI	WP2AHG
Puerto Rico		KP4RR	NP2ED	WP4JWL

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Radio rescues—*Talaria*

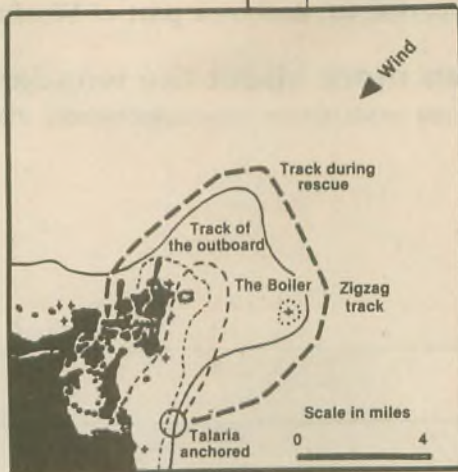
(conclusion)

SONNY IRONS, KA4LEG

Last month we left *Talaria* in a precarious position, barely anchored off a reef with raging 30 ft. seas breaking over her, her mast broken and her propeller jammed. Herb had made contact with *Final Victory* on 7.268 MHz. His wife had a tourniquet on her leg. Though the situation looked hopeless, Herb explained his predicament calmly. But *Final Victory* was 100 nautical miles away.

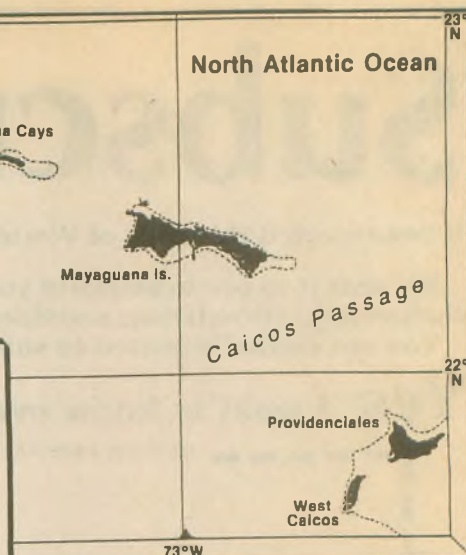
Judy had, during this time, gotten on our other HF radios and contacted Coast Guard Rescue Miami and Bahamas Air Sea Rescue. Both said they were sending help. (We never saw them during the rescue.) We switched to VHF and on channel 16 called South Dock, Providenciales. This was the home of the family of Bob McElvy, (a pilot and the fuel dealer for Provo). Bob had a Twin Apache. We already had *Final Victory* underway from West Caicos to Provo, the longest 12 miles on the ocean. During the sprint, we averaged 11½ knots with seas sounding like a bass drum as they smashed our starboard bow. We filled Bob McElvy in about the *Talaria*, and he said, "Sure," he would fly us to the wreck. He asked how we would get out to the boat after we landed on the road/airstrip?

"We will figure that out on the way," I said. Another voice broke in on channel 16. It was the captain of a sailboat



anchored in Turtle Cove on the north side of Providenciales (I can't remember his name). He heard the radio transmissions on 7.268, 14.313, 8291.1 and WOM. He said he would like to fly with us to the *Talaria*—seems he had seen her in the Virgin Islands. Bob and I said, "Sure, meet us at the airport." He did. I don't think we could have pulled off a successful rescue without him.

Final Victory docked at the South Dock pier. I said good-bye to my wife



After a short trip from West Caicos to Providenciales on *Final Victory*, the author got aboard a private aircraft for the flight to Acklins Island. Once there, he and another sailor went out in a local boat, found *Talaria* and led her to safety.

and children, collected my hack saw, bolt cutter, hammers, vice grips, diving gear and anything else I could think of and headed to the airport with Bob McElvy. We met the sailboat captain and threw our gear into Bob's plane. That plane looked awfully small. I insisted that Bob top off his fuel tanks. He was reluctant. Once before while flying with Bob, we ran out of gas. I didn't want there to be two rescues that day. Bob fueled up.

Airborn—160 knots instead of 10 knots. Hang on, Herb! There were squalls with sunshine in between. Funny weather. Seas were huge, and the surface of the ocean was scudded white foam. We found the spot, but not *Talaria*. I thought, "Oh God, maybe we are too late. Lower—lower, Bob."

Back and forth, lower and lower. There—there she is! *Talaria*'s blue hull and white superstructure was nearly impossible to see, blended right into the ocean. She was about a mile off shore from one of the most dangerous reefs around. Herb saw us and waved.

The next problem was landing. Just inside the reef and on the edge of the shore was a small village. I saw one small boat pulled up on shore. Bob made a pass over the road that also served as an airstrip—goats on one end and pigs on the other. Another pass, just off the ground. Goats and pigs scattered everywhere. The plane was being punched by the cross wind. I don't know what the other captain was thinking for sure, but the look on his face mirrored mine. Another pass and

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just when I thought we might go around again, Bob landed. It wasn't smooth. But it was a landing and the plane looked okay. "Going with us, Bob?"

"No—think I'll handle things on shore, okay?"

The captain and I lugged our gear into the village. Salt-laden air was stinging our faces. We found the owner of the little boat. It was a 15 ft. Chrysler runabout with a 70-HP Johnson. "Runs great!" he told us. We told him about the *Talaria*. He didn't believe us. We walked to the shore, and I pointed in the direction of the wreck. We couldn't see it. The huge breakers and the sea mist blocked our view—that darn blue and white color, too.

Finally, I talked the boat owner into going out to try to help. He kept saying that we were all going to die, and that there was no one out there anyway. We fueled up, stashed our gear, launched and headed up to the north side inside of the reef. I suggested we find a break in the reef to pass through. The boat owner was driving and stared at me for a minute before saying, "There is no break in the reef—you have to go over it." We ran along the inside of the reef just as close as we could and realized that we would never get through the breakers.

"Up by the point. There has to be a break up there!" I yelled.

The boat owner pulled me over to the wheel and said, "Find it."

I pushed that little Chrysler boat up on a plane and, dodging coral heads and swirling water, headed north to the point. Sure enough there was a cut in the reef, maybe 50 feet wide. The seas were breaking there, too, but the bottom was clear of coral. The tide was almost high which meant that the distance of vertical breaking waves was at its shortest point. Low tide, and the distance would be too great to pass.

I counted waves. Threes? Sevens? Nines? Waves run in trains. After a train of large waves, there is a smaller wave. Looked like sevens. Seven more. Yes, *seven*. Everyone count . . . six, seven, GO!

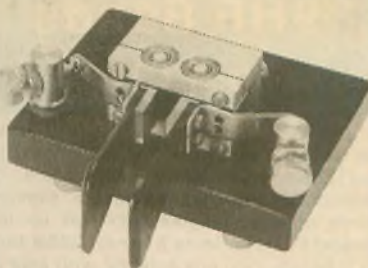
I guess they must have been nines. We were riding out on the returning wave and had to make it out past the breaker zone before the next breaker reared up and crashed. So close! The lit-

tle boat's engine was wide open, dodging coral heads and getting shallower as the water sucked up into the next wave. Then we were going up the face of the largest wave in the ocean. We could see right into that wave—Green death. I thought about Herb's wife—bleeding. Just as the top of the wave broke and crashed down, the little Chrysler boat shot through the top of the wave and into the air. I chopped the throttle back and ended up in a heap of gear and scared-looking crewmen. "We made it!" we all yelled. Grabbing the wheel and controls, we headed in the direction of *Talaria*. We still couldn't see her, and the boat owner was looking at us like we were crazy. I am sure that we all realized that getting out there was lucky, but with the falling tide, we would never get back over that reef. We could only go on. For a moment, I had a feeling that this was my last rescue. We had to keep changing course to miss the largest breaking wave tops. Our heading was to the southeast.

Then, there she was! Her mast was broken and dangling, and waves were breaking right over her deck. No one was to be seen on deck. Coming closer to her stern, we saw one wave throw the boat clear out of the water. Another one punched her deep down under its force. It seemed the boat couldn't survive and no one could be living inside of her. Herb stuck his head out of the companionway. He'd been looking for us, he later said.

We got our 1/2-inch nylon anchor line onto an aft cleat on *Talaria*, and Herb made it secure. A huge wave lifted *Talaria*, then knocked us sideways. Our line snapped. Twice more it snapped. One time it was even doubled up. We had to hold position alongside *Talaria* with our engine. We could see the cable fouling her propeller. The sailboat captain just jumped overboard with my cable cutter and his snorkel gear. He disappeared as he went under *Talaria's* stern. The sailboat was making such violent movements, I thought that the boat would smash him. Shortly he returned, and the cable was cut free. We got him aboard. Good job! I hollered to Herb to start his engine, to put her in gear wide open, and to see if she would make any headway against the wind and seas. He did, but there

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wasn't enough power. The prop came out of the water and churned air. Herb screamed that his last anchor was holding, but the anchor line was fraying.

I had a plan. Even if *Talaria's* engine wasn't strong enough to head straight into the seas, she should be strong enough to tack out (zig-zag into the wind). So I hollered back to Herb, "Cut your anchor line and follow me!" "What?" Herb screamed.

I repeated, "Yes, cut the anchor line," and you could read his face. Cut the only thing keeping them off the reef?

Herb surely trusted me. There he went on his belly, crawling up the starboard deck, diving knife clenched in his teeth and hanging on for his life. Just when he got to the bow, a monster breaking wave crashed down on top of him. He disappeared into the foam. The boat lifted back up, water ran off the deck, and Herb was still there. He slithered on his belly to the anchor windlass. As he grabbed the knife from his teeth, he looked at me. I motioned for him to cut the line. "Cut it—Cut it!" we all shouted. Just as Herb touched the anchor line with his knife, it snapped and sounded like a gun shot. Herb got up and ran through the jumble of broken cables and mast to the cockpit. The next wave pushed *Talaria* all the way around toward the reef. Herb poured on all the power his engine had, and slowly she headed up into the wind—not all the way, but within about 30 degrees. Zig-zag, back and forth. Herb kept his bow right over our stern. The water got deeper and deeper. We finally got off of the sloping shelf that made the waves rear up so high, and I saw that we could clear the Boiler. Herb just followed us all over the ocean. He wasn't going to lose us now. As we rounded the Boiler, we headed downwind along the north coast toward Attwood Harbor. Within an hour, we were through the reef and into the anchorage. We anchored *Talaria* using the small anchor from the Chrysler outboard boat. It was calm in the anchorage so she held fine.

Then we went inside. It didn't look like a boat. It looked as if God had taken that boat in his hands and shaken it to pieces. There was blood on everything, even the cabin ceiling. Herb's wife was just as cool as a

cucumber. She and Herb thanked us, and she said that once we rounded the Boiler, she was able to get the bleeding stopped. Meanwhile, Bob McElvy had the island's nurse come up the road to the anchorage, and we brought her out to *Talaria* where she checked on the wound.

Herb kept saying "thanks," and he gave all the cash he had to the boat owner. He wrote a check for Bob McElvy and his plane and thanked the other sailboat captain and me until we were dizzy. Arrangements were made so that once the weather settled, the sailboat captain would bring his boat over from Providenciales to Attwood Harbor. Then they would make a jury rig and sail together back to the States. That's just what they did.

Bob McElvy flew us neatly back to Provo. Returning to *Final Victory*, I hugged my family, took off my shorts and fell into the bunk.

Judy picked up my shorts and asked, "What is this in your back pocket?"

"I don't know." There was a slightly soggy check from Herb for a thousand dollars. He must have sneaked it into my back pocket as we were leaving.

Epilogue

Two weeks later, I took that thousand dollars and flew back to Fort Lauderdale to get supplies and parts for *Final Victory* and for our bulldozers that we had on West Caicos. We had been waiting for a long time to be able to buy those things.

On a hunch, I stopped by Summerfield's boatyard. *Talaria* had just finished having a new mast and rig installed. Herb was glad to see me. His wife was thrilled. She showed me the terrible scar behind her knee. Looked like it had nearly taken off her leg.

She saw my shock and said, "Sonny, I'm an old lady. It doesn't matter how the scar looks. At least I am alive—thanks to you and your friends."

I said good-bye. The wind was blowing hard again from the northeast. Herb said they were shoving off that night for Boston. "Outside," he said.

"Maybe you should wait until the wind subsides," I cautioned.

"Nope, behind schedule. Got to be in Boston by the 10th!"

See you, Herb. □

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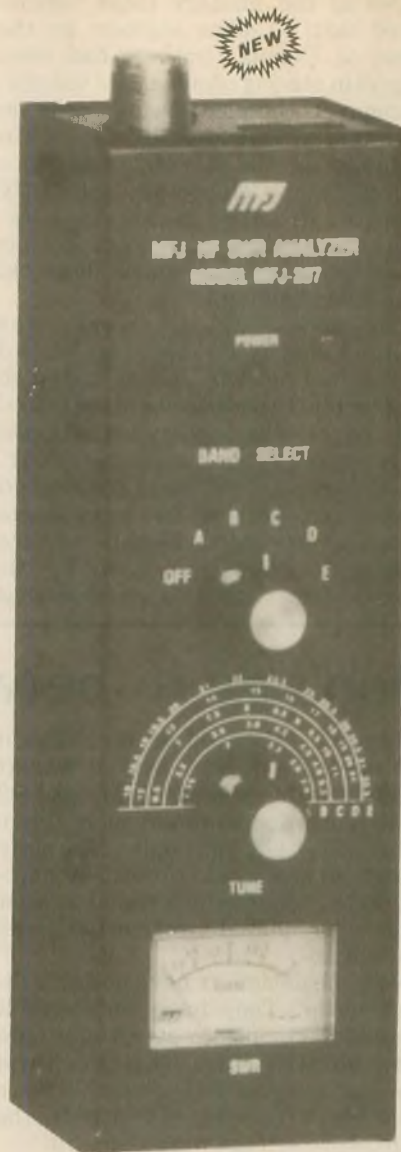
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A Funny thing happened on the way to Saudi Arabia

If you are among the few of us who still get a big kick out of seeing the soft glow of filaments and enjoy the warmth emanating from within the old gray boxes, move over! We have a new fan in our midst: the United States military!

Saddam Hussein is not the only thing acting up in the mideast desert. Some time ago, the military phased out all of its Collins gear, mainly the classic KWM-2A, and purchased brand spanking new Harris solid-state equipment. As an aside, this is the same company which just set up the ARRL Headquarters station in Newington, CT.

Meanwhile, back in the desert, as part of Operation Desert Shield, the military techs were busy erecting support poles and stringing dipoles between them. All was well until the wind blew and the sand flew, resulting in Mother Nature's version of a Van de Graff static electricity generator. Down the coax and into the CMOS and FET front ends of all those nice, shiny, new, store-bought, fresh radios it came. Then . . . silence.

One of the military techs remembered that a Collins engineer by the name of Dennis Brothers had been helpful in solving problems for the government in the past. Dennis, who incidentally was one of the main designers of the KWM-2, had since retired from Collins, and currently operates Western Nebraska Electronics in Potter, Nebraska. Dennis earns his living by keeping those old gray boxes talking.

The saga of the front ends was related to me by Dennis when I called him to find out why it was taking so long for him to perk up one of my prized gray boxes. The military had shipped 24 KWM-2As for refurbishing ASAP. The government still had a few stashed in warehouses that we treasure hunters hadn't as yet found. Dennis tells me that he has now been hired by the Defense Department to travel around

to various bases to teach military personnel the care and feeding secrets of the KWM-2.

For years, scientists have warned about the effects of EMP (electromagnetic pulse) as a result of a nuclear explosion. EMP would almost certainly wipe out the front end of any solid state device. Again, the mighty Collins KWM-2 to the rescue. We have been laughing at the Russian military for years because they continued to use tube-type equipment. Apparently, they have the last laugh in this case.

Red-faced engineers from the designers and manufacturers of the bright, shiny, full-of-bells-and-whistles stuff promise a quick-fix to the sand-wind static electricity problem in the Saudi desert. Meanwhile, the late Art Collins is surely smiling down from the great Ham Shack in the Sky. So are the rest of us, who have always believed that "real radios glow in the dark." —*Jim White, W0NJB, in Watts Snoo, Central Wisconsin Radio Amateurs, Stevens Point, WI, via Bob Baird, W9NN; reprinted from Badger State Smoke Signals, January 1991.* □

Don't do it because it won't work

Remember the good old days when, if you needed a dummy load, it was as handy as the nearest light socket? Well, that won't work any more. Transistors don't like light bulbs. The early transistor rigs would protest by burning up the finals (which would at least made your billfold swear never to do that again).

Now the designers have gotten a little smarter. They have added SWR protection circuits to detect anything above an SWR of 2:1. This circuit will then cut the drive to the finals back to a point where the power dissipated in the transistors will not burn them up.

Now see what happens when you try to use a light bulb as a dummy load. The SWR protection sees the cold fila-

ment of the light bulb as a dead short with a very large SWR. The SWR protection sees this large SWR and cuts back the drive to the final transistors to the minimum and you don't get enough power out to light the light bulb. The light bulb filament never gets any hotter and the filament resistance stays at zero.

You could easily convince yourself that your rig isn't capable of any output and the finals are zapped. This is usually not the case because as soon as you connect the rig to a 50 ohm load, the SWR protection circuit allows full drive to be sent to the finals and you're back in business. —*Jim, KD3S, Maryland Radio Center Newsletter, Jan. 1990.* □

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My three sons

CRAIG A. PRICE, N7KME

In response to Worldradio's February issue article entitled "Seven Year Old Technician," I'm writing to say that this is not the only young lad to have upgraded to Technician while still seven years old.

My three sons, Chris, KB7JKT; Matt, KB7JKU; and Geoff, KB7JKS, all hold Technician Class licenses. They each received their Novice tickets in January of 1990. Chris upgraded to Technician in February and Matt and Geoff upgraded in March of 1990. At the time of their upgrades, Chris was 12 years old, Matt was 11, and Geoff was seven.

The decision to upgrade was made easier for the boys when my wife and I told them that they could each have their own 2M hand-held when they made it to Technician. I learned a very expensive lesson those two months; never underestimate motivated children.

Geoff is now eight and has no immediate plans to upgrade. He had a difficult time with the code and 13 wpm is not on his agenda yet. The other two boys, however, are making overtures toward General Class. (No, I will not buy them their own HF stations when they upgrade.)

These seven-year-olds are the beginning, I feel, of an elite group of hams. Being a ham at seven is remarkable enough, but to have upgraded beyond Novice while seven . . . what next? Also bear in mind that if these kids stick with Amateur Radio long enough, they

will be eligible for the QCWA when they are only 32 years old!

My sons have decided to keep their calls since they are consecutive, KB7JKS, KB7JKT, and KB7JKU and, after all, like Geoff says, "It's Just Kids' Stuff." □



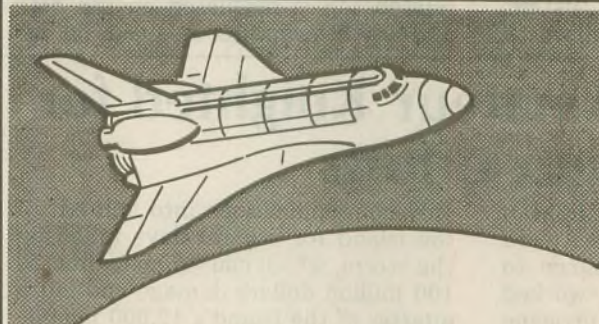
The Price sons (left to right): Matt, KB7JKU; Geoff, KB7JKS; and Chris, KB7JKT. All hold Technician Class licenses.

Keep those library books up-to-date

Is your club one of the many ARRL affiliated clubs that have donated a set of ARRL publications to your local library in recent years? If so, we commend you for your efforts. As a reminder, however, please replace the old, outdated ARRL books in libraries with new ones.

This is especially important for training-oriented titles, because the shelf life is contingent upon scheduled changes in the examination question pool. Also, for example, a *Tune in the World* published before mid 1987 does not cover Novice Enhancement. This may cause a problem for an unsuspecting newcomer studying on his or her own. — ARRL Field Forum □

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Reflections of an Emergency Coordinator

JEAN PRIESTLEY, KA2YKN

What drives a person to take on responsibilities with no weekly paycheck, where you pay your own expenses and have none of the usual benefits? A select few know the answer to this question and will even answer "many reasons." Others cannot fathom why we do it. Why do I do it? I can answer that question by simply stating that I feel there is a pressing need, but it goes much deeper. When I was just seven years old our home was nearly lost to a fire. The memories of that night will live with me forever. There are, I'm sure, other incidents that played a part also. What I do know is that I felt a very strong need to organize a group of dedicated hams to help people. Two years ago someone had enough faith to appoint me Emergency Coordinator for Camden County and I, in turn, believe in those who work with me.

As a new Emergency Coordinator, most situations, of course, were unfamiliar but there was always a seasoned ham willing to offer advice. I credit K2QWQ and K2QIJ with much of my training for this job. I also have the expert technical assistance of my husband, N2HQL, who is Assistant Emergency Coordinator. It is all worth

the effort when I see the smiles on the faces of the people we are out there to protect. Many even stop to say "thank-you." This makes it a full and rewarding part of my life. The bottom line is a very special pride I feel for the work that is accomplished through ARES activities and those loyal and dedicated members of CCARES, as well as many other ARES groups.

The first months of the new Camden County Amateur Radio Emergency Service were slow but progressive and fruitful. Never once did I doubt that we would be a solid organization. I just didn't think in those terms. I saw progress both in terms of growth and interest. Emergency Coordinators don't come prepackaged. We grow and develop with the people who sign on. I don't know everything and I am not ashamed to admit it. But I do know how to seek out the best and employ the talents of the people I have. I strive to know and understand the individual needs and special abilities of my volunteers. This is something you don't get out of a text book.

Although most of our activities and events are fun, we know that any day or night we could be called on to assist in a real emergency. Much of our experience from the events along with the related topics discussed on the nets and any information we glean on our

own will serve to prepare us for whatever type of real emergency we might encounter. We cannot be too prepared. Will you be ready and willing to meet the challenge?

As an Emergency Coordinator, I have worn many hats. I have been pinch hitter, big sister, student, teacher, scout and salesman. In each situation I have gained important experience both for myself and the organization. I look at each situation on its own merits and needs. But we must always be striving to improve and add to our experiences wherever we see a need or an opportunity within ourselves and the organization.

Just as important as experience and dedication is communication. We have to convey our thoughts, feelings and needs to our volunteers and to those we work for so they can better understand what makes us tick. We are only as effective as our ability to communicate.

Reflecting over the last couple of years and now looking back to see what direction to move forward from this point, I realize my life has been enriched by all these experiences. If you are contemplating taking on the job of Emergency Coordinator, consider not that it is time consuming, but rather look forward to the rewards and hidden treasures that will be realized. I have never regretted volunteering and I say very proudly that I am the Emergency Coordinator for Camden County Amateur Radio Emergency Service. □

Montserrat Amateur Knighted for Hurricane Hugo efforts

Errol "Bobbie" Martin, VP2MO, has received the British Empire Award for public service. Martin, known to Amateurs around the world, worked tirelessly during and after Hurricane Hugo struck Montserrat, his home, in September of 1988. He provided the

only communications into and out of the island for several days following the storm, which caused an estimated 100 million dollars damage and left a quarter of the island's 12,000 population homeless.

The BEM award, formerly the Order

of the British Empire, is made to both civilian and military persons for distinguished service. Martin was the only Montserratian to receive the award for service resulting from Hugo. It bestows an honorary knighthood on the recipient, who may then be referred to as "Sir."

But VP2MO would prefer you just call him Bobbie. "It's an honor," he said, "but it doesn't put food on the table."

For more information on Martin and on the island of Montserrat see "A Montserrat Memoir," *QST*, March, 1990, p. 50. —*The ARRL Letter*, Dec. 31, 1990. □

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-Special- Events-

Armed Forces Day

The Pentagon Amateur Radio station, K4AF, will be on the air on May 18 for Armed Forces Day. Operation will be on 80 through 2M; phone, CW and packet. Look for the station on CW, 35 kHz above each lower band edge and 35 kHz above the lower edge of each phone segment.

