Worldradio

Year 23, Issue 10

April 1994 • $1.25

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Uhdingen-Muehlhofen, Germany — Anuta Island adventure


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A grand adventure to Anuta Island

BERNHARD STEFAN, DL8GAC/H44MS

The station used on Anuta is shown here at Bernard's stop on Duff Island.

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A grand adventure to Anuta Island

BERNHARD STEFAN, DL2GAC/H44MS

Anuta (OC-179) is a 0.4 km² small volcanic island with a 65-meter-high hill, and a large flat area. It is surrounded by an unbroken reef, which generates a surf at all times. Landings take place by small boat from an anchored ship offshore. The surf always seems high enough for a nice wave to slosh into the landing boat; you and your luggage have a good chance to get wet.

Occasionally the waves are too high for a landing, and you have to try the next ship. On the average a government ship stops once a month for 3-4 hours, providing the only outside contact. During the typhoon season, gaps of three months between ships are possible.

Anuta is a single island; its closest inhabited neighbor is Tikopia Island, 150 km away. Uninhabited Fatataka Island can be seen on a clear day from Anuta hill, and is visited several times per year for fishing. Anuta's 150-200 inhabitants are of Polynesian stock. Their dialect is related to Tonga, Wallis and Futuna Islands.

At the top of the local hierarchy are two headmen; a principal chief and a second chief of somewhat lesser authority. The word of chief number one is law; he rules in consultation with chief number two and weekly councils with elders.

The island is very fertile. The hill is covered to the top with neatly tended gardens, which produce plenty of food-namely root crops such as cassava and maniok. They also grow all types of tropical fruits like coconuts, bananas, pineapples, watermelons etc. The diet is supplemented by fish from the sea, and an occasional chicken.

Food is cooked in pots over open fires. Pans and frying seems to be unknown. Fish is cooked in coconut milk and afterward the fluid is used as drink. All types of seasonings like salt, pepper etc. is unknown. All food is 100% natural, and because of the wide variety, nutritionally balanced. Tobacco is locally grown and smoked in pipes by both men and women. Frigate birds are kept as free-flying pets.

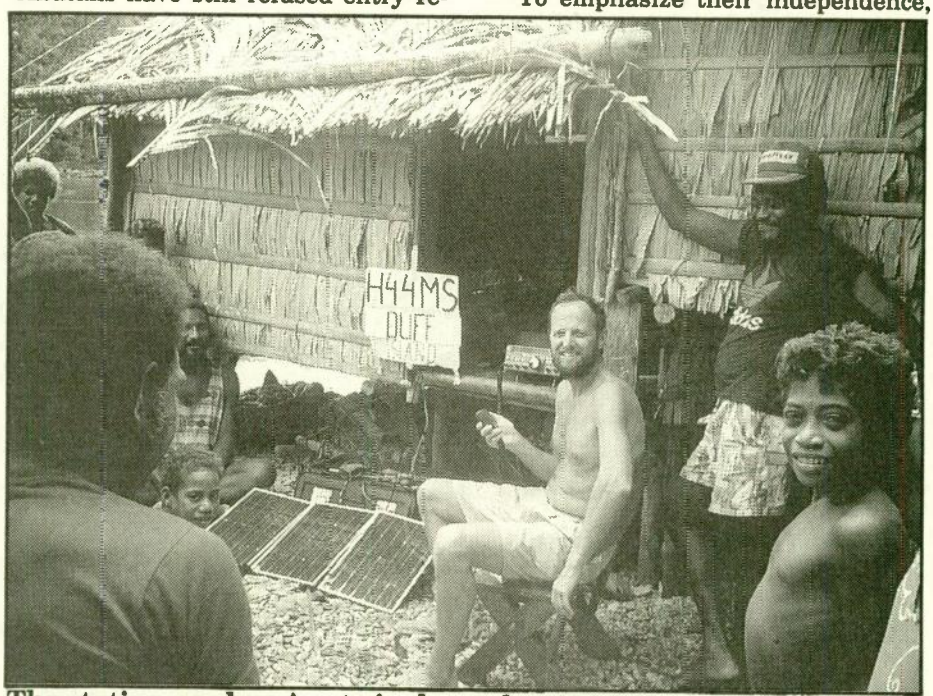
At the time of independence of the Solomon Islands in 1978, Anuta first refused to join because it didn't want to lose its traditional autonomy. The Anutans have still refused entry recently to officials who wanted to collect the head tax levied by the province, and who wanted to register the voters for provincial and national elections. But they have accepted the setup of a public water supply system, and for a fee, a permanent automatic weather station on the highest point of the island. They look upon the Solomon Islands as Melanesian and themselves as Polynesian inhabitants of an autonomous microstate, independent in mind, if not in fact.