For a QSL, send your card and an SASE to P.O. box 47063, Washington, DC 20050. For a full-sized certificate, send \$1 for postage and handling to the same address. See you on the air. □

BEMARC 50th Anniversary

The Bayonne Emergency Management Amateur Radio Club will celebrate its 50th anniversary of public service to the community with the operation of special event station W2ODV on the weekend of May 4 and 5. Operation will be conducted in two 12-hour periods: 1200 to 2400 UTC on Saturday, May 4; and 1200 to 2400 UTC on Sunday, May 5. Operation will be on all bands from 80M through 440 MHz, concentrated in the Novice and General Class portions of the bands.

Each club member will operate signing their own call followed by "BEMARC Special Event Station." The club station, W2ODV, will be operated as a multi-operator station. To receive certificate, forward a QSL card and a 9x12 SASE to BEMARC c/o John Anzivino, 236 Pearsall Ave., Jersey City, NJ 07305. □

Driving of the Golden Spike

The Ogden Amateur Radio Club will operate special event station W7STB from Promontory Summit, Utah to commemorate the 122nd anniversary of the driving of the Golden Spike. Operation will take place from 0001Z to 2100Z on May 10. Operation frequency will be one of the following: 3.970, 7.270, 14.280, 21.375 and 28.415 MHz.

Send QSL and SASE to the Ogden Amateur Radio Club, P.O. Box 3353, Ogden, Utah 84409. □

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Centennial Anniversary

The Kings Amateur Radio Club will operate special event station AA6GZ from 1600Z to 2200 Z on May 18 to commemorate Hanford, California's Centennial Anniversary.

Operation is on the General 10, 15 and 20M phone and the Novice portion of 10M.

For certificate, send an SASE to KC6HVE, P.O. Box 548, Armona, CA 93202. □

Trout Days

The Preston, Minnesota Trout Days will be celebrated with special event station KE0UB, commencing at 0001 UTC on May 4 and continuing through 2100 UTC, May 5. Operation frequencies will be the General Class phone portion of 20, 15 and 10M.

County hunters will want to work this Fillmore County, Minnesota station. QSL with an SASE to Trout Days Radio, P.O. Box 213, Preston, MN 55965. □

Still in there

In celebration of his 70 years in Amateur Radio (1921-1991), Leo F. Servary, W4FRL, will operate as a special event station from May 1 through December 31, 1991. Operation will be conducted up 40 MHz—on 40 through 10M, CW only.

QSL to W4FRL, 5620 SW 54th Court, Davie, Florida 33314 (Broward County). □

Railroad Museum's 10th Anniversary

The California State Railroad Museum will operate special event station WB6RVR from the Central Pacific Depot in Old Sacramento from May 3 through May 12, during Railfair '91, to commemorate the museum's 10th anniversary. Operation hours will be 1600Z to 2400Z on the above dates. Suggested frequen-

cies are as follows: phone—7.270, 14.270, 21.370 and 28.370 MHz.

For a commemorative QSL, send your QSL and #10 SASE to California State Railroad Museum, Attn: Steam Trains, 111 I St., Sacramento, CA 95814.

Those stations working both special event stations W7STB (Promontory, Utah) and WB6RVR (Sacramento) during the concurrent operations on May 10th only will be entitled to receive a special certificate to commemorate the 122nd anniversary of the driving of the Golden Spike. For an unfolded special award certificate, send log information from both QSOs and an 8½x11 SASE to the above address. □

Lewis and Clark station

The St. Charles Amateur Radio Club will operate special event station WB0HSI on Saturday, May 18 and Sunday, May 19 from 1300Z to 2100Z as part of the Lewis and Clark Rendezvous. Operation will be on 7.250, 14.250, 21.350, 28.410 and 146.67 as propagation and QRM permit.

For an 8½x11 certificate, send a large SASE to the St. Charles ARC, P.O. Box 1429, St. Charles, MO 63302-1429. □



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STATION APPEARANCE

Gary Pierson, WW7Q

Send Worldradio a picture of your shack and the staff will choose a winner to receive a free one-year subscription! Stations will be judged by neatness (wires tucked away, etc.) and accessibility of equipment. Monetary value of equipment is not a consideration.

Winners will also receive a top quality, Laserjet-printed copy of the DXCC and WAS BeamHeadings list (a \$15.95 value) compliments of Jack Hurray, W8JBU.

The winning nomination for this month is Gary Pierson, WW7Q, of LaConner, CA.

Gary was first licensed in 1965 as WN7EKZ and, 13 months later, was issued the call sign WA7GVM, which

he kept for the next 22 years. In January of 1989 he was issued the call WW7Q.

His primary interests in Amateur Radio have always been DXing and contesting. The size of his station



results from his tendency to hang on to the older radios as new ones replace them.

Gary's station includes from left to right:

Yaesu FT902DM HF transceiver; Dentron 160-10L linear amplifier; MFJ Versa Tuner V (sitting atop the Dentron amp); MFJ Versa Tuner II (sitting atop the MFJ Versa Tuner V); Ameritron AL1200 linear amplifier; Dentron W-2 wattmeter (on top of the Ameritron amp); Kenwood TS930A HF transceiver; Kenwood TS180S HF transceiver; Hygain Tailtwister rotor control (on top of the TS180S); Digital 24 hr. clock; Kenwood TR2500 2M HT; Kenwood SP180 external speaker; and Kenwood PS30 external power supply for the TS180S.

Microphones consist of a Shure 444 for the TS180S, a Kenwood MC-80 for the TS930S and a Shure 444D for the FT902DM.

For CW, an MFJ Pacesetter electronic keyer is used, keyed by a Bench BY-1.

And the logging/duping computer is an IBM PS/2 Model 50Z with internal 3½ inch floppy drive, 30MB hard drive, external 5 ¼ inch floppy drive and an Epson LQ850 printer. □

Amateur "Hi"



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This month's winner is Mike Flaherty, WA6UBW, of Placentia, CA. Good help isn't so hard to find!


If Amateurs ever gave an award for the best supporting role on an Amateur Repeater station, my nomination would go to the lady in Emeryville, CA, who once put out a QST on the Grizzly Peak ARC repeater.

"This is your waitress at Denny's. Did one of you leave this radio here on the table?" □

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Product Review

MFJ-207 HF SWR Analyzer

RICH ARLAND, K7YHA

Tired of making countless trips to and from the shack out into the back yard (or up the tower) to optimize a new HF antenna system? Yeah, me too. MFJ has once again managed to design and market a useful accessory for all of us who must squeeze the last bit of performance out of our HF antennas. The new MFJ-207 HF SWR Analyzer is the latest addition to the ever expanding product line at MFJ.

Very similar in size to the older MFJ-204B Antenna Noise Bridge, the newer MFJ-207 will read SWR directly when connected to an antenna. Controls are very simple and easy to use. The unit does require a 9V alkaline battery for true portable use. An external power jack is available on the top of the unit next to the jack for frequency counter output. Once the battery is installed and the case resealed, the unit is ready to use from any location.

By coupling a portable frequency counter (I use the Optoelectronics 1300 H/A) into the jack labeled "Freq Out" on the top of the MFJ-207, a direct frequency readout from the SWR Analyzer can be obtained. This is extremely handy as it allows the user to watch the resonant frequency change as the antenna is adjusted for minimum SWR. Also, by adjusting the frequency dial on the SWR Analyzer above and below the desired resonant frequency, the bandwidth (2:1 SWR excursions) of the antenna can be plotted with extreme accuracy. This will provide a visual indication of the operating characteristics of the antenna.

The MFJ-207 covers 1.75 MHz to 32 MHz over five bands which are selected by a bandswitch on the front of the unit. A power/band select switch is also found on the front along with the frequency dial and the SWR meter. Operation is very straight forward: 1) Connect the antenna under test to the SO-239 RF connector on top of the MFJ-207. 2) Turn on the power. 3) Select the proper band of operation on the band switch. 4) Tune the frequency dial to the indication of lowest SWR (as seen on the meter). 5) Measure this frequency (either by coupling the SWR Analyzer to a nearby receiver or using a portable frequency counter).

Once you know the resonant frequency of the antenna under test, it is a simple matter of checking whether it is above or below the desired operating frequency. By aligning the SWR Analyzer on the desired frequency of operation, you can prune the antenna to lower the SWR while watching the meter. Now is that simple, or what?

The MJF-207 HF SWR Analyzer is capable of measuring an antenna's SWR at a particular frequency, finding the frequency at which the antenna has the lowest SWR, providing data for adjusting the antenna to a 1:1 SWR at a given frequency and adjusting an antenna tuner for proper resonance without firing up the transmitter (this reduces on-the-air QRM). How's that for versatile?!

It is interesting to note that the frequency dial on the SWR Analyzer is a bit crowded, making accurate assessment of frequency a bit difficult directly from the dial on the unit. The best way to make accurate frequency measurements with the MFJ-207 is to connect a portable frequency counter into the jack on top of the unit. This will couple the oscillator inside the SWR Analyzer directly into the counter. The result is an extremely accurate frequency measurement of the antenna under test. An alternate method consists of coupling the SWR Analyzer to your station receiver and zero beating the receiver against the oscillator inside the MFJ-207. Obviously, the portable frequency counter not only gives a more accurate readout but keeps the entire system very portable.

The MFJ-207 HF SWR Analyzer received for this evaluation has been given a hard workout on various antennas here at K7YHA. First on the list was the new 8-band Outbacker HF antenna system on my Toyota van. After coupling the SWR Analyzer to the short coax feeding the Outbacker, it was a simple matter to check lowest SWR and bandwidth on all eight bands. Performance was logged and a couple of minor adjustments made to the antenna, and then I was off to check out the rest of the HF antennas at K7YHA.

Next was the Butternut HF-5B "Butterfly" beam sitting on top of the dining room roof. The MFJ-207 was coupled to the coax coming from the beam and readings were taken. SWR on 20, 17, 15, and 10M was good but



SWR on 12 was unusable. With the "spring thaw," guess who will be on the roof trimming the Butternut antenna?

The Carolina Windom II from The Radio Works drove me nuts! This antenna has some resonant points well outside the ham bands. In all fairness to Jim Thompson, W4THU, his antenna was designed to work with an antenna tuning unit. Therefore, I pressed the SWR Analyzer into use to pretune the HW-9 antenna tuner for proper operation. Once the operating controls on the tuner were correctly set, these settings were logged for future use and quick QSYing during contests.

The final HF antenna which was tested at this QTH was the Ant Farm Sky Raider (a 51 ft. sloper). Since this was a multiband antenna also using a vertical feed system (much like the Carolina Windom II), several resonance points well outside the ham bands were noted. Again, using the MFJ-207 to properly resonate the HW-9 antenna tuner and logging the settings resulted in proper operation and low SWR throughout the Amateur bands.

The bottom line on the MFJ-207 HF SWR Analyzer is that it's an outstanding value for the money, extremely easy to use and definitely a "must have" for any shack. Its price class is \$100. This SWR Analyzer is so much easier to use than MFJ's model 204B noise bridge; it makes tuning HF antennas for maximum performance extremely easy. The MFJ-207 takes the work out of optimizing a multiband HF antenna system. For more information, contact MFJ Enterprises at P.O. Box 494, Mississippi State, MS 39762. Don't forget to tell them that you saw it in *Worldradio!* □

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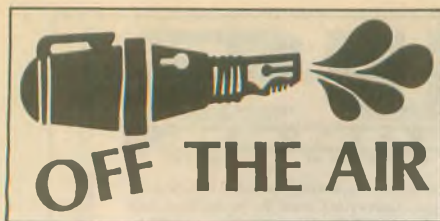
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Principle

The Amateur Radio community should be aware of a dispute which I had with the Florida Palm Beach County Planning, Zoning and Building Department.

I received permission from my condo board of directors to install an antenna atop my four-story building which houses 40 other apartments. (Being a member of ARES, I would be of assistance in the event of a hurricane or any other major catastrophe.) I installed a mobile 7½ ft. 4-band whip and lip mounted it to the steel girder housing the air conditioners on the roof. That



should be the end of the story, but it isn't.

The Palm Beach County Planning, Zoning and Building Department issued a notice of violation due to a complaint from a resident in the building who objected to the action of our condo board. The notice threatened fines of \$250 per day for this antenna, which they claimed required a building permit.

The next day I appeared at the PBCBD and explained that this is not a structure (towers require this permit), and I persuaded them to change their mind. However, I could not talk them out of their claim that I now require an electrical permit. I tried to explain that an antenna of this sort is not connected in any way to the electrical mains, but I was unsuccessful.

As an afterthought, I asked the code enforcement officer if a TV antenna on a private house required an electrical permit and he responded with, "only if there is a complaint." You figure that one out.

Since the law states that a master electrician's signature is required on an affidavit to obtain the electrical license, I called many of them but could not find any that would get involved, since they professed no knowledge of antenna systems. I found myself in a catch-22 situation.

By this time, my condo board (thankfully) got involved and decided that they would back me in refusing to acquiesce to this petty bureaucracy and refusing to go after this permit.

After a few months of protracted letter writing to various government officials, explaining the situation, one of Palm Beach County's commissioners used her muscle and, lo and behold, the PBCBD saw the light. The violation was removed with a letter from the code enforcement officer stating that he now realizes that no connection exists between the antenna and AC mains.

Interestingly, many Amateurs I spoke to said, "Pay the two dollars and get it over with." The permit would have been \$30. I guess the reason I didn't just pay it is *principle*. If a local government department can force Amateurs into obtaining a license for a small antenna like this, we could all be in trouble.

MIKE HERBSTMAN, KM2F
Delray Beach, FL

Who's bootlegging my call?

Every time I receive a fat envelope with super-DX cards from the hard working Willamette Valley Amateur Radio Club QSL Bureau, I am reminded that my call sign has been pirated by an unlicensed person.

The bootlegging is primarily confined to 21 MHz, although a smattering of beautiful cards involves 14 MHz as well.

Two years ago I had to dispose of my Ten-Tec Omni-D, now confining myself exclusively to FM on 10M with a Comtronix FM80. If any Worldradio readers hear W7AR anywhere else

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(and this illegal use of CW), zero in on him and scare him off the air. I'm doing my part by notifying the ARRL and replying to QSLs who might intercept this rascal again.

It is our guess that the illegal CW transmissions are coming from either Oregon or Arizona. Your guess is as good as mine. Let's remove this bad example before the practice further infects our ham community!

FRANCIS ANDERSON, W7AR
Seattle, WA

Morse Code— not a requirement but a privilege

It is reasoned by many that if the code requirement is dropped, the exams will become too easy. This could result in a degradation of Amateur Radio until it becomes simply a glorified form of CB. I have to agree, it certainly could.

However, an exam without a code test could be made more difficult, in a constructive way, by simply upgrading its technical content. This should have a positive effect, hopefully resulting in better qualified licensees. What

is needed are exam questions pertinent to the proper operation of Amateur equipment and to the most desirable procedures for the conducting of Amateur communications.

For example, ham stores sell complicated and expensive SSB transceivers which can also be used to operate (inefficiently) on CW and FM. Most of us use them. They are truly "monuments to engineering" packed with features (and wires). No ordinary ham would dream of touching their interiors with a soldering iron. We have become truly a generation of "appliance operators," because we have not been required to learn about the theory or proper adjustment of this equipment even though we use it on a daily basis. If you listen to SSB QSOs, especially on nets, you will encounter mistuning, badly adjusted speech processors, splatter and—you name it. This is an area which has, up until now, been neglected on license exams.

Code is an essential and useful part of communications and has some unique advantages. It should certainly be retained as a part of Amateur Radio. CW transmissions occupy a small fraction of the bandwidth needed for SSB. This enables an operator to work through interference which would

smother an SSB signal of equal radiated power.

Equipment designed to function only on CW is vastly more simple than our present day SSB monsters. Any person with a modicum of constructional ability could build a CW transmitter if he wished to do so. Admittedly, building a suitable CW receiver would be more difficult. This would be an attractive approach to get a young or old "new" Amateur on the air.

Finally code, at any speed, is something of an accomplishment. Some hams find a pleasure in a code QSO which is lacking in SSB. I won't attempt to explain why. These are the ones who would willingly submit to further testing to obtain access to special code segments of the spectrum. Code really is a privilege, especially now that it's no longer a requirement!

CHARLES W. FINNIGAN, NE4I
Orlando, FL

...

You know you are really hooked on Amateur Radio when you miss your kid's high school graduation because you heard that the "tropo duct" is open to Hawaii.

—Western ARC, Cerritos, CA

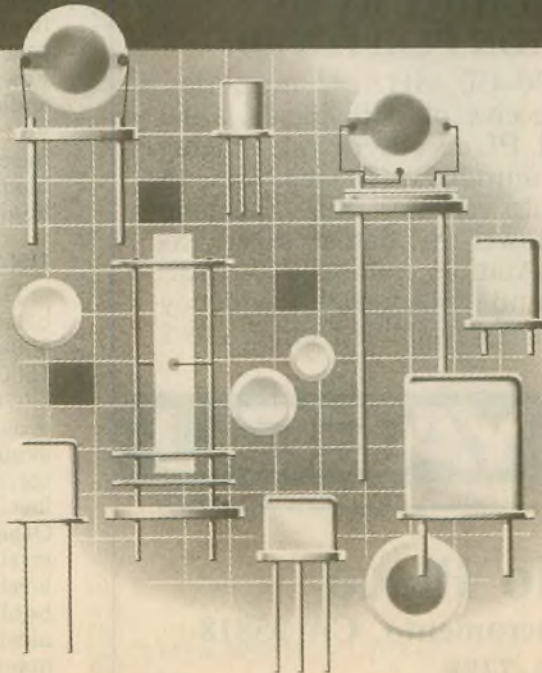
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County Hunter

Ace Jansen, N3AHA

51 Kenbrook Circle, San Jose, CA 95111

Welcome to the bimonthly County Hunter column. First, here's a little information about the author, Ace Jansen, N3AHA.

He was first licensed as WB3LLX in 1978 at the age of 14. He operated 40M CW for three months until he upgraded to General and received his present call, N3AHA. The first night Ace used his microphone he was tuning across the 40M band and found the 40M SSB County Hunter's Net and the rest, as they say, is history.

He was fortunate to live and operate from two rare states: Delaware, 1978-1985 and Wyoming, 1985-1989.

Currently he lives in California and operates primarily mobile, both SSB and CW. In April, 1988, Ace completed the USA-CA (all counties award) 566. He has worked over 150 countries while operating mobile using 100W and has made contacts while mobile from over 800 counties in 34 states, helping others to contact all the counties. You can hear him daily on 14.336 or 14.0565 on the County Hunter nets trying to contact all counties a second time, all mobile to mobile and all on CW. He needs just 400 counties to finish the "second time around" award.

As a captain in the US Air Force, Ace is currently a satellite systems engineer and aspires to make the military a career, at least for another 14 years until retirement. He has an Extra Class license and is a member of the Northern California DX Club and Northern California Contest Club, as well as a USAF MARS operator.

Some of the topics to be addressed in his County Hunter column include award programs, QSLing techniques, contests and mobile operating. Finally, if you are a county hunter or know someone else who is, send information and pictures to Ace. If you have questions or other ideas about county hunting which you would like the author to address, write to Ace Jansen, N3AHA,

51 Kenbrook Circle, San Jose, CA 95111.

Why hunt counties?

Well I guess the first question is, "Why a column on the County Hunter?" Hopefully, this column will generate more interest in the fun of hunting counties as well as provide information to help present county hunters. Amateur Radio has so many facets to it—it's great that we have something for everybody. County hunting is not for everyone, but neither is RTTY, 10-10 or traffic handling. It's also great that Worldradio provides a forum for these different groups to assist the beginner or the experienced veteran. Let's face it, an Amateur's purpose is to be available to assist the community during emergency situations, but when there are no emergencies, we do still operate and we do have fun. County hunting, in a nutshell, is just that—fun!

Most newcomers to Amateur Radio try to see how far they can communicate with their new radio and license. Eventually some decide to achieve different awards, the first being the ARRL Worked All States (WAS) award for making contact with all 50 states. After they achieve WAS they might move on to the ARRL DX-CC and try to communicate with 100 countries. Others may look for additional awards within the states. One such award and, possibly, one of the most difficult awards is CQ magazine's USA Counties Award (USA-CA). Is it difficult? There are 3076 counties in the United States and only about 700 Amateurs worldwide have achieved contacting all counties. But is it difficult? No, not really! It does, however, take time, persistence and patience. Few try to collect counties, fearing an endless endeavor, yet it's a lot of fun. If you have ever collected stamps, baseball cards, etc. and enjoy filling blanks in a book, you will enjoy county hunting.

USA-CA

The USA-CA award is divided into a basic award for communicating with 500 counties with seals for the 1000, 1500, 2000, 2500, 3000 and all county (3076) levels. The USA-CA certificate is one of the most beautiful certificates available to the Amateur Radio operator. Several Amateurs achieve the 500 level, get the basic certificate and stop. Others continue to progress up the levels until finally reaching the 3076 level. What a feeling it is to finish and be able to tell someone "I have communicated with every US county." CQ magazine has a monthly column devoted to awards and a "story of the month" of one of the recent achievers

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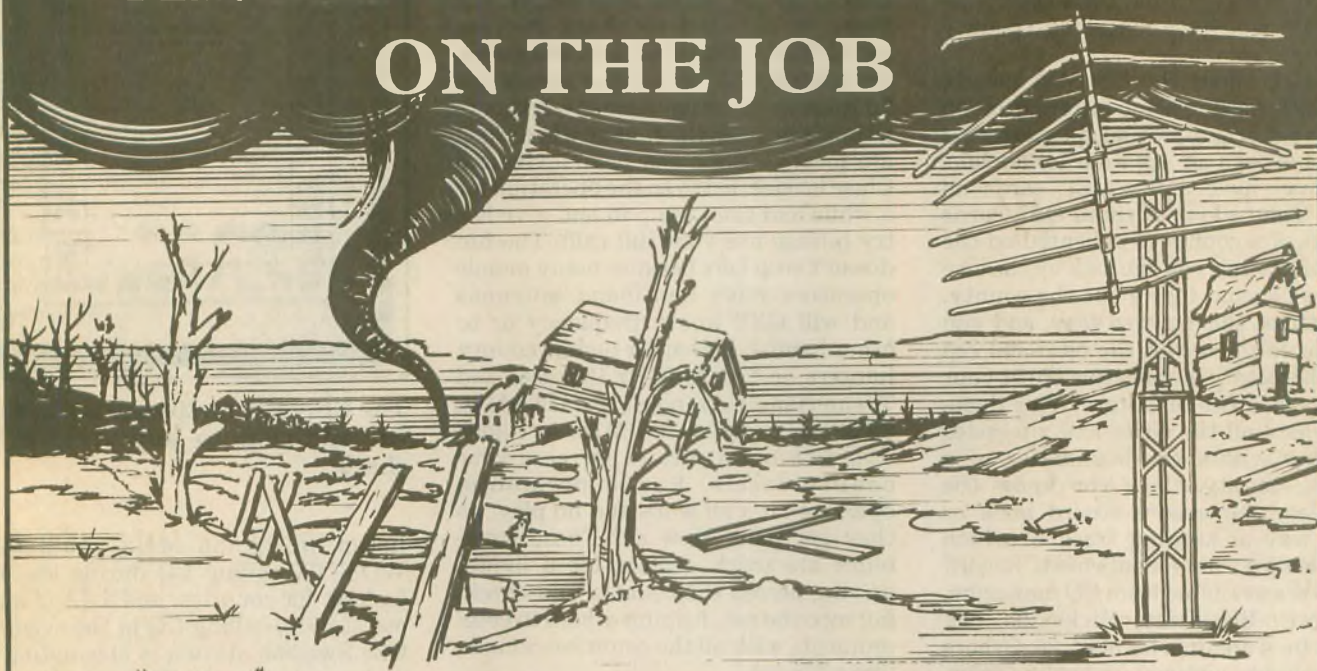
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of the USA-CA all counties award. If you get a chance to see a column you will see that many Amateurs from other parts of the world are also USA county hunters. It is a prestigious accomplishment. Have you ever received a QSL card from a DX station which indicated PSE QSL for USA-CA? Now you know you have contacted a county hunter.

Enough about the USA-CA award, what you need is some information on how to get organized and get started. If you have been an Amateur for a while, you may have a few QSL cards on hand. Take a look at those QSL cards and see if a county is indicated on the card; if it's not, you can look up the city in an atlas and figure out the county. Sometimes this isn't so easy, and you may have to consult the National Zip Code Directory (publication 65) at your local post office or library. This document lists all the cities and zip codes that are within the boundaries of a specific county. Once you know the counties, you need a record book or some way of keeping track of which counties you have confirmed. Record books are available from CQ magazine, 76 North Broadway, Hicksville, NY 11801 for a nominal fee of \$1.25. Others are available with county outline coloring maps from the Mobile QSL Bureau, P.O. Box 6436, Florence, South Carolina 29502. After going through all your QSL cards in hand, you know how you stand on the USA-CA ladder, and you probably have a few more contacts to make. Now the fun begins—it's time to go hunting.

County Hunter's Net

By far, the easiest method of working all counties is to listen to the Mobile Emergency and County Hunters Net, formerly the Independent County Hunters Net (ICHN). The net's purpose is to assist mobile operators during emergency situations, but when there are no emergencies, the net becomes a means to contact mobile operators in different counties. The net

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is located on 14.336 MHz for SSB operators and 14.0565 MHz for CW operators. A few Amateurs have worked all counties in less than a year by using this net. As you can imagine, some counties have few or no hams living in them so mobile operators fill the void. This net works very simply and there is no need to check-in—just listen. The mobiles check-in and get on net control's list. Then each mobile has 10 minutes to make as many contacts as possible from the county where they are located. So if you have a General Class license, listen to the operation for a while and then jump in and give it a try (please use your full call). The fun doesn't stop here because many mobile operators have multiband antennas and will QSY (move frequency or to other bands). Listen for mobile county hunters on 28.336 MHz (Novices and Technicians take note), 21.338 MHz, 7.238 MHz and 3.865 MHz at night. This is a quick way to increase your county totals. For some mobile operators it's all work and no play, as they get paid. How so? These Amateurs are truck drivers for a living, driving across the country and checking into the net, helping others to communicate with all the counties. Sounds like a fun job!

Another method to work counties is to just get on the air and call CQ. If you



The USA-CA certificate is a beautiful addition to any Amateur's shack.

listen on 28.336 MHz you'll hear WD8CTX calling CQ during the day looking for counties, and a JA (Japanese station) calling CQ in the evening. One Swedish station is attempting to make contact with all counties by communicating with only resident hams—no mobiles. How is he doing it? He purchased a microfiche *Callbook* listing of Amateurs by city and has contacted some of the Amateurs by letter to get some of the more rare counties on the air. Now that's persistence.

Contests

Another method is to operate during the weekend state QSO parties. Many states have a weekend dedicated to increasing the activity from that state. The most popular by far is the California QSO Party (CQP), held the first weekend in October. In a future column I will provide a list of state QSO parties, but in the meantime look at the contest column in any of the Amateur magazines including *Worldradio*. You will also find four county hunter contests, two 10M contests in March, one weekend for SSB and another for CW, two all-band contests, an SSB county hunter contest in April and a CW contest in May.

You now have the basics to get organized and start collecting US counties, on your way to pursuing the USA-CA county award. For more information, write to me, or for a County Hunter information packet, write to the Mobile Amateur Radio Awards Club (MARAC) at P.O. Box 64, Newport, MN 55055 (include an SASE). Next time, in July, I'll discuss some other county awards and explain the net in more detail. Until then, have fun, and happy hunting! □

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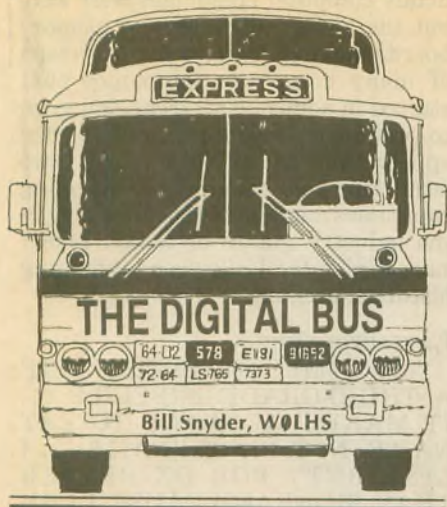
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At a recent meeting of our Fargo-Moorhead Amateur Radio club, the North Dakota traffic route manager spoke on the ins-and-outs of ham radio traffic handling. One of the valuable hints he shared with the club was the words to use when reading the contents of a message over the telephone to an addressee. The first thing he said was not to scare the addressee by saying "I have a message for you." He suggested, and I'm all for this, that you say the following: "Hello, this is (your name) and I'm an Amateur Radio operator. I bring you greetings from (originator's name) in (place). Here is what he said: (message)." It was a very informative meeting. The word "greetings" is the key to the whole approach. Good thought.

In the years immediately following World War II, I did a lot of traffic handling on the national CW nets. It was another phase of my 57 years of spending my hobby money on radio stuff. For a couple winters I acted as the North Dakota member of the Region Ten CW net, and it was a lot of fun. Although I couldn't check in every night, I did my best to pound brass with the experts on the circuit. And they were *experts!*

Each year our radio club would set up a demonstration booth at the local hobby show, and of course some of the members (none of whom handled traffic regularly) managed to con hundreds of the attendees into writing messages to friends and relatives in every-which-place across the US. It didn't take long to overload the little exhibit station with a ton of messages. Most of the club members were neophytes in the traffic system, and they stuttered and stammered and tried to pass, without much success, a growing pile of messages on AM phone (it was in vogue in those days). The pile grew higher.

So, they turned to me. "Bill," the chairman said, "can you take these home and send them on your set?" (Seems to me they called radios "sets" in those days.) So, for the two days the hobby show ran (and a few extra ones, too) I whacked away at the old bug like I never whacked before. I felt like Telegraphist (I love that word!) Carnahan in Bismarck, North Dakota back in 1876, when he was called back to work in the middle of the night to send the

news that 264 men of Custer's 7th Cavalry had been annihilated at the battle of the Little Big Horn. Carnahan, with only a short relief from another operator, sent thousands of words over a period of 48 hours. I'll bet he had a sore arm from all that key tapping. The total revenue for the telegraph company, by the way, was about 3,000 bucks, and in those days you could buy a town for that much money.

So, I lugged the pile of hobby show messages home and checked into Region Ten Net. "I've got a stack for you," I told the net control operator and then proceeded to dump my traffic for that area. When I finished Region Ten I QSYed to Region Six and unloaded the messages for that area. The net control op assigned a top notch guy to take my stack of originations. If I recall correctly, about half the messages from the hobby show went to the California area. At that time people used to say a native Californian was a guy who was born in Iowa or North Dakota, so you can guess there were relatives galore in the sunny southwest.

I will say publicly that the sixth area net had the best operators. I remember one guy (unfortunately I didn't make a note of how good he was in my log) to whom I sent the stack about as fast as I could paddle my Vibroplex bug. He broke in now and then for a repeat of a word or two, but most of the time he would acknowledge receipt of the message with a single dit, not the usual "R" for "Roger." And away we went. I almost hated to see the end of the hobby show, as I really enjoyed working with first class operators like those California guys.

The part of traffic handling that I really don't care for is the delivery business. I wonder how many times in my ham radio career I have tried to contact a person on the telephone to deliver a Happy Birthday or Anniversary message, only to find they're not home and then, after calling for a cou-

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ple of days, have them either tell me that their birthday was two weeks ago or engage me in a conversation such as the following recent exchange:

"Hello," the female voice on the other end said for an opener.

I started my spiel: "Hello, this is Bill Snyder. I'm an Amateur Radio operator and I have a radio greeting for you from George in Germany."

"Oh, how nice, what did George have to say?"

"I'll read it to you," I said. "George says, and I quote: 'I just arrived in Germany yesterday. Things are going fine. Will send you a letter this weekend and

tell you all about my trip. Love. George'"

"Oh, that's wonderful," the voice said, "but I've already received five letters from George, and he's called long distance twice."

See what I mean about deliveries? With a packet bulletin board, I don't mind originating or forwarding traffic; it's all done automatically with the computer program. But delivering—that is a different story—it always seems to go like the above example.

For computer buffs

Today, most plain vanilla computer buffs just take for granted that the micro computer has been around since day one. However, Garry Parrish, AA6GW, put me wise to a paperback book which documents the early history of the micro. I finally latched on to a copy, and for the past few days I have been gorging myself on the facts presented in this book, entitled *Fire in the Valley*, by Paul Freiberger and Michael Swaine, published in 1984 by Osborne/McGraw Hill.

If you have been following micro computers for any length of time, you will certainly enjoy the book. After I read a couple of chapters I was motivated to go down to my basement and dig through my library hoard of old magazines. Sure enough I found a couple of years of *Byte*, beginning with issue number one. (*Byte* was started by Wayne Green.)

While reading the history in *Fire in the Valley*, I've been browsing the *Byte* magazine file and comparing notes. The advertising claims of the various

hobby computer companies were wild, but the history book tells of memory boards that didn't work, etc. It's a saga of many computer companies that started in someone's garage and grew to prominence overnight, only to disappear from the scene a year or two later. Oh, yes, some of the fledgling companies managed to survive; they're the industry giants of today. Like I said, *Fire in the Valley* is a fascinating historical account.

Eavesdroppings

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If you wish to communicate with me, Bill Snyder, my address is 1514 South 12th Street, Fargo, ND 58103. I will enjoy hearing from you. My packet address is W0LHS @ W0LHS. ND.USA.NA. 73 and DITDIT. □

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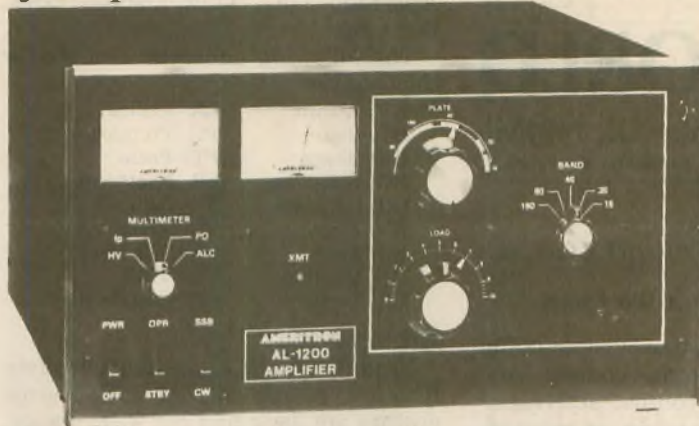
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Pair of Eimac® 3-500Zs give you full legal output for . . . \$1995

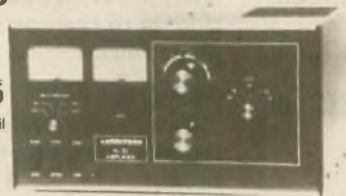
Want a pair of tough 3-500Z workhorses?

The AL-82 is the same amplifier as the AL-1200 except it uses a pair of Eimac® 3-500Z tubes. It has the same super heavy duty power supply to give you full legal output. Some amplifiers

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AL-82
\$1995
Suggested Retail



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John F.W. Minke III, N6JM

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Activities Calendar

25-26 May CQ World Wide WPX Contest (CW)

09 June REP Portugal Day Contest (SSB)

15-16 June JARL All Asian Contest (SSB)

Refer to your favorite contest section for details on contest activities. We have no advance notice on some of the above and are basing the dates on those from previous years.

W100N

The following DXers were awarded Worldradio's Worked 100 Nations certificates as dated:

387) Samuel C. Barreiro, CX6BZ; Feb. 14, '91.

388) Rodger B. Hallen, 5Z4BH; Feb. 14, '91.

389) Richard M. Ellis, KC1KA; Feb. 14, '91.

390) Djunaedi Santosa, YC0MCA (all 10M SSB); Mar. 7, '91.

391) Bengt Hogkvist, SM6DEC (all CW); Mar. 7, '91.

Portugal (CT)

On June 9 there should be a bit of activity from this one. From 0700 to 2400 UTC you will have the chance to work as many Portuguese calls as you can, although non-Portuguese calls are valid. This is an SSB-only contest. DX to DX contacts count one point and contacts with Portuguese stations count two points.

Multipliers include Portuguese countries (maximum of 18), DXCC countries and continents. Final score is the contact points from all bands, multiplied by DXCC countries, multiplied by continents. The multipliers can be counted only once, regardless of the bands worked. Contacts with stations

within one's own country count only for multipliers and have no point value.

Certificates will be awarded to all participants who make in excess of 50 contacts. Other awards are available. Mailing deadline is July 30 and all logs go to Rep. Contest Manager, DP91, Apartado 2483, 1112 Lisboa Codex, Portugal.

The following abbreviations are for the counties:

AV Aveiro	LX Lisboa
BJ Beja	PG Portaleg
BR Braga	PT Porto
BG Bragança	SR Santarem
CO Coimbra	ST Setubal
EV Evora	VC Viana
FR Faro	VR Vila Real
GD Guarda	VS Viseu
LR Leiria	CB Castelo B

Ethiopia (ET)

From Ethiopia, ET2A has been fairly active, mostly on 15M SSB. The operators are Jack and his wife, Nancy, who are with the US Embassy in Addis Ababa.

Unfortunately, they are leaving in April. According to the various DX newsletters, the license is good through next year and renewable for another four years.

There is also another operator at the station who may continue the operation after the first two leave. His name is Scott, and he is reported to be able to operate CW. We have no other information as to the operators' surnames or home calls.

Mayotte (FH)

The Long Island DX Bulletin reports that FH5EJ is on regularly near 14.035 MHz from about 0300 UTC. It is also reported that he will accept requests for contacts on one or more of the WARC bands. Some of the reports for the WARC bands include 10.105 MHz after 2100 UTC and 24.905 MHz at 1700 UTC. He also works other bands, as we worked him one weekday morning here in California on 28.013 MHz around 1630 UTC.

The DX Bulletin reported FH5EH on 28.510 MHz around 1500 UTC on February 16. However, we have seen no other reports for this one, and it may have been a reporting error.

For a few days in March four Japanese operators were scheduled to operate from Mayotte with their calls

appended with FH/. This was to follow their DXpedition to the Comoro Islands.

Jan Mayen (JX)

DX News Sheet reports that JX7DFA has ceased lower band activity and is concentrating on the higher bands. Listen for him between 14.004 and 14.028 MHz from 0130 to 0400 UTC or on SSB near 14.256 MHz after 0130 UTC.

On 15M he has been reported on 21.014 MHz at 1315 UTC, and on 10M on 28.015 and 28.560 MHz after 1330 UTC.

St. Peter and St. Paul Rocks (PY0S)

The Natal DX Group DXpedition to St. Peter and St. Paul Rocks is still on schedule for the first week in May, assuming that the financial obligations are met. So turn your beams south and look for the five-man team which is to include Nei Ferreira de C. Neto, PY5AKW, Pergentino L. de Andrade, PT7AA, Ronaldo B. Reis, PS7AB, Franz Langner, DJ9ZB, and Karl M. Leite, PS7KM, who will also handle the QSL chores.

They will be on both SSB and CW, including the possibility of 6M and RTTY, and will operate around the clock, 24 hours a day.

Benin (TY)

Pat Speranza, I8QLS, was recently active in Benin, signing TY2LS, giving many of the deserving a new one. Many managed to work him during the ARRL International DX Contest in March. This was an SSB operation. Hopefully, there will be more activity from this one.

We did see a report of another call in one of the DX newsletters. TY1PS was reported on 10M RTTY at 1415 UTC on 28.083 MHz on February 24. We have no other information on this one.

Guinea (3X)

3X1ST continues to be active reporting into the various DX nets. Unfortunately, at the time of this writing, the DXCC desk had not received documentation, and cards from this station are not acceptable for DXCC credit.

Try looking for this one near 14.227 MHz from about 0100 UTC or 21.274 MHz at 0900 UTC. He has also been reported on 12M near 18.136 MHz around 2200 UTC working Europeans.

IOTA

Here is some more reported activity of islands that have been chased by the island hunters recently.

AF-20 Bijagos Archipelago J5CVF/P
14.252 MHz 1745 UTC

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SSD-9*	160-80-40-20-15-10M space-saver dipole 71' long	\$125ppd
SSD-5*	80-40-20-15-10M space-saver dipole-specify L 42'	\$108ppd
SSD-4*	80-40-20-15M space-saver dipole-specify L 46'	\$96ppd

*9-bands with wide-matching-range tuner.

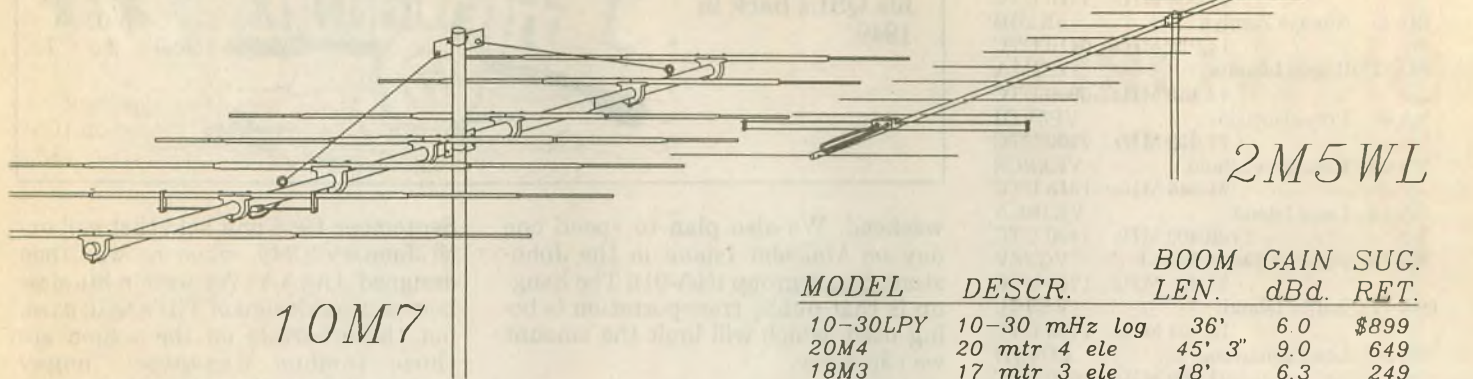
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Four of our 80 meter beams are out there smoking the competition. Our ten meter beam is a real BAND OPENER. A stacked pair at N6NV blew the Europeans minds in the last CQ Worldwide. He has four but didn't get them all up by contest time. Can you imagine what four will do? It's mind boggling!

But listen... All of this is just talk and ego trips if something else doesn't happen when you put up a new M² antenna. We're talkin' about FUN...M² removes the frustration and puts the FUN back in the HAM RADIO EQUATION!!! That's what it's all about. Just ask the guys who have them up!

WHO'S BEHIND ALL THIS?

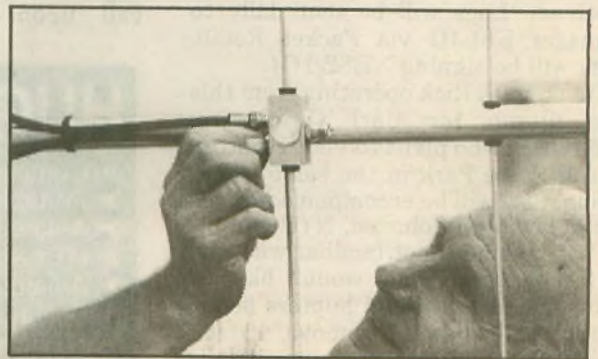
Mike Staal, K6MYC, former co-founder and antenna designer for KLM till '86 is at it again! This time with a strong family effort behind him. M² is about to become a force in the antenna market.

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18M3	17 mtr 3 ele	18'	6.3	249
15M4	15 mtr 4 ele	33' 8"	9.0	369
10M4	10 mtr 4 ele	23'	9.0	169
10M7	10 mtr 7 ele.	45'	10.5	499
6M5	6 mtr 5 ele	15' 10"	9.3	149
6M7	6 mtr 7 ele	25' 6"	10.5	229
6M2WL	6 mtr 9 ele	39' 6"	12.4	379
6M2.5WL	6 mtr 11 ele.	50' 2"	13.0	449
EB-144	2 mtr horiz omni		1.0	119
2M7	2 mtr 7 ele	8' 10"	10.5	105
2M12	2 mtr 12 ele	19' 6"	13.0	129
2M5WL	2 mtr 17 ele	33'	15.0	169
2M18XXX	2 mtr 18 ele	36' 3"	15.3	219
18XXX KIT	Cuts KLM 2M16LBX to 2M18XXX	36' 3"	15.3	69
2MCP14	2 mtr 14 el cir	10' 6"	10.3	149
2MCP22	2 mtr 22 el cir	18' 7"	12.5	225
2M6WLHD	2 mtr 19 ele HD	41' 8"	15.8	379
2M5-440XP	2mtr 5 el with 10 el on 440	5'	9/12	149
220-7WL	1-1/4 mtr 23 el	32' 6"	16.5	189
EB-432	70 cm horiz omni		1.0	109
440-18	70 cm multi-use	11' 4"	14.5	109
436-30CP	30 ele OSCAR	9' 9"	14.5	229
432-9WL	70 cm 28 ele	21' 2"	17.3	149
432-13WL	70 cm 39 ele	30' 8"	18.0	229
MT3000	Elevation rotor HD			669

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MADISON	IN TEXAS	1-800-231-3057
HAM RADIO OUTLET	IN CA. CALL	1-800-233-2482



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AN-11	Ross Island	ZL5/OE8NOK	
		14.013 MHz	1000 UTC
AS-22	Bear Islands	UZ0QXY/4K4	
		14.010 MHz	1610 UTC
AS-61	Diomed Islands	RV9CBF/UA0K	
		21.001 MHz	0300 UTC
EU-33	Langoy Islands	LA9OFA	
		28.527 MHz	1300 UTC
		LA2PHA	
		21.260 MHz	1515 UTC
EU-35	Novaya Zemlya	4K3BB	
		14.011 MHz	0410 UTC
EU-57	Rugen Islands	Y22MA	
		14.185 MHz	0900 UTC
NA-02	Providenciales	VP5VDI	
		21.018 MHz	2200 UTC
NA-08	Ellesmere Island	VE8RCS	
		21.245 MHz	1315 UTC
NA-14	Long Island	VE1SEA	
		28.400 MHz	1400 UTC
NA-29	Prince Edward Island	VG2ZV	
		28.521 MHz	1700 UTC
NA-47	Baffin Island	VE8QL	
		18.122 MHz	1730 UTC
NA-56	Los Cannarros	CO4QH	
		21.260 MHz	1500 UTC
NA-73	Ambergris Cay	V31LY	
		28.483 MHz	1515 UTC
OC-123	Ha'apai group	A35KB	
		14.222 MHz	0615 UTC
SA-28	Sao Sebastião	ZX0MXK	
		28.508 MHz	1800 UTC
SA-38	Atol das Rocas	ZY0RK	
		21.260 MHz	1000 UTC
SA-46	Itamaraca Island	ZY7TR	
		28.495 MHz	1745 UTC
		PY7XC/P	
		7.005 MHz	0530 UTC
SA-47	Mel Island	ZW0MI	
		21.295 MHz	2200 UTC

From Patos Island, (no IOTA reference number as yet), YY5P was busy working the IOTA-deserving and had been reported on several bands.