Over the years there have been devastating typhoons, the last one around New Years Eve, 1992. Outside help has always been refused because there is a unique way of preserving breadfruit as emergency food. In holes on top of the hill breadfruit paste is stored underground, sometimes for several years. It remains perfectly edible, protected by regular replacement of its covering leaves.

To emphasize their independence, every outsider is charged a landing fee. Without prior arrangement, I arrived on a day in February 1993. I got ashore around 10 a.m. and said to the party of locals who awaited me at the beach, "I am a tourist from Germany and want to stay here until the next ship, probably in about 3-4 weeks, and operate my Amateur Radio station here." I was assured by one islander who spoke English that there would be no problem, but "we decided this morning to go fishing today; when we come back we will talk about the particulars, please wait and be patient."

I was given food, took a shower and

(please turn to page 6)



The station used on Anuta is shown here at Bernard's stop on Duff Island.

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New 610

FCC Form 610, application for Amateur Operator/Primary Station License, has been revised. The new version dated November 1993, may be ordered from the FCC Forms Distribution Center at 202/632-3676 after February 14. The new form reflects recent changes in the Amateur Rules.

Effective March 1, 1994, only the November 1993 edition of FCC Form 610 may be used to obtain an Amateur license. Earlier editions of the form received after March 1, 1994 will delay issuance of the license as the applications will be returned without action and the applicant will be required to refile on a current form.

For further information contact the Consumer Assistance Branch, Private Radio Bureau, Gettysburg, PA 17325; 717/337-1212.

HRO in Delaware

Ham Radio Outlet is pleased to announce the addition of its 12th store. The new spacious store will be located at 1509 N. Dupont Hwy #7, New Castle, DE 19720.

Jim Hydzik, K3QIO, formally of Ham Radio Outlet in Salem, NH, has been named as manager of the Delaware store.

Delaware Amateur Supply will be closing down their store after 18 years of serving Amateurs nationwide.

The scheduled opening in Delaware will be March 15, 1994. The Grand Opening is set for Saturday, 26 March, 1994. Kenwood TGIK! — *HRO*

Bicycling hams to sponsor two forums

The Bicycle Mobile Hams of America invites hams and non-hams to the forums that they will be presenting this spring in Ohio and California.

The fifth annual BMHA Forum at the Dayton HamVention is set for Sunday, 1 May at 8:30 a.m. The two-hour program will include numerous demonstrations of techniques and equipment designed for bicycle-mobile operation.

The BMHA is presenting a similar program on Saturday, 28 May, at 3 p.m., at the Great Western Bicycle Rally, which is centered at the Paso Robles, California, Fairgrounds. The GWB Rally annually draws 2,000 cyclists to a weekend of bicycling activity that features bike rides, clinics, cookouts and discussion groups. The BMHA Forum will include speakers on such topics as solar powered bicycle mobile operation and hamming on long bike trips.

The Bicycle Mobile Hams of America has over 300 members, who come from 41 states and five non-US countries.

For further information about these events, more about BMHA and a sample copy of our newsletter, send a self-addressed stamped #10 envelope to BMHA, Box 4009-T, Boulder, CO 80306.

New Satellite Update

The American Radio Relay League has published the third edition of its popular *Satellite Anthology*.

The third edition contains the best of *QST* satellite articles and columns from 1986 through 1993. The latest OSCAR satellites such as Kitsat-OSCAR 25, ITAMSAT-OSCAR 26 and AMRAD-OSCAR 27 are profiled. In addition, seven pages are devoted to an in-depth analysis of the most ambitious Amateur Radio satellite project ever: Phase 3D. Scheduled for launch in 1995 or '96, Phase 3D promises to offer satellite access to virtually all amateurs.

While the *Satellite Anthology* provides sufficient technical support for veteran hams, there is plenty of information for beginners. — *ARRL*

Amateur talent

Fred Propper, WB9VUT, was vacationing in the east this summer and drove by the White House where a crowd had gathered around a Pepsi truck. Fred stopped and found it was a TV public relations stint for Pepsi. They took a liking to Fred, and got him to say a few lines and be video-taped. He became a paid member of the Screen Actors Guild and will receive lots of money. FB Fred! — *Radio Activities*, Argonne Radio Club, Hinsdale, IL **WR**

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Worldradio (USPS 947000) is an international conversation. You are invited to participate.