Rick Dorsch, NE8Z, will be operating from one of the islands of the South Carolina coast (NA-110) between April 20 and 27. Check the usual IOTA frequencies, 14.260, 21.260 and 28.460 MHz on SSB, and 14.026, 21.026 and 28.026 MHz on CW. Rick says that he has already printed the QSL cards. His QSL manager promises "instant QSLing" (cards will be answered the same day received). Logs will be sent daily to manager K8LJG via Packet Radio. Rick will be signing NE8Z/1C4.

If you miss Rick operating from this one, listen for Carl Quickmire, WB4UBS, who plans to visit Hunting Island State Park in the same island group. Carl will be accompanied by his son-in-law, Jeff Johnson, N4UQM.

Carl says he is not familiar with the IOTA program and would like to know where the island hunters listen about. The answer is above, as for NE8Z. Your efforts are appreciated. Carl. One does not have to be involved in the program to help out those who are.

And, N6JM is seriously considering operating from the Queen Charlotte Islands (NA-51) during Canada Day

**W.D. Tiffany,
now W6GNX,
found a clever
way to update
his QSLs back in
1949.**



weekend. We also plan to spend one day on Malcolm Island in the Johnstone Strait group (NA-91). The hang-up is that public transportation is being used, which will limit the amount we can carry.

DXCC project activity reports

The weekly progress reports from the DXCC desk continue. These figures have been continued from our last issue (received-R, processed-P, backlog-B);

New applications (week ending)	R	P	B
Feb. 3, 1991	19	79	477
Feb. 10, 1991	35	65	447
Feb. 17, 1991	26	51	422
Feb. 24, 1991	17	45	395

Endorsements (week ending)	R	P	B
Feb. 3, 1991	31	114	2467
Feb. 10, 1991	94	80	2481
Feb. 17, 1991	29	158	2345
Feb. 24, 1991	29	108	2266

Antique QSL department

In our March column we ran that old J3GNX card submitted to us by Worldradio staffer, Norm Brooks, K6FO. That was the call of W.D. Tiffany, W6GNX, now living in Menlo Park, California. Tiff is a retired US Army Colonel who had served in the Signal Corps. He had received that call upon arriving in Kyoto in

September 1946 and held that call until January 1949, when he was then assigned JA4AA. We were a bit slow here on that design of Tiff's QSL card, but those barrels on the wagon are those famous Japanese "honey buckets." Enough said on that one.

Tiff's former J3GNX rig was a much modified BC-610 which used an RCA 833-A triode in the Class C final amplifier. This in turn was driven by a Raytheon 4D32 beam tetrode, with an old Hallicrafters VFO.

We remember the BC-610 from our army days; ours was with the old AN/GRC-26 RTTY setup in the back of a truck. We used to try RTTY mobile, but it never seemed to work very well. Then again, it probably was never intended to be operated as such.

QSL information

Some time ago there was a QSL manager who had created himself a bad reputation in answering QSL requests. The cards he received had to be completed to every detail. This well known DXer, Antoine Baldeck, F6FNU, had made himself so unpopular in the French circles that the REF (the French National Amateur Radio Society) refused to accept QSL cards for their various awards for calls managed by him. This did seem a bit unfair to penalize the DXers for the actions of a QSL manager.

Well, things change and people change. We worked 5U7NU in early January for a new one. And, guess who the QSL manager was? We waited a few weeks and sent our QSL request to F6FNU with an SASE and two green stamps. Within three weeks we had our 5U7NU card. And this is the second time we have used the services of F6FNU. The first time took a bit longer—six weeks! Perhaps REF should rethink their position. The request for two green stamps really isn't out of line as DXers for years have been sending a single green stamp.

QSL routes

A42A	—A47RS	BV2AL	—OZ1LGF
AH0K	—JE2JCV	CE0/F2JD	—F6AJA
AP2JZB	—G0DOO	CQ4A	—CT1AHU

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DX Prediction — May 1991

CQ4DX -CT4DX VK6BFY/
 CQ7A -CT1AHU VK9X -JA0GPT
 CR6AHU -CT1AHU VK6BFZ/
 CS8AHU -CT1AHU VK9X -JA0GPT
 CT1AOZ -CT1AHU VK9AG -JA0GPT
 D68KN -JL3UIX VK9LM -DJ5CQ
 D68TS -JL3UIX VK9NUE -W6UE
 D68YD -JL3UIX VP2EXX -KC8JH
 D68YH -JL3UIX VP2E/NR1R -NR1R
 ED7ILP -EA6WV VP2VM -KU2Q
 ET2A -WB2WOW VP2V/K5NA -KU2Q
 HF0POL -SP3HLM VP2V/KU2Q -KU2Q
 HK0/N3JT -W2GHH VP5B -WD4JNS
 IT8A -IK8HVH VP5VD1 -K1RIF
 IU8A -IK8DOI VP8CES -G0MGM
 J6ST -N14M VP8CFM -GM4KLO
 J6LTA -N14M VP8GAV -GM0LVI
 J80B -N6HVZ VQ9AB -WB4ECR
 JW1MFA -LA1MFA WB4FNH/
 JW5QFA -LA1MFA OE3 -WB4FNH
 JW9VDA -LA9VDA XFOC -XE1BEF
 KBMFO/6Y5 -W8TPS Y90ANT -Y21RO
 KA6NAL/ NH8 -KA6NAL YS1DRF -W2PD
 (See Note 1) YV5P -YV5ARV
 ZD8DX -WB2K
 ZF2BR -WB4FNH

KC4AAA -NC6J ZK1XL -HA8XX
 KC4USV -W6RPD ZK1XO -VE3CPU
 KF6HI/NH8 -KF6HI ZK1XX -HA8XX
 (See Note 1) ZK2XA -DJ1ND
 ZK2XB -DJ1ND

OX3EW -KB5LRO ZL9DX -JH4RHF
 P29AC -VK8AC ZL9TPY -ZL2TPY
 PJ7IC -K2PEQ ZW0M1 -PY5TT
 ST0DX -WB2WOW ZX0GH -PY2MXX
 T22VU -DJ92B ZX0MOK -PY2MXX
 T31AF -DL2MDZ ZX0MXX -PY2MXX
 T21CE -DJ92B ZY0NS -PP5SZ
 T22YL -DL5UF ZY0RN -PY2MXX
 T23XX -DL2GBT ZY0RK -PS7AM
 T30CT -DL9JQ 4K1ZI -RB5JBU
 T30DQ -DL5UF 4U1ITU -FB1MUX
 T30DR -DL2GBT (See Note 2)
 T30DS -DJ92B 4U1VIC -WB4FNH
 T31AF -DL2MDZ (See Note 3)
 TG8CXM -K3BYV 5H3DC -G7GNQ
 TJ1BJ -K4UTE 5V7SA -WB4LFM
 TJ1CW -F6EEM 7P8UN -OH3GZ
 TR8JWH -G4TWT 7S3OWG -SM3CVM
 TY2LS -IK8DOI 8P6NX -W0SA
 V31LY -VE6LU 9H3NU -G4CVZ
 V31RL -NG7S 9L2AL -WD0HHM
 VE4GV/6Y5 -VE4GV 9M6O1 -DJ4O1
 VK3CAT -WB4FNH 9M6UY -DK7UY
 VK6BFU/ 9M8AJ -AA5AZ
 VK9X -JA0GPT 9M8GB -DJ1UJ
 VK6BFV/ 9M8WB -DK7UY
 VK9X -JA0GPT 9Q5TE -SM0BFJ
 VK6BFX/ 9U5QL -YASME
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C21JM -Jim Motiti, P.O. Box 359, Republic of
 Nauru, CENTRAL PACIFIC
 US0UT -Romeo Stepenko, P.O. Box 812, Sophia
 1000, BULGARIA
 VE1SEA -Amateur Radio Station VE1DEA,
 Freeport, NS B0V 1B0, CANADA
 VE8QL -Rick Brardley, P.O. Box 75, Iqaluit, NT
 X0A 0H0, CANADA
 3DA0BX -Mrs. Christine Shaw, P.O. Box 57, Big
 Bend, SWAZILAND
 3X1US -Arnold Olivo, US Embassy, Box 603,
 Conakry, GUINEA
 4K1ADQ -Vlad T Ivanov, P.O. Box 88, Kolpino 3,
 Leningrad, USSR
 7Z1AB -Ken Taylor, Box 9041, Riyadh 11413,
 SAUDI ARABIA (see note 4).
 9J2CF -2911 Camelot Lane, Missouri City, TX
 77495 USA

Notes
 1. QSL requests accepted via the bureau only from stations outside the United States.
 2. This route applies for contacts made during the weekend of February 23 and 24. Contacts made during the CW portion of the ARRL DX Contest go via N6TR. For contacts made during the SSB portion, QSL direct only to N6MNX or to G0MFO via the bureau.
 3. Applies only for the period June 22-27, 1990.
 4. This route applies for current activity only.

Many thanks to the following contributors: WB4FNH, WB4UBS, W6TUR, NE8Z, PS7KM, PY1APS, American Radio Relay League, Salt Lake City DX Association (KB2G), Western New York DX Association (KD2YP), Southern California DX

Maximum Usable Frequency from West Coast, Central U.S., and East Coast (courtesy of Engineering Systems Incorporated, Box 939, Vienna, VA 22180).

The numbers listed in each section are the average Maximum Usable Frequencies (MUF) in MHz for contacting five major areas of the world centered on Africa-Kenya/Nairobi, Asia-Japan/Tokyo, Oceania-Australia/Melbourne, Europe-Germany/Frankfurt, and South America-Brazil/Rio De Janeiro. Chance of contact as determined by path loss is indicated as bold, *MUF for good, plain MUF for fair, and in parentheses for poor. UTC in hours.

CENTRAL USA

UTC	AFRI	ASIA	OCEA	EURO	SO AM
8	(22)	19	*22	17	*19
10	26	*15	*20	(17)	*20
12	33	*19	*18	22	24
14	37	23	(17)	25	*31
16	40	22	(17)	27	*35
18	*40	(18)	(16)	26	*38
20	33	25	32	23	*40
22	27	29	38	19	*39
24	23	28	41	17	*32
2	*21	27	40	*14	*26
4	*21	24	*39	*21	*23
6	28	22	33	*20	*20

MAY 1991 WEST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
10	(18)	*23	*21	(15)	*23
12	(23)	*18	*19	20	(21)
14	(28)	*22	*18	23	28
16	31	*22	(17)	26	33
18	33	18	(16)	25	*37
20	33	24	32	22	*39
22	27	*29	38	18	*37
24	23	*32	41	16	*31
2	(21)	*34	41	14	*26
4	*22	*34	39	*20	*22
6	27	*31	*33	*22	*20
8	22	*28	*23	19	*18

EAST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
7	24	18	*26	15	*20
9	25	(15)	*21	19	*22
11	32	*20	*19	*23	24
13	36	23	(18)	*26	*30
15	*39	19	(17)	*27	*35
17	*39	(15)	(16)	*26	*38
19	*36	(19)	(24)	*25	*40
21	*30	23	36	*23	*39
23	25	26	40	19	*36
1	*22	26	40	*16	*29
3	*18	24	40	*19	*25
5	26	22	33	*19	*22

Club (WB6PSY), Western Washington DX Club (K7WA), The DX Magazine (VP2ML), Long Skip (VE3IPR), DX News Sheet (G4DYO), The Long Island DX Bulletin (W2IYX), Inside DX (N2AU), QRZ DX (W5KNE) and The DX Bulletin (VP2ML).

Those who participated in the SSB portion of the ARRL International DX Contest were blessed with great conditions. Here in California we were having some long overdue rain, giving us an excuse to play with our radios. N6JM had an additional excuse with a foot in a cast (broke my foot running to catch a bus). Unfortunately, the

winds took out the 40M dipole that Saturday and the XYL wasn't into climbing the tower for me.

With our modest station of only 100W we managed to make over 600 contacts in 79 different DXCC countries. About 98 percent was the hunt and pounce method. No packet radio or spotting network was used. After the contest we were monitoring the DX net on 14.222 MHz. After all the activity that was available in the big test, what a boring way to chase DX. There must be a better way. Very 73, de John, N6JM. □

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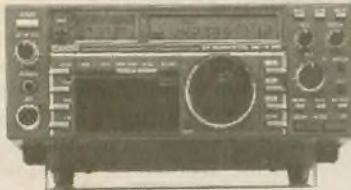
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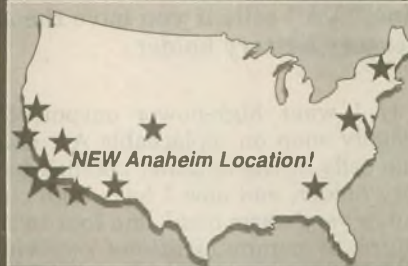
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Care and feeding of hand-held batteries

There's nothing more frustrating than a hand-held battery pack that suddenly drops dead after only one hour of use. Sound familiar? Here is a quick review on how to keep those little cells going on that new or old hand-held set which runs on rechargeable batteries.

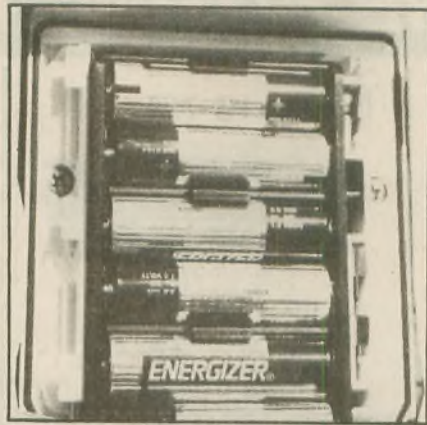
Nickel cadmium batteries can be charged over and over again, many up to 1,000 times before needing a complete replacement. The NiCd battery cell looks almost identical to an alkaline "AA" battery you would buy at the drug store, except most NiCd batteries use solder-tab terminals. Regular "AA" alkaline batteries use plug-in type terminals.

It takes 12 AA type NiCd batteries to equal about the same voltage as 10 regular alkaline cells. This is because the terminal voltage on a NiCd is 1.2V, and a regular alkaline cell is 1.5V.

The new "high-density" NiCd cell offers amazing capabilities of sustaining your hand-held transceiver for up to four hours on transmit and receive before it needs replenishing. While four hours of operating is okay for most of us with a second NiCd pack in ready reserve, it still won't give you the eight hours of operating that most alkaline cells will produce. And AA alkaline cells have a minimum five year shelf life—they normally don't self-discharge in your emergency radio bag for many years. But a set of NiCd batteries, after about 60 days, may only give you about 20 minutes of operation before their self-discharge rate takes them completely down.

Hand-held manufacturers have extended the capabilities of operating time on our hand-helds by giving us NiCd battery packs which operate around 7.2V yet may carry up to a 1,000 milliamp per hour capacity. This is excellent for more hand-held applications; it runs your radio to about 3W of

power output, and the lower power output dramatically conserves battery life. Sure, you can buy battery packs rated at 12.5V, and these high-voltage battery packs certainly do run your hand-held at maximum power output—7W as limited by ANSI. But 7W of power output seldom goes much further than 3W, and the 7W will eat up a battery pack in less than 30 minutes with a lot of transmitting. You won't find many "high-power" battery packs in my radio bag.



Hand-helds may also run on alkaline "AA" cells if you have the accessory battery holder.

If I want high-power output, I'll usually snap on replaceable AA alkaline cells in the optional alkaline battery holder, and now I have high output, a very warm hand, and four to six hours of communications receiving and a little transmitting.

NiCd batteries like to be completely discharged before they are fully recharged. Like athletes, if you don't exercise your NiCd batteries, they get fat and lazy. Are you constantly charging your NiCd batteries but seldom pulling them all the way down? If so, this is one of the worst things that you can do to your hand-held battery pack. Regularly charge it and regularly discharge it all the way down to almost zero. Cycle it over and over again. Even with an old, fat, lazy pack, four complete discharges interspersed with four complete recharges will many times erase its "memory," and that old pack which would never really work for you for long will now give you many hours of HT operation.

In the land-mobile communications market, hand-held battery pack manu-

facturers offer several-hundred-dollar exercise kits. They automatically cycle the batteries, up and down, always allowing for extra-long operation when you may need it most. Hey, gang, we



NiCd battery packs are soldered end-to-end for a positive contact.

don't need these expensive devices, do we? Simply turn your hand-held on, open the squelch at a low volume, and let the batteries die on their own. Then, turn the hand-held off, charge them all the way back up again, and then repeat this cycle. After a few times, your HT's battery system will be rearing to go.

If you regularly use your hand-held and don't have time to wait for the wall charger to bring it back up again overnight, invest in a \$100 rapid charger. ICOM, Kenwood, Yaesu and Alinco all have rapid chargers for your particular hand-held's battery, and most of these rapid chargers are cycled off from the heat generated by fully charged batteries, so most rapid chargers won't damage a battery pack if you regularly exercise that same battery pack that charges up within minutes. Some experts feel that a warm pack shortens the ultimate life of the entire battery set—but I regularly run my batteries all the way down, and I have been rapid charging some battery sets for over four and a half years and they are still going strong.

Most mobile battery chargers feature voltage regulation which only allows for a trickle charge while running your hand-held in a vehicle. This is okay. Don't be tempted to run your hand-held directly off of 12V because it



The alkaline battery may not be recharged, but it offers a five year shelf life.

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This Kenwood NiCd battery pack may be slow-charged from the jack or fast-charged with the drop-in tabs.

will get red hot on transmit, and this is not good for the internal TX output transistor brick.

Certainly a big frustration among radio Amateurs is the disparity between all four manufacturer's wall chargers and rapid AC desk chargers. We aren't alone. In the public safety and land mobile industry, there is absolutely no uniformity between battery charging systems. And be extra careful when using another type wall charger to charge your particular hand-held; even though the little plug looks the same, the ICOM tip is positive, but on two other brands the polarity is just opposite. There is absolutely no standardization as to polarity or voltage when it comes to the little wall chargers or desk-top chargers. And worse, every time a manufacturer comes out with a new style hand-held transceiver, it takes a completely different battery set. Frustrating!

Finally, when you do run your battery set all the way down, don't think that you must throw the entire pack away and buy a new \$50 set-up. With a hot knife, you can carefully open up the pack and replace the cells yourself for under \$15 and about an hour's time. However, be especially careful when stripping down the old pack; remember where the little heat sensor goes, remember what wires go where and always wear safety goggles and work in a well-ventilated area in case something gets shorted out and the pack goes up in smoke.

Regularly exercise your hand-held NiCd batteries, keep them warm in the cold weather, and they will perform many hours to keep your little HT on the air on transmit as well as receive. But if all you do is feed them . . . they probably won't last for more than about 20 minutes when you really need them the most.

And how long will a hand-held run once the little symbol comes up indicating low battery? About three minutes on receive, and about five words on transmit! Welcome to NiCd batteries! □

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BOB BROWN, NM7M

What we speak of as "propagation" doesn't fit neatly into the jargon of physics. There, quantities are either vectors, having magnitude and direction (for example, velocity as well as so many miles per hour in a particular direction, say to the east); or scalars, having only magnitude (such as temperature).

Qualitatively, propagation is usually characterized as being good, bad or somewhere in between. But when we say that, we normally have a certain direction in mind, say toward Europe. That last aspect is something that keeps an entire industry thriving, building towers and beam antennas, those wonders of galvanized iron and aluminum that help us put our RF in the right directions. That effort and how we characterize propagation doesn't make it a vector quantity. But it really results from more than a state of mind!

When compared to how we find the quality of HF propagation, the business of pointing one's beam is simple; all we have to do is some elementary

navigation using coordinates of our transmitter and the receiving site we're interested in. The details can be worked out both analytically, using calculators or computers, or graphically, with the aid of an azimuthal equidistant map centered on our location.

When we do that, however, we soon realize that there are many different locations in the same direction. Thus, pointing a beam brings in more stations than the first heading calculation would suggest. Moreover, signals off the great circle bearing are heard as well. All those results go back to our antenna, however, its pattern having a significant width in both the azimuthal and vertical directions. But everything considered, we'd just as soon keep it that way, giving us a bargain for our money.

Leaving aside the quality of propagation for the moment, it's clear that our RF travels with the speed of light, some 300,000 kilometers per second! On that basis, it would require about 0.13 seconds for our RF to circle the globe. (Remember those old stories about round-the-world echos?) But that number was arrived at by using a path at tree-top level around the surface of the Earth, not the distance traveled by RF bouncing back and forth between the ionosphere and the Earth.

To work out those details, we have to know that the circumference of the Earth is about 40,000 km and that we can get at most 4,000 km per hop. So if one were to work out the problem in more detail and add the effects of slant height, some 10-12 hops would be included.

But to do that, we'd need to know the height of the F-layer, and that depends on the time of day along the path, to say nothing of the sunspot number. And if that wasn't bad enough, there's some question as to whether RF always follows a great circle path from station A to station B.

The last point goes to the question as to how the path in question fits into the scheme of things. The matter of illumination is really another way of talking about ionospheric heights as regions on the sunlit side of the Earth are generally lower than those in the dark. Thus, the more simple-minded notion of an ionosphere with uniform,

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spherical symmetry that is concentric with the Earth is just not valid, there being transition regions between the higher sunlit portions and the lower parts in the dark.

Now, any mention of "transition regions" is another way of saying that the ionosphere is tilted. With the introduction of that word and the idea of ionospheric reflection of RF, it wouldn't take much of an argument to convince you that ionospheric reflections may go off to one side or another if the mirroring layer were tilted. But like everything in this world, it would be a matter of degree, depending on the tilt.

When you think about it, however, it would also be a mistake to think of the reflection region as a plane mirror, even if it were tilted. There is a certain amount of curvature to the ionosphere which should be taken into consideration also. And that makes for a whole new, interesting discussion, the curved ionosphere tending to focus RF just like a concave mirror. On that basis, one could argue that there should be some focusing gain with ionospheric reflections along a path of N hops.

But hold it! With those N ionospheric reflections off a concave ionosphere, there have to be N-1 reflections off the convex surface of the Earth! If reflections off a concave surface make the RF rays focus or converge, then we must reckon with the fact that reflections off a convex surface make the rays diverge and so serve to de-focus the RF. There you have it; "You can't win for N times without losing for N-1 times!," to coin a phrase. Thus, in principle, you'd come away with only a modest amount of focusing gain from that one, last ionospheric reflection that's not accompanied by a surface reflection.

This brings us to the nature of surfaces on the Earth. In that regard, there are good, smooth ones, as with calm seas, as well as ugly ones such as with irregular terrain. Sea water is the best naturally conducting surface we can have, so RF sent off over calm seas might just follow the best prescription given above. But other reflecting surfaces vary in their reflection properties, just from the magnitudes of their conductivity and dielectric character.

Beyond that, there's the question of the size and orientation of any surface irregularities. Thus, even smooth regions as found in some deserts and ice fields can be poor reflecting surfaces. And some ground material, while having superior conductivity and dielectric properties, may give rise to poor reflections if the "lumpiness" or structure of the surface presents a significant aspect or amount of material that is perpendicular to the incoming

radiation.

Given the above discussion on reflections, ionospheric and terrestrial, the "rosiest scenario" we can come up with is one where one's RF is going off over sea water and there's a net focusing due to one, lonely ionospheric reflection on a path. And calculation shows that it could be several dB, depending on details, but that's it. If other surfaces are involved, reflection losses are uncertain, at best, and may be large enough to wipe out the gain from ionospheric focusing.