Our goal is to be a valuable resource of ideas and experiences beneficial to the Amateur Radio community. We publicize and support the efforts of those who bring the flame of vitality to this avocation. You readers are participants — an alliance of active radio amateurs concerned with reality, using radio as a communications tool to develop the skill, quality and full potential of Amateur Radio.

We emphasize the positive aspects of this great activity, and desire your contributions dealing with dramatic, personal and humanitarian uses of Amateur Radio. ***Worldradio*** is an independent magazine not affiliated with any other firm, group or organization. Its pages are open to all. Permission is hereby automatically granted to reprint from this publication with appropriate source credit. If there is something useful, we wish to share it.

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PUBLISHER'S MICROPHONE

We now present those Amateur Radio operators who leave the castle in their horse-drawn carriage and wave jauntily to the many thousands gathered on the sidewalk hoping to glimpse the latest to become ***Worldradio*** SuperBoosters (Lifetime Subscribers):

- Charles Stanley, W5FWE, Sierra Vista, AZ
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•

Amateur Radio once again rose to its peak. In the aftermath of the Southern California earthquake, not only were the amateurs handling the "official" traffic, they were relieving the anguish of those nationwide who had loved ones in the midst of the disaster.

"They are fine.". . . "The house is a mess. Anything that could move is broken, but there are no injuries.". . . "Lots of glass breakage but everyone is fine." . . . "They are OK with some damage."

One person calling in told the receiving amateur, "I have three sons in that area." Hearing something like that, you can imagine what the father is going through.

And as one amateur on 40 Meters said, "This is a reminder to be prepared, with charged-up batteries and all the rest."

•

A month after the peak, there was the valley. A big DXpedition to one of the rarest of all rocks. Top operators facing danger to pass out contacts. It was the chasers who made one wonder. Incredible. The DX station says, "I am listening 495 to 505." BAM! Right on his frequency (480) are all these stations calling him! Don't they believe him? Can't they figure out the "split" on their rigs? Then there are what are called "the policemen." "HE'S LISTENING UP!" What a mess — not one of our shining moments.

•

I was reading in one of the club bulletins about a controversy surrounding whether amateur radio should be written (capitalized) as Amateur Radio. One party in the discussion felt that based on the rules in some style book it should not be.

Another said that if United States Senate or Great Mountain National Park deserved capitalization so did Amateur Radio. We agree. Particularly since we went that road many, many years ago and the other publications followed us.

Of course it should be capitalized because it is IMPORTANT! And since the United States Senate was brought up as an example, we'll pose a question. To paraphrase William Buckley: Would you rather be governed by the first 500 names out of the *Callbook* than by who is sitting in Congress now?

•

If your club is putting on a hamfest soon make sure you contact us for some items that will add to the festivities. If (along with your press release or hamfest flyer) you send a #10 self-addressed, stamped envelope to Risa, KD6PSF, ***Worldradio***, 2120 28th St., Sacramento, CA 95818, something nice will come your way.

•

Dayton is just around the corner. What a circus! Everything you ever wanted to know about Amateur Radio but were afraid to ask can be answered right there. It does some hams a lot of good to go there. From the looks of a lot of them it appears that walking through that gigantic flea market is more exercise than they get all year. Three days of forums are certain to touch on something of interest to you. Those who have never been to Dayton have missed something, indeed.

Closer to home are the ARRL Division conventions. The more times you go to the one in your area, the more likely you are to go to the next one.

No lack of things to do, the eager-beaver clubs are already into their preparations for Field Day.

•

I wrote to the Old Old Timers Club about joining. The prerequisite is to have made your first radio contact 40 years ago. Thanks to Uncle Sam's Signal Corps this year marks 40 summers since then. Where did all the time go, and so quickly?

•

Tiare Publications, P.O. Box 493, Lake Geneva, WI 53147 has a catalog detailing their books on CW, QSLing, QRP, Antennas for RVs, Contesting, Nets, etc. However, the way things are going these days, their most important book may be the one "On Guard!" about personal safety, residential security and related topics.

— Armond, N6WR

It's that time of year again!
Let's see how many of our eagle-eyed readers can spot the April Fools pieces we have planted in this issue.
Have fun, de Lou Ann, KB6HP.

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Anuta Island

(continued from page 1)

collected my 70 kilos of luggage. In late afternoon the fishing party returned with a catch of about 150 fish. I was told which hut I would stay in and who was my host. In the evening the council of elders talked about my case in the hut of chief number one. Two important things were to be settled. First the two chiefs expect a gift from every visitor; second, the nature of my intended radio activity. To topic one I was told about the visit of another German by yacht in the 1970s. He was very generous, gave the two chiefs US$50 each and in addition, US$500 was donated to the local school and churches — quite a lot of money. I am not a poor man but I am also not a millionaire. After some soul searching I offered US$50 for each chief, which was accepted.