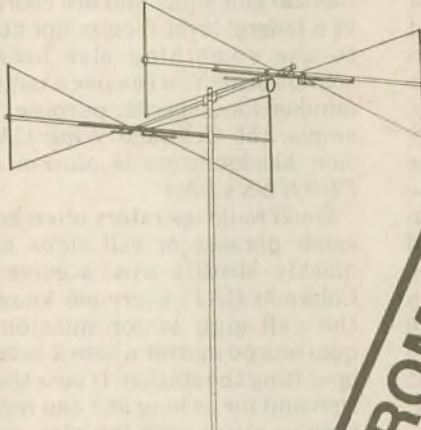
The above discussion only deals with the paths that RF follows; there's still the question of the intensity of RF on reflection. At the ionospheric level, losses are considered to be negligible;

at the surface, that's another matter and depends on the polarization and frequency of the RF. But even serious DX operators usually don't come to grips with those facts. Maybe it's because the Earth's surface is about 80 percent sea water, biasing their thinking.

They are, however, aware of the matter of spatial attenuation, the loss of signal strength just due to distance. Each is a whole new subject and we can get to them another time. For the moment, hang in there; Cycle 22 may be sagging but that's no excuse for your efforts to do the same. Just proceed with "full glacial speed," working the "new ones" that show up, and keep in mind that "self-help" is the way to go!

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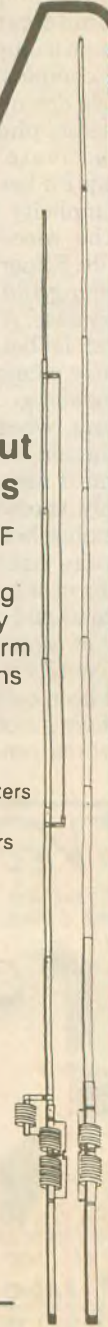
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How complex is your emergency communication structure? In any system (computer, radio, club, etc.) it is the complex interconnections which break down or cause confusion. If it takes six phone calls and a secret code to activate your communications group I'd bet you get very few calls.

Simplicity is more than just a word to the wise—it is an operational attitude. Experience should teach us that planning and simplicity work in almost every case. A simple plan that is understood is better than a confused response where we're told "grab everything and go." If we know what's happening, what's needed and what the situation is, our response will be planned and more effective than randomly throwing gear in the car (and spending hours on site getting set up).

We're habit forming people. When we form a habit it's tough to change (darn it) and often our habit gets in the way of instruction. We may hear that net control is now KA7GZH, but, drat, I've been calling KB7BSJ all day.

There's nothing simple about a two by three randomly assigned callsign.

There is simplicity in defining tactical names when you set up your emergency communications plan. What's simpler than calling net control simply "NET CONTROL"? Or stations at Red Cross buildings: RED 1, RED 2 or RED 3? (Aircraft contact SALT LAKE TOWER or CEDAR CITY RADIO. While these FAA radio sites have FCC assigned call signs, using them would cause confusion.) Checkpoints at marathons or races can be CHECKPOINT 1 or CHECKPOINT 5. You have POOPOUT BUS 1 or ROVER 4. Your aircraft relay could be SKYCOM and the emergency operations center for the state can be STATE EOC.

There is nothing in the Amateur Radio rule book that prohibits you from designating tactical identifiers *in advance*. This requires advance planning and suggests that you have a prepared communications plan and have made it available to your group. You still have to give your Amateur Radio call sign as per Part 97, but the tactical call can remain the same when you change operators. (Note: For you CAP folk, your call signs are already tactical call signs and are coordinated at a federal level. You're not at liberty to use something else because it sounds neat. You can use a tactical call number for a specific purpose. For example, the Colorado Wing CAP mission headquarters is *always PIKES PEAK SEVEN*.)

Good radio operators often key in on catch phrases or call signs and can quickly identify what's going on. In Colorado CAP, everyone knows that the call sign is for mission headquarters no matter where it is or who is operating the station. It cuts the confusion and for as long as I can remember they've stuck with the plan and been consistent.

KISS

In a recent article in *Analog Science Fiction/Science Fact*, the KISS (keep it simple, stupid) philosophy was dis-

cussed. The article noted how, as we make something complex (a "high tech zoo"), fewer people will understand or use it. The author lamented the experiences with overly-complex products designed with modern technology when "good, old low technology would have done the job just as well."

Connecting this concept to the local SAR system, take a step back and look at your "overhead" and see if you've made it simple or complex. Complex includes the mutual appreciation paperwork (multiple pages, multiple copies and 20-page instructions) or busy work that contributes little in the way of operational readiness or ability to respond.

This also applies to your operations plan or instruction classes. Quick, simple exercises often teach more than a complex multi-day massive practice mission. I have a mission communications plan that stretches to 35 pages —by the time the poor operator reads it (and optimally understands) the mission is over.

Keeping it simple ensures it can be understood quickly, and quick is what emergency response is all about. Keeping it simple also means that it will be kept consistent, and the plan won't change every time the commander changes.

Leadership

Wellman's second myth of search and rescue management is that it exists.

Did you see Gen. Norman Schwarzkopf's briefing to end all briefings? Wow! Remember when he described the low morale of the Iraqi troops? He said the best equipment and large numbers, without dedication to the cause, produces nothing. He talked of leaders who lied, deceived and threatened troops with death if they quit, and of troops having a cause they did not believe in with no vision of what was going on.

In other published remarks by Gen. Schwarzkopf, he told of an Iraqi com-

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mand structure which was highly centralized. He said, "The higher the centralization, the happier I am. That just eliminates initiative on the part of the subordinate. And that's a good way to lose. "We do exactly the opposite . . . The commander clearly makes his intent known . . . but we encourage maximum initiative on the part of the supportive commanders in the execution of their missions."

If you're interested in "leadership" you could find no better school than the Gulf War. Those who had the knowledge and expertise were allowed to do their job. President Bush did not micromanage the war and neither did the on-scene commander. It was obvious the allied forces had the vision of what had to happen, understood their role and were allowed to operate as they were trained—one giant team with a common vision of purpose.

In volunteer groups it is often the "maverick" who has the time and/or money to rise to leadership positions. Yet, it is the commander's lack of team understanding that hinders accomplishment of the mission. The maverick often does not expend the necessary time to prepare the group for adequate response and does not understand why his "followers" don't jump to obey each command.

A good leader is out in front. This implies study, lots of effort, experience and some expertise in many areas. A good leader operates from a position of strength (i.e. he/she knows all about the mission and purpose and is in touch with state-of-the-art). Weak leaders are often ill informed, are seldom up on latest developments and usually have a few close "advisors" who filter information so that the commander is happy (but uninformed). The weak leader must personally approve everything (micromanage) because no one else is allowed to do what needs to happen.

J-pole antenna

I've put to paper the instructions for

building a J-pole that can be used as an emergency field antenna. A normal VHF J-pole is too long to fit into your trunk, but with some threaded fittings, you can make it break down for easy storage.

During a recent Utah Amateur Radio Club meeting I demonstrated this antenna and, judging by the interest, I think you may like it too. The antenna is built out of copper pipe (one 10-ft. length) and has a low SWR over a wide range. It gives you an improved signal over a ground plane and especially a rubber duck. Send me a legal size SASE and I'll send you a copy of the instructions. I built two in just over 40 minutes. I've used these on a lot of SAR missions (they work great for CAP and MARS). Best of all, the cost to make one is about \$6, plus coax.

Grab and Go bag

As you prepare your field equipment there are some general items that could make life easier. Among these are: assorted hose clamps, small (trial size) bottle of mouth wash, lip balm (not in a plastic container), throat lozenges, duct tape, masking tape, gallon size zipper lock plastic bag and some large trash bags.

I found a one-piece clear plastic 5x7 photo holder was pretty handy as well. I write the net control or mission information on a piece of paper and use the photo holder atop the rig. This puts needed information where it's easily seen and keeps it from getting buried under the paper pile that grows during a mission.

The best flashlight I have for my field kit is a Radio Shack goodie that has a switch which stays on only when held down. The flashlight runs on AA batteries (which is what the portable computer, portable radio, etc. use) and won't turn on in your coat pocket or gear bag. The light is rugged plastic, inexpensive and has good light output for its size.

Until next month, 73, Jerry.

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pleted his first year on the board of directors and proven himself to be a very dedicated and conscientious member. First licensed in 1935 as W8NWB, he was an active member of Pittsburgh Chapter #6 and made a concerted effort to encourage all QCWA members to take an active part in the administrative processes of QCWA. He will be sorely missed.

1991 Convention

Registration forms are now available for the September 27-28 QCWA convention in Canton, Ohio. Registration is only \$10 for members and \$5 for guests. Plans are progressing beautifully. There will be the traditional Friday evening sing-along with Leo Meyerson, W0GFQ, and the "Hamstrings" from Akron, Ohio. The banquet speaker for Saturday evening is nationally known Roy Neal, K6DUE. The convention will be held at the Parke Hotel (4343 Everhard Road, NW, Canton, OH). Delta Airlines is offering special air-rates for the convention.

There will, of course, be a banquet, breakfasts, tours, special activities for the ladies, etc. For full details and a registration form, write to the convention chairman, Dennis Moriarty, K8AGB, 2455 40th Street, NE, Canton, OH 44705-2857 or phone 216/452-3872. Make your reservations early to assure good accommodations and to help the convention committee with its planning and early preparation expenses. Send in at least your basic registration right away. You can always add activities if you wish (or modify your original registration) at a later date. Early income can be a big help to a convention.

Scholarships

One last reminder about the seven QCWA scholarships being offered this year: requests for applications must be made before the end of May, and the completed form must be returned

before the end of June. Help us find some deserving candidates. Endorsement of a QCWA member is required. These scholarships pay \$750 each, and that can put at least a small boost in the college budget. Applications are available from: FAR Scholarships, 6903 Rhode Island Avenue, College Park, MD 20740.

Chapter historians

A suggestion that each QCWA chapter appoint a chapter historian has been offered by Lester Peterson, W0YCV, past secretary of Wisconsin Chapter #55. This is an excellent idea. Certainly many chapters have already done this, but we hope that any who have not will give it immediate consideration. It is relatively easy to keep up a record of important milestones in the history of a chapter but it is surprising how fast those items can be lost in antiquity—and how difficult they can be to recover. How many can even remember who your officers were just three years ago? How about 10 years ago? Or 20? All of this can be very interesting and important to later generations of members.

Lester also suggests that the historian keep a record of statistics on each member and be responsible for notifying headquarters of the passing of chapter members. The historian's records can be very helpful in detailing the activities and accomplishments of individuals as well as the activities and accomplishments of the chapter itself.

Tapes for the blind

The tape program continues to be quite popular among QCWA members who are sight impaired. Audio cassettes providing the highlights from the QCWA Journal are available upon request. The tapes are free. If you know any QCWA members who might benefit from this program, have them write to QCWA Membership Services, Tape Coordinator Blanche Randles, W4GXZ. 73, The Owl. □

Cast your ballot

Ballots for the election of members to the QCWA Board of Directors will be in the mail any day now. Give this ballot your very serious consideration. This is a full ballot this year, with the election of all officers as well as five directors. Study the biographical information on each candidate and vote for the people you feel will do the very best job in representing your interests and promoting the welfare and the future of QCWA.

Director Backstrom is Silent Key

We are very sorry to report the death of QCWA Director "Pete" Backstrom, W3DM. He passed away on February 2 at the age of 73. Pete had just com-

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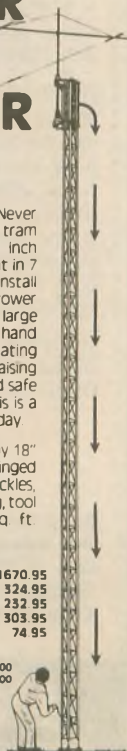
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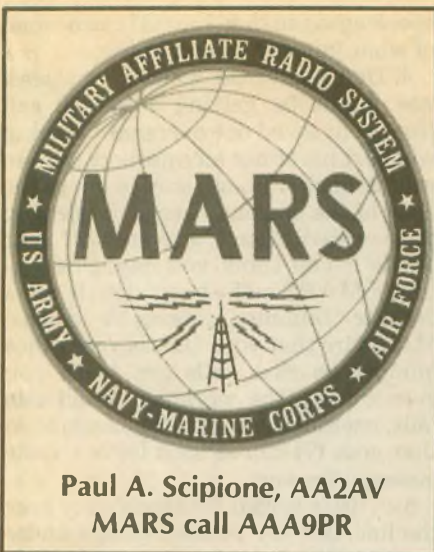
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months) to provide emergency communications nets, technical training, and MARSgrams (telegram-type messages sent via radio), as well as phone patches. Each year these skilled volunteers donate time and services worth in excess of \$25,000,000 to the Armed Forces.

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Phone patches are radio-telephone calls that travel between the GI's distant location to a MARS station in the US. The call is then "patched" into an existing domestic telephone system (MCI, Sprint, AT&T or GTE) for the last link between the stateside MARS station and your home or office. Most of the phone patches from personnel in Operation Desert Shield/Storm are being paid for 100 percent by MCI and Sprint. The radio portion of the call travels thousands of miles via HF (high frequency or short wave) radio when we bounce the signals off various layers of the ionosphere, some 30 to 50 miles up into space. Phone patch calls really work! Best of all, your GI can make a call from nearly anywhere.

Phone patch DOs

1. Speak a little louder, clearer and slower than normal. The call is traveling thousands of miles via radio and ionospheric skip, so you need to help to make it all work.

2. Be enthusiastic and upbeat. Such positive emotions will be communicated via MARS and your GI will feel a lot more upbeat and less lonely. That's the whole concept of MARS phone patches—to let people enjoy the intimacy of a voice contact and thereby improve the morale and welfare of both you and your servicemember.

3. Do try to be flexible about the time of day when your loved one might call via MARS; 2 a.m. on the East Coast is 10 a.m. in the Persian Gulf. Don't get upset if the call comes through in the middle of the night. Believe me, a few winks of sleep is little to pay for a few

A quick guide to MARS phone patches for the relatives and friends of service men and women

I got the idea to write this column while I was running phone patches from our GIs in the Persian Gulf at AAR2USI (Ft. Monmouth, NJ). A mother in Georgia got so flustered when the call started that she hung up her phone! Fortunately we were able to reestablish contact with her son and she was able to cope with the "strange" procedures the next time around.

This is a quick guide to what to do and what not to do if you receive a phone patch from a loved one in the service via one of the three MARS systems (Army, Navy/Marine, and Air Force). If you have a loved one in the service or know someone who does and you're unfamiliar with the procedures, keep these guidelines handy near the telephone.

If any are altogether unaware of the system, MARS stands for "military affiliate radio system." There are more than 12,000 Amateur Radio operators nationwide who volunteer their time (a minimum of 12 hours every three

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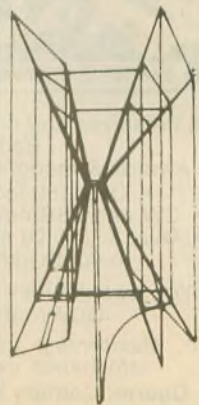
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wonderful minutes on the phone with your loved one overseas!

4. Do remember that only your serviceperson can initiate a MARS phone patch; you can't call them. That's because it is impossible for us to know exactly what location (which MARS station) overseas and at what time we would need to place a call to them.

Phone patch DON'Ts

1. Don't ask your GI where he or she is located or about any matters of military strategy. Remember that a MARS phone patch is over the air—i.e. one of the world's biggest "party line" calls. We must assume that our enemies can and do listen to many of our phone patches. This restriction should be no problem, though—you and your loved one should have plenty of other things to talk about. As they say in the WWII movies, "Loose lips sink ships."

2. Don't waste any time—the MARS call will probably last only four to five minutes. Keep a list of what you want to say and what you want to ask by the phone so that you and your loved one overseas can get the most out of each phone patch. And please don't get mad at us if your relative is told to end the call. It is the MARS operator overseas who controls the length of each call. Keep in mind that there is probably a long line of other GIs who want to make calls.

3. Avoid short responses. One- and two-word answers drive us nuts because we don't get the time we need to manually switch radios from *send* to *receive*. Also remember to wait a second or two after you have heard your GI say "over" before you start to

speak again so that your GI can hear all of what you say to him or her.

4. Don't leave the house if you think you might be getting a MARS call from your loved one overseas. Nothing will hurt his or her morale more than to wait in line for hours, only to get to the head of the line and hear your line ring unanswered. Also try to stay off your phone if you think you might be getting a MARS call—busy signals are a definite "bummer" among the troops. Make sure that your GI has your office number so that calls can reach you even during the workday. If all else fails, use a home answering machine so that your GI can at least leave a voice message for you.

5. A little verbal flirting is okay over the line, but try to keep things under control. We can get into trouble if we let X-rated material get out over the airwaves, not to mention the even greater personal frustration that your loved one overseas might experience. Both of you should try to keep things in good taste. What the heck—you can always blow him or her a kiss over the phone!

6. Be very careful about how you break bad news to your serviceperson overseas. If a relative or friend has died or is seriously ill, don't just suddenly spring the bad news. Consider sending an emergency message via the American Red Cross first.

7. Lastly, don't expect the quality of a local phone call. Your voices are traveling thousands of miles via short wave and all kinds of atmospheric and sun spot activities can cause interference. Just enjoy your call, warts and all!

I hope that this brief guide lets both you and your serviceperson enjoy phone patches more via the MARS systems. When we MARS operators hear the joy in your voices, that's all the pay we need to keep the system going and growing!

Dr. Paul Scipione is National Coordinator of Public Relations for Army MARS. He became involved in MARS as a direct result of the phone calls home that he was able to make from Vietnam via MARS. If you would like to get involved, call 1-800-633-1128 toll free. □

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10-10 INTERNATIONAL News

Chuck Imsande, W6YLJ
10-10 19636

It's convention time

10-10 has a convention every other year, and this is the year! The Republic of Texas Chapter is the host for the third International 10-10 Convention which will be held in Arlington, Texas on June 7, 8 and 9, 1991. As has been the practice in the past, the 10-10 Convention will be held in conjunction with the ARRL Ham-Com at the Arlington Expo Hall.

In addition to the normal Ham-Com events (technical forums, DX forums, flea market, vendor and manufacturer displays and all of the other great ham convention activities), 10-10 will have their own activities. These will include Ten-Ten forums, chapter tables and possibly a 10-10 banquet. In addition to normal Ham-Com prizes, 10-10 will also have prizes just for 10-10 members.

The 10-10 Board of Directors will hold their annual meeting at the convention, and 10-10 members are invited to attend. If you are interested in obtaining an information package, send your SASE to Ray Moyer, WD8JKV, 303 Westover Drive, Euless, TX 76039.

10-10 Scholarship Award

It's that time of the year again when the 10-10 Scholarship Award is about to close for 1991. 10-10's Scholarship Award is administered by The Foundation For Amateur Radio (FAR) along with 35 other scholarships sponsored by a number of Amateur individuals and clubs.

10-10 sponsors two \$750 scholarships, and these are awarded to 10-10 members who plan to pursue a full-time course of study beyond high school and are enrolled in or have been accepted for enrollment at an accredited university, college or technical school.

Applicants for the two 10-10 scholarships must be nominated by a 10-10 member. If you know of some deserving individual and would like to nominate him or her for one of the 10-10 scholarships, send your request for an application form to: FAR Scholarships, 6903 Rhode Island Avenue, College Park MD, 20740; and note you are interested in the 10-10 scholarships. Your request must be postmarked prior to May 31, 1991.

Along this same line, 10-10 would be very happy to have your contribution to add to the 10-10 Scholarship Fund. Please send your check (made out to the 10-10 Scholarship Fund) to Gerry Gross, WA6POZ, 643 N. 98th #142, Omaha, NE 68114. No amount is too small! If everyone reading this column would put a green stamp (\$1) in an envelope right now and send it to Gerry, the scholarship fund would be in great shape! (A \$5 stamp would help even more!) How about it? Support 10-10!

New director and area manager

It was with regret that President Norm Lefcourt, W6IRT, accepted the resignation of Tom Henderson, K4CIH, from his directorship and as District Manager for the 4th District states of North Carolina, South Carolina and Virginia. Health reasons as well as military commitments will preclude Tom from having time to do justice for 10-10. Tom has been a strong supporter of 10-10 and his efforts will be missed. We all thank him for his past work.

President Norm has appointed Jim Michaels, W6PGM, 10-10 #10, as Tom's replacement as Director. Jim was the person who received the next highest number of votes in the past election for Director. Jim will also replace Tom on the Planning Committee.

Rick Roberts, N4KCC, 10-10 #41852, will accept the duties as District Manager for the 4th District states of North Carolina, South Carolina and Virginia. This will be in addition to Rick's duties as Manager for the 4th District states of Florida, Kentucky and Tennessee. Those members in North Carolina, South Carolina and Virginia should now send your dues and other membership correspondence to Rick at 7106 Ridge Stone Drive, Ooltewah, TN 37363-8871.

New 10-10 OM/XYL Award

The informal OM/XYL certificate, which has been around for a number of years, is being replaced by a new, formal 10-10 OM/XYL Award. This new official 10-10 award will have the same basic requirements as the former certificate. The basic award requires contact with 10 OM/XYL teams. A numbered certificate will be issued for submittal of an application. Contact an additional 15 OM/XYL teams and a

colored seal will be issued. Additional colored seals are available for contact with each additional 25 OM/XYL teams. QSL confirmation is *not* required for this award. It is on the same basis as the BAR Award (the honor system). The basic certificate cost is \$2 and the seals are no charge except for an SASE.

Elaine Nickoloff, N8CBE, has been the Certificate Manager for the informal OM/XYL certificate and has agreed to continue as the manager for the new award. For Rules and Application form send an SASE (#10 business size) to the 10-10 OM/XYL Award Manager, Elaine Nickoloff, N8CBE, 10-10 #30409, 5583 E Atherton Road, Burton, MI 48519.

For those who hold the informal certificate, a new certificate can be had, with all up-grade seals, by sending all of your old certificates along with \$2 to Elaine. The new two-color certificate, with the original number, will be issued to replace the informal certificates previously issued.

Are your dues current?

It is easy to forget about paying your dues. It happens to all of us. The first clue is you have not received a copy of the *10-10 International News* for some time. The cost of 10-10 dues is still the best bargain in Amateur Radio, still just \$4 per year. If your dues have expired, how about sending your renewal to your District Manager right now? A strong organization is based on "active members."

If you are one of our "lost sheep" and can't find your 10-10 number, send me a list of *all* of your calls, current and previous, and I will check the computer for your number. Remember, 10-10 numbers are issued for life, never re-issued, so if you ever had one it should be in our computer data base. Please include an SASE.

If you are not a 10-10 member and would like information about how you can received your own 10-10 number, send me a "green stamp" (\$1) plus two first class stamps, and you will receive our 24 page information manual and a copy of the latest issue of the *10-10 International News*, 10-10's quarterly magazine. Please, *no* SASE, but an address label would be appreciated. Send your request to Chuck Imsande, W6YLJ, 18130 Bromley Street, Tarzana, CA 91356-1701.

As a final note . . . please do not send me your Application for Membership. Each month I receive several applications. Only District Managers can issue 10-10 numbers. Please read the instructions carefully before sending your application. Sending me your application only delays the issue of your number, as I have to forward it on to your District Manager. 73, es cu next month. □

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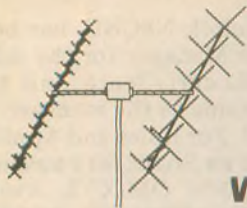
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Amateur Satellites



WB5ZDP
Keith Berglund

For this month's column I had the great pleasure of interviewing Doug Loughmiller, KO5I, President and General Manager of AMSAT. Doug has been involved with the AMSAT and the Amateur satellite program since the days of OSCAR-6. Doug's first office in the AMSAT organization was that of Area Coordinator. Since then he has held the offices of Asst. VP of Operations (Spacecraft Operations), VP of Operations, VP Field Operations, AMSAT-NA President (1988), and then in September of 1989 he accepted the full time office of General Manager.



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Worldradio: To begin with, Doug, tell us a little about AMSAT.

KO5I: Well Keith, the name AMSAT, or more precisely, AMSATNA (North America) stands for The Radio Amateur Satellite Corporation. It is a member based non-profit scientific and educational organization of over 6,500 people in the United States and around the world who have joined together for the purpose of designing, building, testing, and launching Amateur satellites, that is to say, satellites for use in the Amateur Satellite Service.

Worldradio: Doesn't setting up a satellite station require an engineering degree and many thousands of dollars?

KO5I: Absolutely not! There are several satellites in orbit now that can be worked using omni-directional antennas and ordinary HF and 2M SSB gear. RS-10/11 and RS-12/13 are what we call the "easy birds" because they are ideal satellites for beginners who are just getting started with the OSCARs. Both of these satellites employ linear transponders and are a lot of fun to operate.

Amateur satellite operation is like any other part of Amateur Radio; if you just read the ads in the back of the magazines, you'd think that every piece of Amateur Radio equipment out there costs a whole pile of money. But we all know that you can go to ham-fests and buy used equipment at considerable savings. Amateur satellite equipment is no different.

Worldradio: Do you have to be an AMSAT member to operate on satellites?

KO5I: No, just as you don't have to be an ARRL member to be an Amateur Radio operator. Anybody licensed to operate on the frequency is free to use the birds. Keep in mind, though, that the satellites now in orbit were built and paid for by worldwide AMSAT members. These funds came primarily from memberships, software and publi-

cation sales, and, in some cases, by donations of hardware and facilities from generous companies. If you get on the birds, find that you enjoy satellites and would like to see it continue... you'll know what to do.

Worldradio: How many total satellites are there now operating in the Amateur satellite service?

KO5I: That's an important question, Keith, because most people don't realize what's available today. There are a total of 12 satellites operating in various modes, on various frequencies, and in different stages of post launch development. In addition, there is now constant Amateur activity from the Soviet space station Mir, and there is often Amateur activity when the Space Shuttle is in orbit.

Worldradio: Twelve satellites! All doing the same thing?

KO5I: No, not at all. There are two "birds," AMSAT-OSCAR-10 and AO-13 that are high altitude, wide coverage satellites where the DX opportunities are truly remarkable. These satellites employ linear transponders from 2M all the way through 2.4 GHz. There are many who have DXCC through these birds! UO-11, DO-17 and WO-18 are scientific and educational satellites which offer a wide range of capabilities to Amateurs who are involved in education. RS-10/11 and RS-12/13 are fantastic satellites for beginners, as previously mentioned. And then we have UO-14, AO-16, LO-19, FO-20 and AO-21 which are the digital birds. It's worth mentioning that FO-20 and AO-21 both also include linear transponders as well as their digital capabilities.

Worldradio: So there's something for everybody in the Amateur satellite program.

KO5I: Yes, Exactly.

Worldradio: 1990 was a very successful year for the Amateur satellite service, wasn't it? Please tell us about some of the events that took place during 1990.

KO5I: Yes, it was a very successful year! It was so successful that the ARRL Board of Directors proclaimed 1990 the "Year of the Amateur Satellite." This came about due to the sheer numbers of OSCARs that were placed into orbit. A total of seven satellites were launched. In January, six OSCARs were launched all at once

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from a European Space Agency Ariane launch vehicle and 16 days later, our Japanese colleagues, under the direction of the JARL, launched yet another OSCAR known as Fuji-OSCAR-21. In one month, the Amateur satellite community placed more satellites in orbit than had been launched in the previous fifteen years combined. It was great!

Worldradio: What are these new OSCARs designed to do?

KO5I: Well, they are primarily digital store and forward satellites. Four of them have a "flying mailbox" capability and one can take pictures of the Earth and transmit them down as packets which can be displayed on the screen of a PC. When Dove-OSCAR-17 is fully deployed, it will be able to use an onboard voice digitizer and speak messages down to Earth in plain English. It can be received on any 2M FM radio using ordinary omni-directional antennas. This will be an important tool for use by educators around the world.

Worldradio: Speaking of the Space Shuttle, Doesn't AMSAT have a hand in the on-going SAREX (Shuttle Amateur Radio EXperiment) program?

KO5I: Yes we do. Our VP of manned space activities is Bill Tynan, W3XO, and he serves as a member on the SAREX working group. I've kind of joined the group unofficially as Bill's assistant. AMSAT is a co-sponsoring organization of the SAREX activity along with the ARRL, and as such we've taken on significant operational responsibilities for both STS-35 and STS-37.

Worldradio: Like the Orbiter to classroom linkups on STS-35?

KO5I: Yes, plus a great deal more. A number of our volunteers like Tom Clark, W3IWI, Joe Kasser, G3ZCZ/W3, and Howard Goldstein, N2WK, provided support for the packet robot activity on STS-35. W3XO worked out the scheduling and logistics of the classroom contacts. A number of our members served as tracking stations for the actual linkups—VK5AGR and PY2BJO, among others.

Worldradio: All in all, it sounds like the Amateur Space program is a hotbed of activity.

KO5I: Well, I'd say that's a safe statement. As far as I'm concerned, it's the best of Amateur Radio in many ways. And I'm convinced that the best is yet to come.

Worldradio: So you'd encourage other hams to get involved and operate via the birds.

KO5I: Absolutely.

Worldradio: Where does an interested Amateur get more substantial information?

KO5I: While there are a number of

sources for more information, the starting point is through AMSAT Membership.

Worldradio: Does membership include any kind of publication?

KO5I: Yes it does, the *AMSAT Journal* is a bi-monthly publication which serves as the flagship publication of the organization.

Worldradio: What other good things are available to members?

KO5I: As you know, AMSAT has an extensive tracking software and publications exchange in which members are entitled to discounts. AMSAT maintains satellite tracking software for most popular computers from the

Timex Sinclair to the IBM PC and everywhere in between. Some of the publications include *A Beginner's Guide to OSCAR-13* and *The Satellite Experimenter's Handbook*.

Worldradio: Where can one write for more information?

KO5I: AMSAT Headquarters is located in the Washington DC area. Write (include SASE) to AMSAT, P.O. Box 24, Washington D.C. 02244. If you want, call 301/589-6062 or FAX to 301/608-3410.


Worldradio: Thank you for your time today, Doug. Good Luck.

KO5I: You're welcome! See you on the satellites. 73. □

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Hi gang, welcome to another QRP column in *Worldradio*. As you may have noticed by now, this column has gone bimonthly. This allows me some latitude in writing and also assures that I can provide fresh input in each column and not re-hash the same old stuff. Many thanks to all of you who have written saying kind words about this column. This kind of feedback really makes it all worthwhile.

I sit here writing this the weekend after the ARRL DX Contest (SSB). Going over the logs, I must admit that my 10M entry was not only great fun but it netted me about nine new countries for my QRP DXCC totals. The Ranger AR-3500 was my rig of choice, running about 5W output on SSB and, to compound the handicap, I made all con-

tacts while mobile in my van (102-inch CB whip on a ball-mount on the right rear fender)! It just goes to show that DX contests are made for the active QRP DXer. Contest operators are a cut above the rest and can pull weak QRP signals out of the noise for a QSO or multiplier point. A word to the wise: enter DX contests (both CW and SSB) using QRP power levels and you *will* be pleasantly surprised at the results. This is a sure way to boost your DXCC totals and get some rare DX contacts at the same time.

Last column we looked at three outstanding record-keeping programs for the active QRPer. Mike Zane, K6URI, wrote to tell me about his favorite log-keeping program, *Hyper-log*. Mike and I go back quite a ways, and I hadn't heard from him in several years. I first encountered K6URI during my infancy with the Pacific Amateur Radio Guild (PARG) in the early, early 1970s (this was when Howard Pyle, W7OE, was still active). I was in the Azores at the time (CT2BH), and Mike and I started corresponding on a regular basis. The nice thing about this column is that occasionally I am able to re-establish contact with people whom I haven't heard from in a while. Mike is one of those people. Good to hear from you, Mike. Now, get on the air!

This year's ongoing topic for the QRP column is DXing. Therefore, it is time we give some thought to DX newsletters. I have long been of the mind that nothing takes the place of a DX newsletter. For many years I have subscribed to one or another of the weekly (or biweekly) DX news sheets. The *Long Island DX Bulletin* is one of the better ones around. It is published every two weeks and is chock full of outstanding DX information including upcoming DX operations and QSL information. *QRZ DX* is the newsletter that I am currently subscribing to; it is published 50 times per year (basically once per week) and is very interesting.

It is up to date and has outstanding DX information in each issue; in addition to the latest DX happenings (current and projected), there is a QSL information column, propagation forecast, DX calendar and a large section devoted to what has been heard on the air over the last week. This last section is especially useful when trying to establish operating habits of DX stations. It also allows you to plan your operating schedule to coincide with the operating habits of the DX station. A sample copy of *QRZ DX* is available by sending one dollar (\$1) to: *QRZ DX*, P.O. Box 832205, Richardson, TX 75803. Editor Bob Winn, W5KNE, will also provide the mailing in an envelope upon request. (This keeps your copy of *QRZ DX* from getting trashed by the US Mail.)

Mike Bryce, WB8VGE, recently sent me a copy of the new *HW-8 Handbook*. The QRP fraternity has been waiting almost two years for this third edition of the famous *Hotwater Handbook*, originally edited by Fred Bonavita, W5QJM. Is the new version worth the wait? Yes, especially if you are in possession of an HW-9 that needs modification. In comparing the new edition with the first edition of the *Hotwater Handbook* it was noted that the new edition carried 10 modifications (for the HW-8) that did not appear in the first edition. Several of these mods were presented in the second edition, however. So, is it worth the price (a modest \$7.95 including shipping) for HW-8 owners who already have either the first or second edition? That depends. One of the most duplicated mods on the HW-8 is the addition of the Receiver Incremental Tuning (RIT) to the receiver. Two good RIT mods exist in earlier versions of the *Hotwater Handbook*. However, a "Super RIT" mod graces the pages of the new edition and might be well worth the purchase price in itself.

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HW-8 Handbook, HW-9 modifications abound within the covers. Many of these mods are taken directly from the pages of *The QRP Quarterly* (the quarterly publication of the QRP AR-CI). I have copied most of the mods from *The Quarterly* and found them to be much easier to read and use as presented in the *HW-8 Handbook*. Overall quality of the new edition is good. There are a couple misspelled words, but the circuit drawings (done with CAD) are much easier to read than previous editions. Unfortunately, Mike was unable to get all circuit diagrams done in CAD, so there is a mix of schematic diagrams, some good and others not so good. If you have an earlier version of the *HW-8 Handbook* and have already modified your HW-7 or HW-8, then you probably have no real need to buy this newest edition. However, if you have one of the new HW-9s and are dissatisfied with its performance (and most people are bitterly disappointed with the performance of their stock HW-9) then you need this new *HW-8 Handbook*. For more information, contact Mike Bryce, WB8VGE, 2225 Mayflower, NW, Massillon, OH 44647.

Antennas are an important part of the QRP station. As a matter of fact,

most successful QRPers rate the antenna farm the singular most important area of the QRP station. Finding a new antenna in the ham magazines and getting it to "play" properly is sometimes an exercise in patience. Why do articles expound on the ease of erection and pruning when the reality of the situation dictates multiple trips to and from the shack to orient and tune the new antenna? Very simply, Edsel Murphy lives for moments like this. Recognize that the ease of installation and tuning is inversely proportional to the size and gain of the antenna.

To lessen the frustration and maximize the time spent on antenna installation and adjustment, MFJ Enterprises has marketed two very handy devices. Enter the MFJ-207 HF SWR Analyzer and the MFJ-208 VHF SWR Analyzer. These two nifty pieces of test gear enable the antenna experimenter to read SWR directly at the antenna without numerous trips to and from the shack. Now you can take either of these devices right to the antenna under test, couple the 207 (or 208) directly to the antenna, and, using a portable frequency counter connected to the SWR Analyzer, read resonant frequency and determine bandwidth (2:1 SWR points) of the antenna.

Boy, I wish I had the model 207 when I was installing my Butternut HF-6V vertical. It sure would have sped up the process of tuning the multi-band vertical. In extensively field testing both units, I am amazed at the ease and speed with which an HF or VHF antenna can be tuned to the desired operating frequency. I am also amazed that no one had thought of this idea earlier and marketed something similar. MFJ has really cornered the market on these items. Both models sell for about \$100 and are well worth the cost in their addition to the shack test equipment inventory.

We are at the end of another column. Next time I will share some mods on the Argonaut 509 and 515 QRP transceivers. At this time I will call for input from the readership regarding mods for these two transceivers. If there is enough interest I will publish an Argonaut handbook of modifications. Anyone wishing to contribute their favorite mod to either of these radios will receive a complimentary copy of the handbook when it is published. Since WB8VGE has published his new edition of the *HW-8 Handbook*, I will no longer be providing reprints of the first edition of the *Hotwater Handbook*. 73s es gud DX. □

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MARS

The Military Amateur Radio System demonstrated how valuable it can be in the recent conflict in the Middle East. It must have made a big difference in many lives to be able to receive and/or send messages while in the desert. Many servicemen are in countries where the US has no third party traffic agreements. Messages to these countries (Korea, Germany, Philippines, Japan) can be passed to and from any service person via MARS.

The message can enter the NTS to be forwarded to MARS. Full information on the service person (full name, rank, social security number and unit address) is needed. A message can also originate with the service person through a MARS station and then be transferred to the NTS for delivery. When the message is refiled (transferred from MARS to NTS) the Amateur station receiving the MARS traffic reformats it to NTS specs and puts their own Amateur call on the message. There is a lot of interaction between MARS and the NTS. Each MARS station should be encouraged to send a monthly activity report to the section traffic manager (listed in *QST* under section news).

Public Service Honor Roll

The Public Service Advisory Committee (established by the ARRL), has been reviewing the criteria for your monthly Public Service Honor Roll (PSHR) report to your Section Emergency Coordinator. They just released their recommendations. The bottom line, after combining several categories, was to add a new category, Originations, and to delete a category, Handling Emergency Traffic. On the surface, it seems strange that a report submitted each month to the Section Emergency Coordinator would eliminate handling emergency traffic and leave nothing but general traffic classifications. Hopefully the reasoning behind these recommendations will be made clear soon.

Traditionally, each piece of delivered traffic counts as one point on the monthly PSHR report. It would seem the reciprocal should also be worth one

point. If you give a piece of traffic to a MARS station, it counts as one sent. One would certainly think that the reciprocal of this would be that when you acquire and reformat MARS traffic as NTS, it would become one point as received, since it was received on a radio frequency; The *ARRL Handbook* clearly says that it's whether or not you are transferring the traffic on radio or not that makes the difference as to whether you are sending and/or delivering a message to a third party. There is some controversy here. Some have said they feel it's an origination point. In the past this has made no difference. It will now.

80M Novice band moves

On March 16, 1991 the Novice/Tech band shifts to 3675-3725 kHz. Many nets will now fall in the Novice section. The good news is that many who would like to try traffic handling now can. The bad news is that if we need to add power (some of these nets cover very large sections of the country and summer propagation often requires more power), we cannot. We must adhere to Novice power limits. Some nets may choose to move to a new frequency. As always, my *Worldradio* articles must be submitted six weeks before publication. Thus, this is being written in early March before the change takes place. It will be interesting to see how it affects everyone.

Be happy

Handling traffic is fun. Talking with and then meeting the stations with whom you handle traffic at hamfests and other events leads to an enjoyable camaraderie, as within any hobby. At another level, there is the awareness that if you learn to play the game well, you can be of genuine usefulness for your community in times of emergency. Practice for this emergency should be refined by participating in community events such as parades, runs, table setups at the mall, demonstrations at schools, etc. or attending a local radio club where activities and discussions are stimulating and whose members have established affiliations with the community (hospital, police, Red Cross, local government personnel), so they know who to call if help in communications is needed.

Another ingredient is to understand the procedures which are utilized in traffic handling. Traffic handling is an enjoyable aspect of our hobby, allowing us to simultaneously develop skill, organization and fellowship. While it may not make much difference to a person who doesn't operate with careful precision, it can make a difference to the total system. Many learn by listening to others. Traffic passing pro-

cedures were created to help pass the most traffic in the least amount of time. They should help the operator to organize the traffic in the most efficient way possible. As with anything, the procedures need to be reviewed occasionally to be sure they are the best they can be.

ARL sixty seven

"Your message number undeliverable _____ because of _____. Please advise." This is self explanatory. It is also mistreated. The number is already part of the readout. Thus, you don't need another NR. The reason should be stated but not analyzed. Information going back to the originating station can become just as garbled as the information you received. This could lead to a double misunderstanding. You have asked to be advised, so you should lay the message aside for a few days in case this happens. One of the most common reasons given for lack of delivery is, "incorrect phone number, no listing." A return message with the phone number given as words (two-one-zero-nine-six-four-one) may be helpful.

Packet

A new position on each area staff (EAN/CAN/PAN) has been created by Field Services at ARRL. Each area now has a "Digital Coordinator." They are to help integrate data modes with the NTS. The Pacific Area coordinator is WF6O. The Central Area coordinator is N5TC. The Eastern Area coordinator is N4SS. If the other two are anything like N4SS, Nick Zorn, they will be a great benefit in integrating packet, AMTOR, RTTY, etc. with the NTS.

Maryland/South Carolina

Many geographical areas utilize packet. I'm told that South Carolina has the equipment and is intending to link the state with high speed packet (9600 baud). Each radio is dual band to connect with 2M for local access. Maryland reports that all traffic is sent to WB3V for delivery. The station is supposed to be available to all with a digi hop or two. Each geographical area should work out a "data" plan. Perhaps our new digital coordinators can help by reviewing what is happening globally and make local suggestions.

Privilege yields responsibility

The FCC chose recently to send notices of apparent violation to a group of Amateurs stating that they may have used Amateur Radio to further a commercial enterprise. In itself, this is not original nor remarkable. Every Amateur, in particular a traffic handler, is aware of his responsibilities in

this area and is, from my experience, very conservative in its application. But responsibility falls particularly heavy on our shoulders because we handle so many messages from non-Amateurs who would not be aware of the rules. The new wrinkle was the fact that Packet Bulletin Board Stations were in this group. One PBBS was "appalled" that an Amateur in *store-and-forward* operation should be thought responsible for the content of messages passed by his station.

In past columns I've discussed the issue of traffic handling recognition for the *automatic* forwarding of NTS traffic. In the *non-automated* mode, responsible people take action to accurately originate, transmit, receive and promptly deliver traffic. Many of these people use data modes to accomplish the task. Many a PBBS sysop puts significant effort into NTS traffic. These personal efforts are the crux of our system and deserve the recognition that they get.

Some PBBS sysops say that it's impossible to comply, due to the very nature of packet. They feel that only the originator should be held accountable. But the originator may be the rare irresponsible Amateur or even a "pirate." Normally, the system acts to contain that damage; *People* do—*machines* don't. Perhaps our new digital coordinators can work this out with the FCC. Are packet/AMTOR stations accountable to the same FCC rules as SSB/CW operators? □



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AERIALS

Mobile antennas

C. H. STEWART, KD5DL

If you do a lot of driving then you've probably thought a lot about operating HF mobile. And, if you've thought so much about it, you've undoubtedly discovered that the biggest limiting factor to getting a signal on the air is the antenna.

Sure, it would be great if cars were built at least 125 feet long and overpasses were all 65 feet high. That's just about the right size to put up a trapped dipole for 80M and up. Unfortunately, you'd soon go broke feeding meters if you ever had to park downtown.

Theory works two ways against mobile antennas. Theory says that shortening an antenna below about a quarter wavelength lowers its radiation resistance. If, for example, a transmitter fed 100W to a theoretically perfect 50 ohm antenna, all 100W would be radiated. But mobile antennas have so little radiation resistance that 100W into, say, an 8 ft., base loaded, 80M whip antenna will only get

one watt, or less, into the air!

Theory also says that as an antenna is shortened, its effective bandwidth is also narrowed. On 80M the acceptable bandwidth may only be a few kilohertz either side of resonance.

We'll show you how to use pocket computers to play with theory and, hopefully, design a practical custom built HF antenna for mobile use. And, as a bonus, we'll even show you how to get that 80M dipole mounted on your current family car.

The theory

Antenna theory says that a halfwave dipole in free space has a radiation resistance of 73.13 ohms. It further states that half of a halfwave dipole has half the radiation resistance, or about 36.56 ohms. More importantly, theory says that there is no such thing as a real "free space" antenna.

Half of a halfwave antenna is a quarterwave antenna. In real life a quarterwave antenna can be mounted vertically and will work fine for fixed as well as mobile applications.

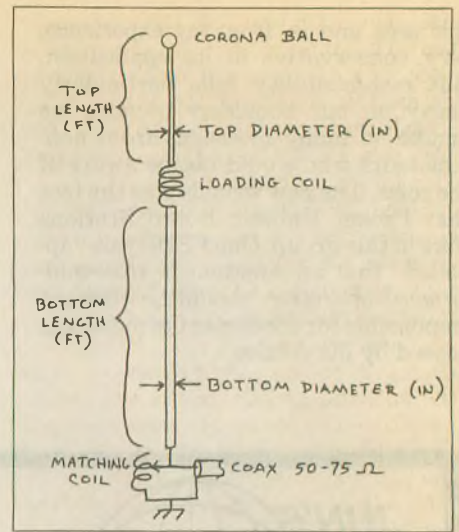
But there is a practical limit on the height of a vertical mobile antenna—it has to do with tree limbs and overpasses. Generally 14 feet is about as high as a mobile antenna should be, and that's about the limit for a 20M operation (and higher).

Last month ("Short dipoles," Aerials column) we learned how to use a pocket computer to shorten a dipole by inserting loading coils in the legs. We can do the same thing with a mobile antenna if we want to operate 30M and below.

Theory says that the electrical field strength of an antenna is dependent on, among other things, the RF current, and that current is greatest at the base of a vertical antenna. Theory and experience have both shown that if a loading coil is used to shorten a vertical antenna, current is somewhat linear at the base section and radiation resistance is increased somewhat.

This means that we should strive for a long base section by placing the loading coil near the top of the antenna. Unfortunately, loading coils are larger near the end, and at highway speeds they tend to create a lot of wind resistance. Still, top-loading should be considered as a way to increase radiated power.

Theory says there are resistances



The pocket computer permits us to design and custom build HF antennas for any frequency and practically any size whip, all on paper! Final pruning will be much simpler than when starting from scratch, and results will be much more predictable.

other than radiation resistance to worry about. One of them is coil resistance. It is here where we get into a little controversy. Some designers insist on using the highest-Q coil possible to cut coil resistance, while other designers insist that coil resistance doesn't really matter much because it doesn't change radiation resistance at all. In fact, some designers insist on using low-Q coils, saying the antenna's bandwidth is increased, and that the coil becomes a radiating element of the antenna (citing the good performance of an all-coil, helically-wound short vertical).

Along these same lines, theory says that a low-Q antenna exhibits greater bandwidth. One way of lowering antenna Q is to make the radiator thicker. CB whips can get away with 1/8-inch whips because the CB band is relatively narrow. The ham bands, being wider, could use "thicker" antennas, say 1/2- or 1-inch plumbing (at least for the base section).

More to consider

When a car rolls down a highway it builds up static electricity, and a good place for the static to dissipate is off the end of the antenna (you can hear the static in your receiver). The tip of the antenna is also the high voltage end, and at higher power you can sometimes see the sparks fly. The problem is worst when the end of the antenna is sharp. Putting a metallic "corona discharge" ball up there will reduce or eliminate these problems.

We've all seen stealth CB anten-

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nas—the little four foot jobbers mounted on the bumper of a van or along the body of a car or truck. Think about it; an electric field will flow into nearby metals and will dissipate as heat, not RF. It's almost like using a dummy load for an antenna.

Since RF current is responsible for establishing the electrical field of an antenna, we want as much of that current as possible to work against the radiation resistance to give us every bit of power we can get into the air, not back into the car. That means putting the antenna as high up on the car as possible—the center of the roof is best; on the trunk is almost as good; down on the bumper is last choice.