On the second topic, the only known radio operation in the minds of remote Pacific islanders, is of a professional nature. SIBC (Solomon Islands Broadcasting Corporation) is the government-operated public radio station in the Solomon Islands. The only other known type of radio activity are daily radio contacts by solar powered radios to the next islands, the provincial and national capitals for exchange of social news and medical assistance. This radio activity had been stopped in 1990 when authorities had removed the solar panel from Anuta.

Someone who claimed to do radio contacts worldwide as a hobby and not to earn money was a previously unknown species. Everybody was very curious. It was bedtime by the time the council had agreed to allow my radio activity.

The next morning I set up my solar panel to recharge my radio's battery and took a close look around the island. Later in the day I set up my groundplane for the 20, 15 and 10 meter bands, (Pritzel GPA 30) on top of a bamboo pole, and my FT-757 GX 2 inside my host's hut. Houses on Anuta are about two meters tall, and are built from bush material. The roof is topped with leaves. The entrance is tall enough for children up to about two years of age to walk in upright; everybody else has to crawl through. Inside, the sand floor is covered with mats. There is a fireplace, above which hangs from a rod, a storage compartment for food and tobacco drying.

There are no chairs or tables on the island; everybody sits, dines and sleeps on the floor. Consequently my radio setup in a corner of my host's home was located on the floor as well. So here is your operator — sitting on the floor, leaning with his back against the battery container, head phones on. In his left hand, the microphone; in his right, the pencil to fill in the log book which sat upon the knees. Not a good position for running a pile-up for hours!

The first few days I didn't use headphones in order to give my curious hosts the ability to hear what was going on. My first contact was a US station who made the contact and wanted to disappear, but I wanted more than just an exchange of reports. The hut was filled with listening locals who were unlikely to understand such short contest-type contacts. Luckily ZL2VS, who was one of the next contacts, understood this and addressed my audience. Everybody could hear "Hello Bernhard. Greetings to your hosts on Anuta Island. Thank you for letting him operate his radio. I have known Bernhard for several years; he is a nice man who likes to go to remote islands like yours to operate his radio. My name is Dusty, and I am from New Zealand. Have a good time."

Watching my audience, I could see the smiles on their faces; the initial experiences of the islanders with Amateur Radio were indeed positive.

Some two days later, I was received by the head chief of Anuta in his hut. I handed over the US$100 bill and some Polaroid photos as well. My host acted as interpreter, because the chiefs didn't speak English. I was told that it is the custom for a visitor to eat with each family at least once during his stay. My host made a list of 23 families. During the 3-week stay, I had to eat every day once, and sometimes twice in another hut to satisfy my social obligation to every family.

My daily radio life started in the morning with the setting up of the solar panel. I redirected it from time to time during the day (into the sun to get maximum charge) while continuing to monitor the battery voltage. From mid-afternoon there was usually enough charge in my 70 Ah battery for an hour of activity, but I rarely called CQ and kept my transmissions short to conserve battery power.

In the evening usually I had power for 3-4 hours of activity and lighting for my host's hut as well. All this required good-to-reasonable daily sunshine. If I had had a period of 2-3 days of overcast, my operating time would have been shortened to 1 hour per day.

If you are a guest, it is impolite to operate after your hosts have gone to sleep next to your station, so I rarely operated after 10 p.m. or before 6 a.m. Operating is not determined by band openings, but by power availability and the usual daily schedule of the local residents. After a few days I started (as an public relations project) a video show. I had brought along a video 8 Sony Walkman with a 10 by 10 cm screen. When in Singapore I had bought a slide-on battery case, (40 AA-sized nickel-cadmium rechargeable batteries and five battery charging boxes) to power this set. The plastic charging boxes have a small solar panel on top and can charge 4 batteries at a time. After 2 days I had 40 charged batteries. Using 12 batteries at a time in the battery case, the video Walkman gave a 5-6 minutes of video before the

batteries were flat again. During the 3 weeks I showed 10-12 evenings of videos from my home, family and travels. From the second show the hut was packed every time.

After a week I installed a Fritzel PD 4 window antenna sloping down from a nearby coconut tree and was QRV on the 40, 17 and 12 meter bands. The Anuta hill has some mystic meaning for the locals. The slopes are fertile and there is no shortage of food, which is unusual if you consider a population density of 400 people/km living on a subsistence economy. That means producing all of their needs. Outsiders may go up the hill only with locals. For this occasion my upper body was specially decorated and I had to wear a traditional loin cloth made from treebark.

Two days before I left, an open-air farewell dinner by the island community was given. I had given my host Sol$300 for 3 weeks accommodations and food. He passed Sol$5 to each of the other families.

I was expected to give a speech. Then a speech from a young man of the family of the primary chief thanked me for the good time. Every family had set up a mat in a circle with food, so once more I had to go around, sit down for two minutes on each mat and eat a few bits of food.

My solar powered radio didn't transmit a huge signal and had permanent power supply restrictions, but it was sufficient to have some 1,000 contacts in three weeks. I tried unsuccessfully to compete in the pile-up for the Palmyra/Kingman Reef expedition, which took place during my stay, but I worked the expedition on other bands. I enjoyed an unusual advantage. Since the nearest public electrical system is over 400 km away, I have never experienced such low noise on the 80 and 40 meter bands.

Since 1988 I have operated from some 35 IOTA locations. Several times, when I had to deal with undisciplined pile-ups, I had decided to do no more IOTA DXpeditions. But an experience like Anuta Island keeps me going. This is the side of IOTA which I enjoy.It enables me to endure uncomfortable transportation, power limitations, and the occaisional inconsiderate mentality of some IOTA hunters who are operating from their comfortable armchair positions at home. **WR**

Ask Elmira

Advice for the Technically Forlorn

CONNIE DUNN, KB5LES

QUESTION: Recently, I was trying to break into a conversation on the repeater with an emergency. But I was unable to do so. True, the guys were not unkeying very long and it was hard to be that fast on the draw. But even if I caught the tail end of the squelch tail, I was not hitting the repeater. I was on an HT with a rubber duckie about two miles from the repeater. What could be the cause? It wasn't my battery.

ANSWER: Wow! Hope you're not still waiting for the guys to help with your emergency. First thing you need to do is tell them to take a deep breath between transmissions and slow their fingers down! Of course, it sounds like you are more concerned about what is wrong with your HT. I'm going to assume that there is nothing technically wrong with the HT. Lots of things could have been going on that would have prevented you from hitting that repeater. You say your battery was OK. Well, let's look at other possible causes.

One of the more common causes of HT malfunctions is caused from hitting the shift button. Because of size, most HTs are made where the shift key is easy to hit by accident. If thatshift is on the wrong (+ or -) then you won't be able to call up the repeater. Therefore, those people that were talking on the repeater would have no idea you were even out there. You might even have changed it to simplex by accident, and the same thing would occur. Next time, check for these small settings. If you are set right and you still can't hit the repeater, you may be having a more serious problem with your handheld. You may want to have a technician take a look at it.

*Editor's note: The repeater might also be in PL. If you don't have the PL, wait until the repeater's carrier drops out – then say **Break, Break, Break** simplex on the output. Someone will move you off to a simplex frequency and help.*

•

QUESTION: I keep hearing people talk about how great a longwire antenna is, but I don't know how long one should be. How long should I make it?

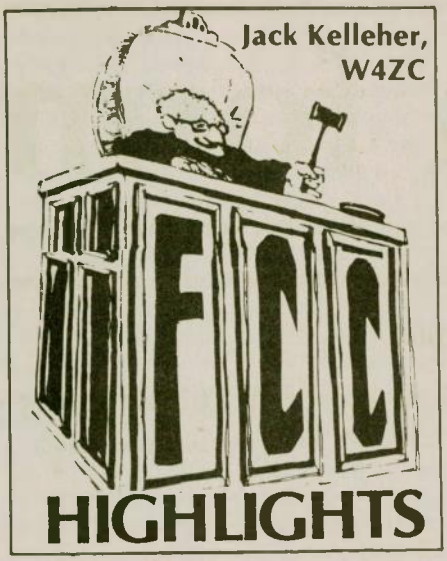
ANSWER: Long enough to reach the station you are trying to contact! Well. . . honestly, the first thing you need to know is that you shouldn't even attempt a longwire antenna unless you have some sort of matching device, such as an antenna tuner. Of course, a longwire is not a longwire unless it is longer than one wavelength at the operating frequency. So, for the 20 meter band, a longwire antenna would need to be at least 67 feet long. Here's the formula:

$$\frac{492(N-0.05)}{f \text{ MHz}}$$

N = number of half waves.