However, if you have to mount the antenna on a bumper, consider doing it on the driver's side of the car. There's less chance of having a curb side tree damaging things there.

And, if you absolutely must mount the antenna below the roofline, at least consider putting the loading coil several inches higher than the roof. When you're on the highway the antenna will sway in the wind, and as the coil sways near the car's body, the metal in the car will detune it, creating all sorts of problems.

What the program does

Until recently, if you wanted to build your own HF mobile antenna, you had to go through a lot of trial-and-error, or you settled on someone else's published design. Bruce Brown, W6TWW, helped solve that problem by publishing formulas in the latest *ARRL Antenna Book* (and the *ARRL Antenna Compendium*, Vol. 1). His formulas are easily converted to *Basic* and requires less than 400 bytes of Casio pocket computer memory.

Lines 10 and 20 assign variables to the operating frequency and diameters of top and bottom sections. Each time you run the program you only need to enter these once. To change these variables, say for another frequency, you must rerun the program from the start.

Lines 30, 40 and 50 compute the characteristic impedances of the top and bottom sections (from the formula on page 110 of the *Antenna Book*). Line 60 uses the computed information to derive the antenna's degree-amphere-area (H), the electrical heights of the

```

0 REM: MOBILE ANTENNAS, BY KD5DL
10 MODE 4: INPUT 'F (MHz)',F: INPUT 'T
OP DIA',D: INPUT 'B DIA',M
20 S=D: T=M
30 INPUT 'T LNGTH',C: INPUT 'B LNGTH',
L: GOTO 50
40 E=60*(LN (48*C/D)-1): G=45*F*C/123:
RETURN
50 GOSUB 40:A=E:B=G:D=M:C=L:GOSUB 40
60 H=(G*(1+COS G)+B*COS G)/2: P=B+G: Q
=P/2:R=P^2/(312*Q^2)*H^2
70 I=SQR ((A*/TAN B)^2-(E*TAN G)^2): Q
=300
80 J=I/Q*(COS G)^2: K=J+R+10: L=SQR(K*
(52-K)): M=L/(2*pi*F)*1.5
90 N=1/(2*pi*F)-M: PRINT 'Lc=';INT (100
*N/100);'uH'
100 PRINT 'Lm=';INT (100*M)/100;'uH': P
RINT 'Rr=';INT (100*R)/100;'ohm'
110 D=S: M=T: GOTO 30

```

top and base sections (B and G) and the radiation resistance (R).

Line 70 computes the necessary inductance for the loading coil, then assumes a coil Q of 300. If you want to change the coil Q, assign your new value to variable Q.

Line 80 also makes the assumption that ground resistance is 10 ohms. Actual ground resistance varies from car to car and depends on where the antenna is mounted. Ten ohms is just a compromise—you can change it as you see fit.

Line 80 also determines the loading coil's resistance (J) and adds it to the radiation and ground resistances to "best guess" total antenna resistance (K). The variable L becomes the impedance of the matching coil, and M is the computed inductance of the matching coil (plus 50 percent, for tap pruning the system).

The rest of the program prints out values for the loading and matching of coils and the radiation resistance you can expect from the system. The program automatically returns to line 30 so you can experiment with various lengths for the top and base sections.

As with any antenna, you'll still need to prune and tune. You might want to consider using a telescoping top sec-

tion and design the antenna for mid-band operation. Lengthening or shortening the telescope will resonate the antenna at other frequencies throughout the band.

The mobile dipole

Earlier we hinted that you could mount a 40, 80 or even a 160M dipole on the old family car. Credit goes to Don Johnson, W6AAQ, who describes the trick in his book, *40 Years of HF Mobileing*. Don says you can mount a coil-loaded vertical at the back of the car as one leg of the dipole, and use the rest of the car for the other leg of the dipole. If the car isn't long enough, simply make up the difference with another coil-loaded antenna grounded to the frame at the front end. Don says it works like a champ. □

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Arkansas

The NORTHWEST ARKANSAS AMATEUR RADIO CLUB will sponsor a hamfest on Saturday, May 11 from 8 a.m. to 4 p.m. in the Community Building at the Rodeo Grounds in Springdale.

Admission is free. Flea market tables are \$5 each, and advance registration is a must. Tailgating is \$4 per vehicle.

Hot meals and free parking will be available.

Talk-in on 146.76 (-600).

For further information, contact Jim Henington, KB5ITL, P.O. Box 278, West Fork, AR 72774; 501/839-2488; packet: KB5ITL@KA5BML.AR.USA. □

California

The NORTH HILLS RADIO CLUB will sponsor a hamfest on May 5 from 8 a.m. to 2 p.m. at the Elks Lodge in Carmichael. Features will include a raffle and door prize, flea market and refreshments.

Indoor tables will be available; outdoor spaces will sell at \$7 each.

Talk-in on 145.19(-) and 224.78(-).

For further information, contact Dick Thompson, W6AIP, 3571 Bodega Ct., Sacramento, CA 95864. □

Illinois

The KISHWAUKEE RADIO CLUB will sponsor the De Kalb Hamfest on Sunday, May 5, 8 a.m. at the Sandwich Fairgrounds in Sandwich.

Tickets are \$4 in advance (with two stubs) before April 15, or \$5 at the gate. Tables are \$10 each. Tailgate space is free with paid admission; set-up starts at 6 a.m. Overnight camping (though no hookups) is available.

Talk-in on 146.13/73 and 146.52.

For further information or reservations, send SASE to Howard Newquist, WA9TXW, P.O. Box 264, Sycamore, IL 60178. □

The CHICAGO AMATEUR RADIO CLUB will hold its annual hamfest on May 26 from 8 a.m. to 3 p.m. at the De Vry Institute of Technology in Chicago.

Tickets are \$4, or \$3 in advance. Some indoor space is available.

Talk-in on 147.225+600 PL.

For further information, contact CARC, 5631 W. Irving Pk. Rd., Chicago, IL 60634; 312/545-3622. □

The STARVED ROCK RADIO CLUB will sponsor a hamfest on June 2 at 6 a.m. at the Bureau County Fairgrounds in Princeton.

Tickets are \$5 at the gate, or \$4 in advance (before May 20). Camping and outdoor flea market area is free. Eight-foot tables indoors are available for \$10 each.

Talk-in on 146.355/955.

For further information, contact Bruce

Burton, KU9A, 1153 Union St., Marseilles, IL 61341-1710; 815/795-2201. □

Iowa

The CLINTON AMATEUR RADIO CLUB will hold its Hamfest '91 on Saturday, May 18 at the 4-H County Fair Grounds in Dewitt. Seminars on ATV and DX packet cluster will be featured, as well as VE testing and refreshments.

Gates will open at 8 a.m. Admission is \$4, or \$3 in advance. Tables will be available for \$5. Overnight security will be provided, and vendors will start set-up at 6 a.m.

Talk-in on 147.06 and 145.430.

For additional information, advance tickets or table reservations, contact Darryl Petersen, KD0PY, RR 1, Box 84, Bryant, IA 52727. □

Kentucky

The NORTHERN KENTUCKY AMATEUR RADIO CLUB announces Ham-O-Rama '91, to be held Sunday, June 9 at the Erlanger Kentucky Lions Park. Features will include door prizes, packet and antenna forums, indoor exhibit area for major vendors and an extensive outdoor flea market.

Doors will open at 8 a.m. Admission is \$5 (\$4 in advance), and children under age 13 enter free. Indoor vendor space is \$15 per table. Outdoor flea market spaces are \$2 each (tables will not be furnished). Set-up will begin at 6 a.m.

Talk-in on 147.855/.255 or 147.975/.375.

For more information or advance registration, contact KC4FET c/o NKARC, P.O. Box 1062, Covington, KY 41012 or call 606/341-1213. □

Maine

The PINE STATE AMATEUR RADIO CLUB will sponsor its Bangor Hamfest on June 1 from 8 a.m. to 2 p.m. at the Hermon Elementary School in Hermon.

Admission is \$2. Flea market, VE exams, refreshments, free parking and door prizes (to include an Alinco DJ560 dual band HT) will be featured.

Talk-in on 146.34/94.

For further information, contact Roger W. Dole, KA1TKS, RR 2, Box 730, Bangor, ME 04401; 207/848-3846. □

Massachusetts

The MIT ELECTRONICS RESEARCH SOCIETY, the MIT RADIO SOCIETY and the HARVARD WIRELESS CLUB will hold a tailgate electronics computer and Amateur Radio flea market on Sunday, May 19 from 9 a.m. to 2 p.m. at Albany and Main streets in Cambridge.

Admission is \$1.50, and there is free off-street parking for 1000 buyers. Covered tailgate space is available for \$5 in advance or \$8 at the gate; set-up begins at 7 a.m.

Talk-in on 146.52 and 449.725/444.725-pl 2A-W1XM/R.

For further information or space reservations, call 617/253-3776 or mail advance reservations before May 5 to W1GSL, P.O. Box 82, MIT Br., Cambridge, MA 02139. □

Michigan

The WEXAUKEE AMATEUR RADIO ASSOCIATION will sponsor its annual swap and shop on May 18 from 8 a.m. to 1 p.m. at the Cadillac Middle School in Cadillac.

Admission is \$3. Tables will sell at \$6 each.

Talk-in on 146.38/.98 repeater.

For further information, contact Dan Schmidt, KE8KU, at 616/775-0998 or write to the Wexaukee ARA, P.O. Box 163, Cadillac, MI 49601. □

Minnesota

The SPIRIT VALLEY AMATEURS' First Hamfest and Microwave DX Expo will be held on May 4 from 9 a.m. to 3 p.m., at the First United Methodist Church in Duluth. Features will include Amateur Radio and computer gear, microwave demos, refreshments and free parking.

Admission is \$4. Four-foot tables will be available for \$5.

For further information, contact Duane Flynn, KB0LC, 4907 Peabody St., Duluth, MN 55804; 218/525-4580. □

The PAUL BUNYAN AMATEUR RADIO CLUB of Bemidji will hold its annual hamfest on Saturday, May 4 at the local Moose Lodge from 7 a.m. to 3:30 p.m. A pancake breakfast and lunch will be served. In addition, there will be dealers, exams, programs and a flea market.

Talk-in on 146.13/73.

For more information, contact Don Illies, N0MAZ, RR 2 Box 187AA, Bemidji, MN 56601; 218/751-9254. □

New Hampshire

The CONTOOCCOOK VALLEY RADIO CLUB will sponsor a hamfest on Sunday, June 2 in Contoocook, near Concord.

Admission is \$5 for sellers and \$1 for buyers. This hamfest features an Amateur Radio and computer electronics flea market and tailgating.

Talk-in on 146.895 and 146.94 repeaters, and 52 simplex.

For further information, contact K10PQ@pkt WA1WOK-2, or call David Perrin, K10PQ, 603/746-5090 evenings. □

New York

The SOUTHERN TIER AMATEUR RADIO CLUB will sponsor the Southern Tier Hamfest on May 4 from 8 a.m. to 4 p.m. at

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ICOM - Order Model I for all Icom (2AT/02AT). Slides on bottom of radio.

TEMPO, SANTEC - Order Model T (Simple mod). Write for spec sheet/info on other radios.

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the Marvin Park Fairgrounds in Owego. Features will include the 32nd Annual Banquet, seminars, ARRL Forum, VE exams, vendors' exhibits, indoor and outdoor flea markets, refreshments and tailgating.

Admission is \$3 in advance, or \$4 at the gate. Tailgating is \$2 extra. Tables are available for \$15. Banquet cost is \$18 per person in advance (includes general admission).

Talk-in on 146.16/76 or 146.52/52.

For further information, contact STARC, P.O. Box 7082, Endicott, NY 13760. □

The METRO 70cm NETWORK will sponsor a hamfest on May 5 from 9 a.m. to 3 p.m., rain or shine, at the Lincoln High School in Yonkers. Features will include Amateur Radio gear, computers, VE exams, hourly prizes, free frequency checks and free parking.

Admission is \$4; kids under 12 and XYLs enter free. Tables are available for \$15; \$10 each additional. Full payment must be made in advance; last pre-registration date is May 3. All tables sold at the door will cost \$20. Set-up will begin at 7 a.m.

Talk-in on 440.425/445.425T, PL 74.4 Hz., 146.910R/146.310T, 223.760R/222.160T PL 74.4.

For further information, contact Otto Supliski, WB2SLQ, 53 Hayward St., Yonkers, NY 10704; 914/969-1053. □

The ROCHESTER AMATEUR RADIO ASSOCIATION will sponsor the Rochester Hamfest and Computer Show over the weekend of May 17, 18 and 19 at the Monroe County Fairgrounds in Rochester. Show hours will be from 9 a.m. to 5:30 p.m. on Saturday and from 9 a.m. to 1:30 p.m. on Sunday. This is a huge show; the 1990 show was a sellout with 59 exhibitors occupying 117 booths, and 6,000 attendees. For full details and information, call 716/424-7184 or 716/424-1100 during weekday business hours.

The HALL OF SCIENCE AMATEUR RADIO CLUB will sponsor the Hall of Science Hamfest on June 2 (rain date June 9) at 9 a.m. in the New York Hall of Science parking lot, Flushing Meadow Park, in Queens. Features will include an Amateur Radio exhibit station, tune up clinic and films as well as free parking, door prizes and refreshments.

Donations are set at \$4 for buyers and \$6 (per space) for sellers.

Talk-in on 445.175 repeater and 146.52 simplex.

For further information, contact Steve Greenbaum, WB2KDG, at 718/898-5599 or Arnie Schiffman, WB2YXB, at 718/343-0172.

North Carolina

The DURHAM FM ASSOCIATION will hold its 18th annual Dur-Ham-Fest on Saturday, May 25 under the south parking deck of the South Square Mall shopping center in Durham, rain or shine.

Advance tickets are \$4 (\$5 at the door) and may be obtained from R.P. Buehlmann, N4IQA, 1314 Chaney Rd., Raleigh, NC 27606. Please include an SASE with your order, or else tickets will be held until hamfest.

Tables are available for \$6; contact either Thomas D. Ferrell, WA4MWT (3012 Glendale Ave., Durham, NC; 919/220-5018) or Sid Edwards, W4QWM (1700 High St., Durham, NC 27707; 919/489-2933).

Talk-in will be on the WA4WTX/147.225/825 repeater.

For further information, contact Sid Edwards, W4QWM. □

Ohio

The ATHENS COUNTY AMATEUR RADIO ASSOCIATION will hold its 12th annual hamfest on Sunday, May 12 from 8 a.m. to 3 p.m. at the City Recreation Center in Athens. Features will include a large flea market, door prizes and good food.

Admission is \$4 per person, but spouses of hams will enter free. Paved outdoor flea market space adjacent to the building will be provided free to tailgaters. Indoor space is only available by advanced registration.

Talk-in on the club repeater at 145.15/55 MHz.

For space registration, contact John Bidle, WD8JLM, 80 Wonder Hills Dr., Athens, OH 45701 or call 614/594-8901 after 6 p.m. For more general information, write to Carl J. Denbow, KA8JXG, 63 Morris Ave., Athens, OH 45701. □

Pennsylvania

The BREEZESHOOTERS AMATEUR RADIO CLUB is having its 37th Annual Hamfest and Computerfest on June 2 from 8 a.m. to 4 p.m. at the Butler Farm Show Grounds in Butler.

Admission is \$1 at the door. Free outdoor flea market space, free parking and handicap parking are available on the grounds. Indoor vendor space is available; tables are \$10 each in advance. Overnight campers are welcome, and hookups are available. VE exams will be given only with pre-registration.

Talk-in on 147.96/36. Mobil check-in on 28.495 and 146.520.

For further information, contact Rey Whanger, W3BIS, Box 8, Rd. 2, Cheswick, PA 15024 (include SASE); 412/828-9383. To reserve table space, send \$10 check and SASE to George Artnak, N3FXW, 3350 Appel Rd., Bethel Park, PA 15102 or call 412/833-3395. □

South Carolina

The BLUE RIDGE AMATEUR RADIO SOCIETY will sponsor the Greenville Hamfest and Electronic Flea Market on May 4 and 5 at the Anderson County Fairgrounds in Anderson.

Features will include 30,000 square feet of indoor dealer displays, indoor/outdoor electronic and computer flea market, prizes, VE exams, camping and free parking.

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Admission is \$4 in advance and \$5 at the gate. Doors will be open from 8 a.m. to 5 p.m. on Saturday and from 8 a.m. to 3 p.m. on Sunday.

For advance tickets or additional information, send SASE to the Blue Ridge ARC, P.O. Box 6751, Greenville, SC 29606. □

Washington

The YAKIMA AMATEUR RADIO CLUB will sponsor the 1991 Yakima Eastern Washington Section Hamfest on May 18 and 19 in the Queen Gym. Doors will be open from 9 a.m. to 4 p.m. both days. VE walk-in exams will be held on Saturday at 1:30 p.m.

Admission is \$5 in advance and \$6 at the door. Flea market tables will be available for \$8 each. Set-up will begin after 4 p.m. Friday and will be held again between 6 a.m. and 9 a.m. on Saturday.

Yakima is again hosting a group of five visiting Soviet Amateurs to their first US hamfest. A banquet dinner will be held on Saturday evening at 7 p.m.; the cost is \$12 per person.

Talk-in on 146.66, 224.9 and 444.8.

For pre-registration, flea market tables or banquet reservations, mail check to W7AQ, P.O. Box 9211, Yakima, WA 98909. For further information, contact Dick Umberger, N7HHU, at 509/453-8632 (days) or 509/248-3580 (eves). □

West Virginia

The TRIPLE STATES RADIO AMATEUR CLUB will hold its 14th annual TSRAC Wheeling Hamfest and Computer Fair on Sunday, May 19 from 8 a.m. to 3 p.m. at Wheeling Park. This is West Virginia's largest hamfest.

Dealers are welcome; there will be 36,000 square feet of covered space as well as an open six acres of flea market space. Free overnight RV parking is available.

Admission is \$3 at the door or \$2 in advance. Children under age 17 and all women will be admitted free.

For further information or advance tickets, contact TSRAC, Box 240, Rd. 1, Adena, OH 43901; 614/546-3930. □

Wisconsin

The OZAUKEE RADIO CLUB will sponsor its 13th Annual Cedarburg Swapfest on May 4 from 8 a.m. to 1 p.m. at the Circle-B Recreation Center in Cedarburg.

Admission is \$2 in advance or \$3 at the door. Four-foot tables are available for \$3. Sellers' set-up will begin at 7 a.m. VE exams will be given at 9 a.m.

Talk-in on 146.37/97 and 146.52.

For admission tickets, table reservations, maps or further information, send an SASE to ORC Swapfest, 11448 Laguna Dr., Mequon, WI 53092 or call 414/242-4995. □

The MANCORAD AMATEUR RADIO CLUB will sponsor a hamfest on May 11 from 8 a.m. to 5 p.m. at the Manitowoc County Expo Center. The flea market will feature Amateur Radio and computer related gear, and VE exams (all classes) will be offered as well as refreshments.

Admission is \$2 in advance or \$3 at the door. Tables (8 ft.) are available for \$3; \$8 with an electrical outlet.

Talk-in on 146.01/61.

For further information or reservations, send an SASE to Mancorad Radio Club, P.O. Box 204, Manitowoc, WI 54220. □



Florida QSO Party

The East Pasco Amateur Society is sponsoring the 25th annual Florida QSO Party. All Amateurs worldwide are invited to participate.

Operation: All Amateur bands, excluding WARC bands, may be used. A station may be worked once on each band for each mode. Contacts must be made in their respective subbands; crossband or crossmode contacts are not allowed. Phone and CW contacts are combined and are not considered as separate contests. No repeater contacts counted. Florida stations may work other Florida stations for contest points only (no multiplier credit). Out of state stations may work only Florida stations for contest credit.

Classes: Florida stations are divided into two classes: class A stations are those operating under Field Day rules, portable, mobile on emergency power and running 100W or less output inside Florida but outside their home county. Class B stations are all other stations operating in Florida. Entrants may be single operator or multi-operator and must be indicated on the summary sheet.

Exchange: Florida stations send signal report and county of operation. Out of state stations send signal report and state, province or territory or DX country.

Suggested Frequencies: CW—3.555, 7.055, 14.055, 21.055, 28.055, 28.155 kHz; phone—3.945, 7.279, 14.279, 21.379, 28.325, 28.645 kHz.

Scoring: Florida stations count one point per phone QSO and two points per CW QSO. Multiplier is total number of states (49 max), provinces/territories (12 max) and DX (27 max) actually worked. The maximum multiplier is 88. Florida class A stations only: multiply final score by 1.5 to obtain total score. Out of state: count two points per Florida QSO. The multiplier is the total number of different Florida counties worked (67 max). The score is the product of the QSOs and the multiplier.

Awards: Certificates will be awarded for the top scoring single operator in each state, province, territory and DX country. The top category scorer in each Florida county will be awarded a certificate. Multi-operator winners will receive certificates as activity justifies. Four plaques will be awarded: Highest Single Operator Florida, Highest Single Operator Out of State, Highest Aggregate Club Score and Highest Novice/Tech Single Operator. There is no minimum score to be eligible for a certificate.

Logs: Each entry (except DX) must contain an SASE with first class postage. Legible logs indicating CW and phone contacts must be in chronological order; a summary sheet is required with each entry. Entries with 200 QSOs or more must supply a dupe sheet. The summary sheet must contain claimed score, Florida county or state operated from, number

of QSOs, multiplier total, station call sign, entry class, power source for class A entries and a complete mailing address. Indicate license class if a Novice or Technician. The name of the Florida club for which aggregate total credit is being assigned must also be on the summary sheet. A signed declaration that the rules and regulations have been observed must also be included. A sample summary sheet is available for an SASE from the QTH below.

All entries must be postmarked on or before June 29, 1991. Mail all entries to Florida QSO Party Contest Committee c/o East Pasco Amateur Society, P.O. Box 942, Dade City, FL 33526-0942. □

MARAC County Hunters CW Contest

The Mobile Amateur Radio Awards Club is sponsoring the 23rd annual County Hunters CW Contest from 0000Z Saturday, May 4 to 2400Z Sunday, May 5. Mobile and fixed operation from every county in the United States is welcome and operation from less active counties is encouraged.

Rules: Fixed stations may only be worked once on each band. Mobiles may be worked each time they change counties. Mobiles operating on a county line give and receive one QSO number, but each county is a separate multiplier. Mobiles must identify by signing /M after their call. To be eligible for an award, a station must not operate more than one transmitter at any one time.

Exchange: QSO #; category (Mobile only);

Signal Report; county and state for United States, province (Canada) or country for others.

Sample Mobile report: 023M 579 MODOC CA

Scoring: QSOs with fixed US/Canadian stations are worth one point; mobiles are worth three points. US/Canadian contacts with DX stations are worth three points. Contacts with stations operating under "Net Control" are invalid. Final score equals total QSO points times the total number of US counties worked.

Frequencies: 3.575, 7.055, 14.060, 21.060 and 28.060. Fixed stations should CQ or QRZ above the suggested frequencies and mobiles operate below them.

Awards: Certificates to winning stations as follows:

F—First Place Fixed in each state, province and county with 1,000 points or more

M—First Place Mobile in each state operating from three or more counties with a minimum of 10 QSOs from each county.

MARAC Plaques to the highest and second highest scoring mobile and fixed stations in North America, and to the highest scoring DX station. For purposes of this contest DX is any country except the US, Canada or Mexico.

Mobiles who change states should calculate their scores 1. for individual state certificates and 2. for total score for the overall plaque. Total overall score must not count a county as a multiplier more than once, regardless of the state from which it was worked.