Let's use this formula for finding how long to make your longwire for the YL Open House frequency (14.288). We need at least two half waves (two halves equal one whole), so take 2, subtract 0.05. We get 1.95, then multiply that by 492 to get 959.4, and divide by 14.288 to get 67.14725 or rounded off to 67.15 feet. **WR**

*To have your technical questions answered, write to **Ask Elmira,** 1807 N. Elm, Suite 238, Denton, TX 76201.*



New FCC Form 610

Beginning 1 March, 1994 the FCC will accept only the new version of its Form 610 (the one dated November 1993) as explained in February *QST*. Use of the new form applies to everyone, from new licensees to renewals, call sign changes, etc.

Vanity call signs

As of 4 February ARRL has requested an extension of the deadline for comments in this proceeding (PR Docket 97-305) from 7 March to 21 April. It is anticipated that the Commission will grant the League's request.

Regrets and repentance

We regret that there doesn't seem to be much FCC news this month. This being so, we use this space for an abbreviated version of an article which appeared in *QST* in January 1947, and which is being used with the permission of ARRL. The article is titled "The Repenter, for people who think they think," by Burt L. Zimet, W2JUX.

General

The Repenter is a lightweight, compact unit (see Fig. 1) and is intended for use by people whose capacities for repentance are below normal, or by those who have more to be sorry about than can be conveniently handled without artificial aid. By use of this device the operator may have his bad moments repented for him, thus permitting him to engage in activities which he may later repent at leisure. The Repenter is guaranteed (except in March) faithfully to repent in exact accordance with the desires of even the most talented of bunglers.

The Repenter produces tone-modulated sighs in the frequency range 10.3 to 70.1 pangs per second (pps), and the modulation frequency is one thousand sobs per second (sps). The device may be adjusted to produce racking pangs of remorse when such extremes are indicated. A simple adjustment of the Remorse potentiometer will create an atmosphere of complete dejection and thus enable the operator to quickly repent hasty words or purchases. Complete and absolute penitence is accomplished at 60 pps. However, the operator is cautioned that this adjustment must be made with extreme care (kid gloves if available, if not, use spats), since the Repenter will be operating in the Black Despair end of its Gripe-current Plight-voltage curve. (NOTE: A Gray Gloom may be obtained from the output jacks when the Grief control is turned to the extreme counterclockwise position. Should this control be in the Off position, only a lingering doubt will be present). When gloomy, the operator should turn the dial labeled KICK ME to the On position, and immediate relief will be realized.

It is, of course, reasonable to assume that in accordance with Moe's Law (Hey, Moe, watta ya know?) the Repenter can be made to rue. To rue the day, adjust the device in accordance with the simple nine hundred page instruction manual furnished with each Repenter.

When the urge to say "You'll be sorry" comes upon the operator, the Azuzza-type Expectation Preselector should be attached to the Repenter. Combining these two devices will produce in the Repenter a negative Drift current which biases the Volstead Valve excessively. The net effect on the operator is essentially a surge of linear expectation which causes a hasty revisit to every surplus store within a hundred-mile radius to purchase everything in sight, including such useful items as air brakes for rotary-beam antennas.

Characteristics

The Repenter differs from most con-

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 the first of January 1994.

For more information about the callsign 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 Am. Extra	Group B Advanced	Group C Tech./Gen.	Group D Novice
Ø	AAØQC	KGØLB		KBØLQM
1	AA1IL	KD1TP	N1RGM	KB1BFT
2	AA2RC	KF2TQ	N2XUK	KB2QVZ
3	AA3GZ	KE3LY	N3RKG	KB3BAU
4	AD4PJ	KR4MI		KE4JKD
5	AB5SS	KJ5UR		KC5FFG
6	AC6AC	KN6XZ		KE6FCN
7	AB7BD	KI7VO		KC7ANO
8	AA8NZ	KG8GR		KB8RKQ
9	AA9KB	KF9TV	N9WBZ	KB9IWX
North Mariana Is.	AHØW	AHØAQ	KHØCK	WHØAAY
Guam	WH2A	AH2CU	KH2IM	WH2ANI
Johnston Is.	AH3D	AH3AD	KH3AG	WH3AAG
Midway Is.		AH4AA	KH4AG	WH4AAH
Hawaii		AH6NF	WH6SG	WH6CRC
Kure Is.			KH7AA	
American Samoa	AH8H	AH8AG	KH8BB	WH8ABB
Wake Wilkes Peale	AH9C	AH9AD	KH9AE	WH9AAI
Alaska		AL7PM	WL7QG	WL7CHL
Virgin Is.	WP2F	KP2CC	NP2HG	WP2AHU
Puerto Rico		KP4WG		WP4MNB

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Worldradio is a two-way communication. Send in Amateur Radio information and news. Share your knowledge with your fellow amateur and Worldradio reader. We are most interested in your comments and suggestions. We would appreciate being placed on the mailing lists of amateur club bulletins.

ventional ham gear in that it satisfactorily matches a wide range of emotional impedances. These impedance values depend in large measure, of course, upon the temperament coefficient of the operator. When this factor is essentially flat the instrument may be relied upon to adequately supply remorse for long periods of time without recalibration. However, when the emotional impedance varies in accordance with the season, the weather, or what's for supper, the Repenter must be recalibrated. It is necessary to return the Repenter to the manufacturer for recalibration since the exact standards of human nature are as yet unknown. The Response of the Repenter is essentially flat over the entire sad gamut of emotional range, being less than 3 dB down at the Remorse end, and only 2 dB down at the Indifferent Compunction end. Where a flatter characteristic is desired, the Repenter may be flattened with any convenient pile driver.

Circuit design considerations

Spurious or parasitic remorse is prevented by the use of Pang suppressors in the Mud Valving circuits. The Repenter must always be operated at the highest possible sobbing point. Sobbing-point measurements can be made from readings of the Flow and Ebb meter on the front panel. This meter is of the Past Mistakes type, having 1000-Ohs-per-volt sensitivity, and will indicate how lousy things are going. Where conditions require a "filled-with-remorse" state, as in the range 14 Kilowracks (14 KW), the operator should carefully adjust the Racking Trilks, since the device has an inherent tendency toward self-oscillation at these frequencies. Careless adjustment would cause the Repenter to break into a violent state of sobbing which could build up in amplitude to a peak power of over 150 qts. This would instantly swing the Worry current sinusoidally and a state of mental exhaustion would prevail. The author has carefully investigated this phenomenon and recommends the use of several antilament chokes connected in series with the screens of the No-Nox tubes. Such chokes will effectively damp out all but the racking type of sob. The dampness is controlled by a Lachrymal potentiometer located on the rear panel. All Platonic voltages and Plague currents for the tubes are supplied by a single prejudice supply adequately filtered by use of two open chokes and two leaky capacitors. (Similar components may be picked up at any surplus store.)

Controls

All controls are brought out to the front panel for accessibility. For ready maintenance on the interior of the cabinet the 35 knobs and 15 clamps are removed, and the front panel is then removed by unscrewing 216 machine screws and running an acetylene torch along the edges of the panel. Since all wires and component parts mounted inside the cabinet are embedded in sealing compound, a trough should be placed below the front panel when it is removed. Offtimes it may be necessary to blast the panel loose (Corrosion, you know). The Repenter is therefore equipped with a detonator charge directly in back of the front panel. To set off the charge, merely hit the Gravity switch with any long stick. (Caution: Operator should practice hasty exits before tripping Gravity switch — this maneuver not recommended for old-timers).

Preselector attachment

The Expectation preselector is essentially a faze inverter. Should the attitude of the Repenter become optimistic, the preselector instantly shifts the Attitude current 180 degrees out of faze through a simple Remorse Canopy network (R/C faze shifter) creating a pessimistic outlook which is then fed into a class 4F modulator. By means of the thrush discharge characteristics of this Class 4F modulator a Widget is caused to absorb the output of the Attio-amplifier faster than it can be supplied. The net result is that a regression into the past is obtained. This regression essentially is a negative projection, and should bring forth from the past many objects, words, etc., to repent.

Operation

The operator should turn on the Repenter and wait a while (45 hours, 15 minutes, 8 seconds) for the tubes to reach normal operating temperature. The Repenter is now ready for its first assignment. Generally, the first assignment is used to determine if the apparatus is functioning properly. This should manifest itself to the operator by a great surge of repentance for having purchased the instrument. The procedure outlined below should be followed for best results.

Turn switch SW-3 to the Remorse position and advance the Futility output control to about half-scale. Rotate the Sob dial to the setting marked "Pangs" and look at the invoice marked "price." Observe that the Repenter has a single high-amplitude pang and note the instant cessation of doubt at having bought that surplus. If it is found that following this reaction a desire to purchase more surplus persists, the Obsession control was adjusted too high. If a slight lingering feeling of guilt is noted, the Idiosyncrasy control was set too low. The Expectation preselector attachments should then be attached to the Repenter and tested by connecting test cord T 153/4 to jack marked "Anti-out" and then to "Regin" and from "Ut. Fut. On" to "Ant, Hyb. In." Then advance Repenter output. Set Gripe control to "Hppn" and turn Plight switch to "Anythg Cn Hppn" and observe that the Agastat picks up. Normally an idling current of approximately 0.4 gills is satisfactory, although there are exceptions. A few more gills of expectation will do no harm, however. The reader is referred to the author's text titled "The Snore-a-scope," soon to be released, for further details. **WR**

*If you're not subscribing to **Worldradio**, you're missing a lot of Amateur Radio news.*

The ham with a heart

Ed Kelly, KB7TFC, of Sierra Vista, AZ and his dad Paul, WA4YUV, of Pikeville, KY, check into our Sunday morning 14.270 MHz net.