Sample log and summary sheets are available for an SASE to the address below. A check list of counties is required for entries with 100 or more counties worked. Completed logs, summary sheets and county lists must be received by June 3. Send to: Jerry Burkhead, N6QA, 7525 Baltic St., San Diego, CA 92111 (Include a business size SASE for personal copy of contest results). □

Michigan QSO Party

The 1991 Michigan QSO Party, sponsored by the Oak Park Amateur Radio Club, will be held during two periods GMT: 1800Z Sat., May 18 to 0300Z Sun. May 19; and 1100Z Sun, May 19 to 0200Z Mon., May 20. Phone and CW are combined into one contest. Michigan stations can work Michigan counties for multipliers. A station may be contacted once on each band/mode. Mobiles may be counted as new contacts each time the county changes.

Exchange: RS(T), QSO number, QTH, county for Michigan; state or country for others.

Scoring: Multipliers are counted only once. *Michigan stations:* one point per QSO multiplied by the sum of states, countries plus Michigan counties on phone. Each CW contact is two points per QSO. Alaska and Hawaii count as states. Canada counts as a country. Maximum multiplier is 85. Five points for each W8MB contact. *Non-Michigan stations:* multiply QSO points by Michigan counties. One point for each Michigan phone QSO and two points for each CW contact. Five points for each club station contact with W8MB/W8MB/mobile. Maximum multiplier is 83. *VHF only entries:* Same as above except multipliers per VHF band are added together for total multipliers. No repeater contacts are allowed.

Suggested frequencies: CW—1810, 3540, 3725, 7035, 7125, 14035, 21035, 21125, 28035, 28125; phone—1855, 3905, 7280, 14280, 21380, 28580; and VHF—50.125, 145.025, 146.52.

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Awards: Michigan: plaques—high multi-operator, single transmitter score, high Michigan score, high Michigan (upper peninsula) score, high aggregate club score and high VHF only entry (minimum of 100 QSOs), and high Michigan mobile score. **Certificate:** high score for each county (min 50 QSOs). **Out of state:** high out of state plaque and certificates for high score each state and country.

A log and summary sheet is requested showing the scoring and other pertinent information, name and address in **BLOCK LETTERS** and a signed declaration that all rules and regulations have been observed. Michigan stations include club name for combined club score. Party contacts do not count toward the

Michigan Achievement Award unless one fact about Michigan is communicated. Members of the Michigan QSO Party committee are not eligible for individual awards. Decisions of the contest committee are final. Results will be final on July 30, 1991 and will be mailed to all entries that have sent in an SASE. Mailing deadline is July 1, 1991. Send logs to: Mark Shaw, K8ED, 27600 Franklin Road, Apartment 516, Southfield, MI 48034. □

Nevada QSO Party

Sponsored by the Frontier Amateur Radio Society, the contest will take place from 0000Z May 11 to 0600Z May 12. Work stations once

per band and mode.

Exchange: RS(T) and state/province/country (and county for Nevada stations).

Frequencies and modes: 6 through 160M; CW, SSB, RTTY, SSTV and packet.

Scoring: One point per phone QSO and two points for QSOs on other modes. Multiply by the number of states/provinces/countries for Nevada, others multiply by the number of Nevada counties.

Awards: Certificates will be awarded to the top scorer in each state, province and DXCC country; one each for General and above and Novice/Tech.

Mail entries by June 1 to Jim Frye, NW7O, 4120 Oakhill Ave., Las Vegas, NV 89121. □

Hams beware!

Dan Moravec, KA0WRZ

Our Washington correspondent recently interviewed a lobbyist for one of the large radio and communications companies. The message is that there is a horrible regional crowding of the radio spectrum. A case in point is the city of Washington, D.C., where a casual glance around shows mobile telephone antennas sprouting from many cars seen downtown and it is not unusual to see two, three or even four antennas on the many limousines. The drivers of these cars also commonly carry a handheld but I can't imagine what they need it for.

The large radio companies are pre-

dicting the next five years to be the age of "personal communications." This, of course, refers to cellular phones, cordless phones, and pagers, but also includes devices which are not yet now commonly seen, such as the digital transmission of personal data to units similar to today's pagers. The idea is to transmit messages and more (even pages of information) to a person's belt.

The expansion of technology will put a tremendous demand on a radio spectrum that is already packed to the limit on assigned frequencies in the large metropolitan areas. There is simply no more room left to accommodate these new functions. New frequencies will have to be obtained from somewhere.

Soon, the federal government will be looking at the large spectrum given to the military, but other users of the radio spectrum are fair game.

This means that the hams had better "watch out." Our 900 MHz band is being eyed covetously at this very minute. The 220-222 MHz reallocation may be only the beginning. On the positive side, however, even though the big companies have hired big-guns to expand their interests, the elected officials still listen to those who speak within their constituency. Hopefully, when the situation presents again, we will be collectively even more effective. — Lincoln ARC Inc., Lincoln, Nebraska. □

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NEW PRODUCTS

Information in "New Products" is supplied by the manufacturers to acquaint *Worldradio* readers with new products on the market.

Console mount

The Poop Deck is a console-like metal deck for mounting radio and communication systems in vehicles. This mount is superior to other methods of mounting equipment because it gives a solid, low profile and clean, organized, compact mounting. The Poop Deck mount allows ample space for multiple radios, scanners and other equipment. A terminal connection block is included for attaching hot and ground wires to one central location for easy servicing.

The Poop Deck console mount fits across the center floor hump in almost any vehicle and has adjustable angles and extensions built into the console mounting feet for an easy, solid custom fit. The entire console mount, with radios, can be put together on a technician's workbench and then installed fully assembled into the vehicle. In only a few minutes the entire unit can be removed for radio repair or placed in another vehicle.

Features include 1/8 inch aluminum construction, anodized finish, terminal connection block with 10 double posts and multiple deck angles. The deck comes in two widths: 12 inches (usually for front wheel drive cars) and 17 inches (usually for rear wheel drive cars).



Dimensions are seven inches deep, 10 inches high in front and eight inches high in back. All assembly hardware is included for quick installation.

There's no more shake, rattle and roll with the custom fit Poop Deck. For further information or to order, write to Smallwood Enterprises, P.O. Box 891, Carthage, MO 64836. □

Frequency counter

Optoelectronics Inc. announces a radically new type of universal frequency counter-timer in the form of a 9-inch drop-in card for personal and lap-top computers. It uses Windows 3.0 as a control panel and display window, and it directly tunes radio receivers such as the ICOM R7000, resulting in a uniquely configured *self tuning radio*.

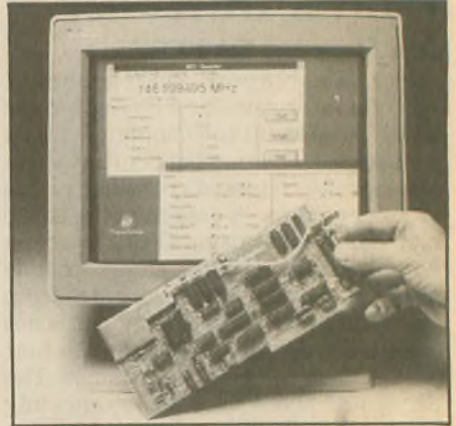
Opto's new Model PC-10 Universal Frequency Counter-Timer is a 10 Hz to 2.4 GHz radio instrument which measures, captures and analyzes discrete and average frequency readings, pulse width, time interval, period and the ratio between two frequencies. It provides a useful "reciprocal counting" feature for 8-digit resolution of low frequency readings.

The PC-10 has at its heart a 200 MHz custom CMOS ASIC and three bipolar MMICs; it provides a unique blend of sensitive radio instrumentation and PC-based data manipulation and analysis.

The PC-10 operates as a self-tuning radio—for surveillance applications where frequency scanning is too slow, it identifies the nearest signal source and tunes a companion receiver to it. User-controlled lockout frequencies are written to a file to override local broadcasters and other anticipated noise sources.

The PC-10 is simple to install, set up and use. You simply drop it into an 8088- or higher-based IBM compatible PC with Windows 3.0. Establish one of 16 addresses with a DIP switch and call up the CONFIGURATON window to set the measurement units you want (GHz, MHz, kHz, Hz; nsec, usec, msec or sec).

The PC-10's ASSIGNMENTS window controls both input and reference signal conditions such as gain, prescaler, input impedance,



polarity, hysteresis, interval and ratio (two amplifiers at once).

The PC-10 accepts any input signal of 10 mV or greater from sub-audio to 2.4 GHz, determines its frequency in terms of a ± 1 PPM temperature compensated crystal oscillator (TCXO), and then displays it with up to 10-digit resolution. For optimum balance between sample time and resolution, the unit's input gate is continuously variable from 1 msec to 28 seconds.

The PC-10 also offers a unique software-calibration feature: input any reference signal and enter its frequency and the PC-10 determines the reference frequency, compares it to

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what you say it is, then writes the difference to an initialization file. Then, whenever the PC-10 takes a measurement, it automatically corrects the reading according to the calibration data. Windows 3.0 maintains all calibration data even through power-down cycles.

Opto's new Model PC-10 Universal Frequency Counter-Timer is priced at only \$335 in unit quantities. Delivery is quoted off-the-shelf. Model AP10H option (\$295) provides custom input amplifiers, signal conditioning and frequency prescalers. For further information, contact Optoelectronics Inc., 5821 NE 14th Avenue, Fort Lauderdale FL 33334; 800/327-5912 or 305/771-2050; FAX 305/771-2052. □

MFJ-817 meter

MFJ Enterprises, Inc. announces the release of the new peak and average reading MFJ-817 144/440 MHz Cross-Needle SWR/Wattmeter for only \$79.95.

This new MFJ-817 meter shows forward power, reflected power and SWR—all at a single glance. You get two power scales, 200 or 20W forward and 5 or 50W reflected.

A meter lamp and a large, two-color meter make across-the-room reading easy. The black



aluminum cabinet measures 7¼ × 4½ × 3½ inches. The meter lamp uses 12 VDC or 110 VAC with MFJ-1312 AC adapter (\$12.95). You also get MFJ's one year unconditional guarantee.

For more information or to order, contact any MFJ dealer or MFJ Enterprises, Inc., P.O. Box 494, Mississippi State, MS 39762, or call 601/323-5869; FAX: 601/323-6551; or order toll-free at 800/647-1800. □

Code scanner

Microcraft Corporation introduces the Code Scanner, the new advanced two-line 32-character multi-mode decoder that copies Morse, Baudot and ASCII codes from your radio. Code Scanner features a built-in code practice oscillator for hand-key with readout to the display, a built-in speaker, advanced analog and digital filtering with AGC and a special practice mode for learning the Morse characters. Code Scanner's compact size of 3½ × 5¼ inches allows it to be placed almost anywhere. Code Scanner operates from a 12 VDC or 120 VAC with the adapter provided. Hook-up to a radio speaker or headphone jack is easy.

The Code Scanner, model CSCAN, is \$189

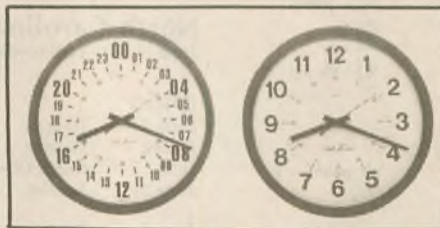


plus \$5 for shipping and handling. Write or call for a free brochure, or order factory direct: Microcraft Corporation, P.O. Box 513, Thiensville, WI 53092; 414/241-8144. □

Matching clocks

B.A. Fox, Inc. announces the availability of a true 24 hour station clock.

The clock, made in the USA by "Seth Thomas," is 13 inches in diameter and uses a true 24 hour battery operated quartz movement. The case is made of high impact plastic with a shatter resistant crystal. The clock



features large numbers and a red second hand. One AA battery powers the clock for approximately one year. A matching 12 hour clock is also available. The price is \$29.95, plus \$2.50 shipping in the US.

For more information or to order, contact B.A. Fox, Inc., 113 N. Church St., Spartanburg, SC 29301; or call 803/582-6464; FAX 803/582-6744. □

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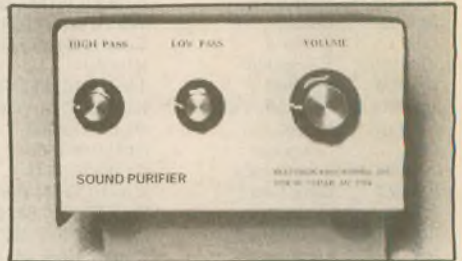
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Audio filter

Electron Processing, Inc. today announced a new audio filter that improves reception of signals that are either weak or experiencing interference. The Sound Purifier makes reception more enjoyable by effectively sharpening your receivers' filters and eliminating annoying "garbage" from the sound. Noise and interference are greatly reduced, thanks to two multi-stage active "switched capacitor" audio filters. Operation is easy with the two front panel tuning controls. A handy volume control is also provided. A potent 5W audio amplifier delivers plenty of sound too!



Easily used with any receiver or transceiver, the Sound Purifier connects between the external speaker and the receiver. The unit is housed in a handsome 6 × 5¼ × 3 inch metal cabinet and powered by regular 115 VAC. For mobile use, a +12V DC powered version is also available for an additional \$4.

The Sound Purifier is priced at \$89.95 with a special limited time introductory price of \$79.95. To order or for additional information, contact Electron Processing, Inc. at P.O. Box 68, Cedar, MI 49621 or call 616/228-7020. □

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VE exam schedules

As a service to our readers, Worldradio presents a feature listing those VE exams, times and locations which are sent to us. Please remember that our deadline for publication is three months in advance. For example, if your VE group is scheduling an exam for September, please have the information to us by mid June.

Worldradio, 2120 28th St., Sacramento, CA 95818.

Please mark the envelope "VE Exams."

List the location, any information examinees should have (advance registration, etc.) and the name and telephone number of a person to contact for further information.

p/r=pre-register

w/i=walk-in

Date	City	Contact	Notes	Date	City	Contact	Notes
Arizona				Mississippi			
May 18	Flagstaff	W7YS (602) 526-3370	w/i only	June 11	Ocean Springs	AA5SP (601) 875-9341; AA5TX (601) 875-2142	p/r pref; w/i OK
June 1	Tucson	K7OPX (602) 886-7217	w/i only	Missouri			
California				June 1	Antonia	Jim WD0GDY (314) 671-4243	no w/i
June 1	Burbank	KE6AR (818) 349-0927	w/i	June 9	Granite City	Larry NZ0P (314) 524-3254	w/i OK
June 2	Chico	W6YKU (916) 342-1180	p/r pref.	Nevada			
June 1	Concord	Gene (415) 254-5090	w/i only	June 15	Reno	K7HRW (702) 827-8450 or (702) 972-3933 night	p/r 30 days prior, w/i OK
June 29	Escondido	KB6WB		New Jersey			
June 22	Fairfield	Jerry (916) 662-0801	w/i only	June 15	Bayonne	WA2QYX (201) 451-9471	w/i OK
June 20	Fountain Valley	K16WK (714) 846-6984	p/r	June 20	Bellmawr	WA2VQG (609) 546-7710	w/i
June 15	Hemet	(714) 925-3502		June 8	Cranford	N2XJ (201) 635-7686	
June 1	Lancaster	(805) 948-1865		June 12	Fort Monmouth	WB2GYS (908) 532-5353	w/i
June 9	Loma Linda	(714) 825-5341		June 3	Sayreville	K2FD (201) 442-9215	w/i
June 27	Long Beach	KA6HOQ (714) 897-6331	w/i OK	New Mexico			
June 1	Modesto	W6XK (209) 883-2968	w/i	June 1	Alamogordo	WA5IPS (505) 437-5896	w/i
June 19	Porterville	Pat (209) 539-2429	w/i only	New York			
June 15	Redwood City	Dudley (408) 245-4801	w/i only	June 19	Lancaster	Stan N21AE (716) 887-6608	
June 1	Riverside	(714) 780-2680	p/r 7 days prior; w/i space permit- ting	June 9	North Babylon	KA2RGI (516) 957-0218	w/i OK
June 13	Sacramento	Lyle, AA6DJ (916) 483-3293 (916) 925-0159	Novice/Tech only; w/i	June 8	West Amherst	James K2QB (716) 688-8293	
June 15	San Diego	KB6WB		June 2	Yonkers	AC2V (914) 237-5589	w/i OK
June 1	San Dimas	K6THQ (714) 596-9383	p/r 1 week prior	North Carolina			
June 15	San Dimas	K6THQ (714) 596-9383	p/r 1 week prior	June 8	Yadkinville	N4XRY (919) 699-8469	w/i
June 8	San Pedro	N6DYZ (213) 325-2965	w/i OK	Ohio			
June 8	Santa Maria	KI6XG (805) 922-8509	w/i OK	June 8	Dayton	Terry WM8L (513) 866-8734	
Colorado				June 1	Mentor	Scott KD8O (216) 256-0320	
June 8	Aurora	W0IJR (303) 366-9689	w/i	June 1	North Olmstead	Dan KB8A (216) 267-5083	
June 10	Boulder	Barbara McClune (303) 530-2903	p/r pref.; w/i OK	June 29	Norton	KA8MPH (216) 882-6387	p/r pref.; w/i OK
June 15	Westminster	N0CFM (303) 451-1231; N0HNR (303) 278-4280	p/r or w/i	June 8	Ravenna	Joanne KJ3O (216) 274-8240	
Connecticut				June 8	Toledo	NC8M (419) 825-3423	
June 30	Milford	NB1M (203) 933-5125; WA1YQE (203) 874-1014	w/i	Pennsylvania			
June 1	Norwalk	Ray WB1U (203) 847-2541	w/i OK	June 1	Erie	W3CG (814) 665-9124	w/i
June 26	Shelton	WJ1T (203) 736-0488	w/i pref.	June 29	McKeesport	KQ3W (413) 466-5204	p/r 2 days prior
Idaho				June 6	Philadelphia	ND3Q (215) 482-0386 or (215) 879-0505	w/i
June 8	Boise	W7JMH (208) 343-9153	w/i	June 3	Pottstown	K3ZXQ (215) 679-5764	
Illinois				South Dakota			
June 15	Loves Park	W9SS (815) 877-6768	p/r; w/i	June 8	Rapid City	KA0SEZ (605) 394-1298; NU0F (605) 348-6564	p/r 30 days prior; w/i OK
June 15	Morton	NT9C (309) 266-6756	w/i OK	Tennessee			
June 8	Oak Forest	KA9HDN (312) 247-0650	w/i	June 1	Memphis	Harry W4MI	p/r by 5/31/91
Indiana				Texas			
June 1	South Bend	NI9Y (219) 255-4455	w/i OK	June 15	DFW Airport	KF5BL (214) 252-8015	w/i
June 21	South Bend	NY9A (219) 232-6883	w/i OK	June 11	Houston	WB5IGG (713) 777-3345	p/r pref; w/i OK
June 2	Terre Haute	K9EBK (812) 466-2122	w/i OK	June 8	Midland	KT5G (915) 694-9450	w/i OK
Iowa				Virginia			
June 28	Sioux City	NF0N (402) 494-6070	w/i OK	June 8	Harrisonburg	Marshall N4ZKH (703) 856-8012	
June 22	Council Bluffs	AA0BS (712) 322-1454	w/i OK	June 1	Virginia Beach	Ed WD4ROY (804) 468-0866	
Kansas				Washington			
June 5	Great Bend	WA0PSF (316) 792-5363	p/r pref.; w/i limited	June 15	Renton	WA7UVJ (206) 854-4031	w/i only
Maryland				West Virginia			
June 1	College Park	Scott NF3I (301) 513-5932	w/i	June 15	Huntington	K8KVX (304) 736-6542	w/i OK
June 8	Laurel	NT3Z (301) 761-7115	w/i	Wisconsin			
June 15	Laurel	WB3GXW (301) 572-5124	p/r pref.	June 1	Racine	NW9P (414) 658-8390	w/i
June 8	Salisbury	KB3MT (302) 436-8360	w/i	June 16	Stevens Point	Joe N9JW (715) 344-1182	p/r pref.; w/i OK
Massachusetts							
June 3	Boston	WN1U (617) 436-2413	w/i				
June 19	Cambridge	KA1MQX (617) 253-3776	w/i				
June 1	Marlboro	KZ1D (508) 460-9059	p/r; w/i				
June 15	Melrose	WB1F (617) 322-7654	w/i OK				

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The International Callbook lists over 500,000 licensed radio amateurs in countries outside North America. Its coverage includes South America, Europe, Africa, Asia, and the Pacific area (exclusive of Hawaii and the U.S. possessions).

The 1991 Callbook Supplement is a new idea in Callbook updates, listing the activity in both the North American and International Callbooks. Published June 1, 1991, this combined Supplement will include thousands of new licenses, address changes, and call sign changes for the preceding 6 months.

Every active amateur needs the Callbook! The 1991 Callbooks will be published December 1, 1990. Order now for early delivery as soon as the new books are available. See your dealer now or order directly from the publisher.

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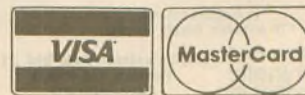
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- | | | |
|----------------------------|----------------------------|-------------------------------|
| A & A Engineering — 48, 50 | Engineering Systems — 6 | N4EDQ Amateur Radio |
| Ace Communications — 14 | EPO Software — 42 | Sales & Service — 64 |
| Alabama Amateur | Fallert's Engraving — 26 | New Dimension QSL — 20 |
| Electronics — 54 | Garco Electronics — 6, 38 | P.C. Electronics — 15 |
| Alinco — 17 | Gem Quad Products Ltd. — | Palomar Engineers — 11, 19, |
| Allband Radio Products — | 43 | 38, 41, 43 |
| 12 | Gene Hansen Co. — 55 | Pass Publishing — 14, 19, |
| Amateur Radio Bookstore — | GGTE Morse Code — 7 | 30, 51 |
| 37 | Glen Martin Engineering — | Personal Database — 18 |
| Ameritron — 29 | 42 | QCWA — 44 |
| Antennas West — 7, 12, 16, | Grapevine Group, Inc. — 27 | Radio Engineers — 40 |
| 22, 54, 61 | H&M Jewelry — 55 | Radio Place — 24 |
| Antennas, Rudy Plak — 3 | HAAM Radio 4+6+9 — 36 | Radio Works — 22 |
| Antique Radio Classified — | Ham Radio Outlet — 34, 38 | RLD Research — 48 |
| 4 | Ham-Pro Antennas — 25 | S&S Fabrication, Inc. — 50 |
| Avant Systems — 55 | Handi-Tek — 56 | Synthetic Textiles, Inc. — 64 |
| AXM Inc. — 42 | Henry Radio — 2, 49 | Texas Towers — 21 |
| B.A. Fox, Inc. — 27 | ICM — 23 | Tiare Publications — 40 |
| Battery Tech — 59 | ICOM — 68 | Tibi Productions — 38 |
| Bilal Company — 15 | IMRA — 19 | TNR Technical, Inc. — 50 |
| Brian Beezley, K6STI — 64 | Jim Queen, KB3Y — 33 | Universal Radio — 32 |
| Broadcast Tech. Services — | Jun's Electronics — 53 | Van Gorden Engineering — 7 |
| 16 | Kilo-Tec — 44 | Visit Your Local Radio Club |
| Butternut Electronics — 39 | Lakeview Co. — 6, 26, 57 | — 45, 46 |
| C.A.T.S. — 11 | Lanz Company — 22 | Visit Your Local Radio Store |
| Cabel X-Perts — 18 | M. Bohnhoff — 16 | — 60 |
| Callbook — 44, 63 | M2 Enterprises — 31 | W5YI Group — 61 |
| Collins Electronics — 41 | Maxcom — 11 | W5YI-VEC — 28 |
| Comm-Pute Inc. — 28 | McClaren Sales — 64 | W9INN Antennas — 30, 47 |
| Courage Center — 48 | Media Mentors — 14 | Williams Radio Sales — 10 |
| Cubex Co. — 58 | MFJ — 13, 29 | Yaesu — 5 |
| Embroidery Warehouse — 8 | Mike Forman — 67 | ZCo Corporation — 61 |

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