Paul didn't check in on the day after Christmas but Ed did and related the following story.

Ed's sister, Nancy May, of Pikeville, required a kidney and pancreas transplant. She had been awaiting a suitable donor for a long time, and had recently begun dialysis treatments.

On 23 December, a call came from the hospital in Cincinnati, OH, saying they had a donor. However, she only had five hours to get from Pikeville to Cincinnati. Pikeville is in Southeastern Kentucky near the Tennessee border and Cincinnati is just across the river from the northern tip of Kentucky. The route is through the Cumberland Mountains. It is a hard four hour drive in good weather.

December weather in this area can be miserable. Highways are hazardous with ice and snow and on 23 December, the increased holiday traffic could further delay them.

Paul loaded Nancy into the car and they headed for Cincinnati. It was snowing. Shortly after leaving home, Paul checked on two meters for road conditions and the best route.

When he received a response, he explained his situation and the urgency of his trip.

Enter the ham with a heart. Rodney K. Smith, N4ZIF, was monitoring and broke in. He said, "Turn around and head for the airport. I will meet you there and fly you to Cincinnati."

They did, he did, and Nancy got to the hospital with time to spare.

The operation was a success, she received the kidney and pancreas, and is now recovering.

Rodney flies for a major construction company. He said, "It's only a half hour to Cincinnati in the King Air. They would never have made it with the weather and traffic conditions being what they were. I asked the company if I could use the plane and they never hesitated in giving permission for this flight."

Think how easy it would have been for Rodney to just monitor or to pass on the road conditions. It was the day before Christmas Eve and surely he had some last minute preparations to make as most of us do.

Instead, he volunteered his time and his company gave the use of their aircraft to ensure that Nancy got to the hospital on time.

Rodney, our hats are off to you. Congratulations and thanks from the members of the Cochise Amateur Radio Association. You put into practice what so many of us preach — the volunteer spirit of Amateur Radio. — *The Cochise Smoke,* Cochise, AZ, ARA

The night I blacked out L.A.

A personal reminiscence

CHARLIE L. SMITH, N7FSN

In 1943 I was a newscaster with the Mutual Broadcasting System in Hollywood. MBS used the studios of its affiliate, KHJ. The two broadcast entities were interlinked. The 17 announcers and newscasters on the staff worked interchangeably as KHJ staff voices and several, including me, were also assigned to network production I did a 7:00 a.m. 15 minute news to the net and again at 3:00 p.m. to the full net, reaching the east coast at the dinner hour, 6:00 o'clock; plus three on-the-half-hour two minute news summaries to the network.

MBS-KHJ studios were on Melrose Avenue, nestled between the huge RKO and Paramount picture studios. Some of the staff members and I had access to the RKO studios, commissary and barbershop, and had a nodding acquaintance with some of the screen luminaries of that time

The network operations and RKO "connection" were exciting and fulfilling to this young radio man from Raytown, Missouri, a suburb of Kansas City, where I broke into radio while attending college

My draft designation was 4-F because of a duodenal ulcer, which was not helped much by the tensions of the split-second schedules of broadcasting.

Being wartime the Western Air Defense Command was concerned about enemy air attacks. Specifically, WADC wanted to prevent enemy planes from homing in on coast radio stations, as the Japanese had, as they were approaching Pearl Harbor.

WADC devised a warning system and radio blackout system so that when an alert came, west coast radio stations (there was no TV then) would immediately shut down. When they heard the alert code, stations were not to sign off but immediately pull the switch.

KHJ was designated as the Key Station for greater Los Angeles, which then had about 15 AM stations and three or four FM stations. FM was just starting, usually carrying simulcasts.

WADC installed a direct line telephone in the KHJ announce booth with instructions that if that phone rang (actually a raucus buzz) the announcer on duty was to immediately grab the phone and answer, even if he was, at that time, on the air. All radio station transmitter engineers in the greater Los Angeles area were to continuously monitor KHJ for the alert code call. The call was "X-RAY! X-RAY! X-RAY!"

The big event came one night about 10:30. I had been asked by a friend to take his evening shift, which was just sitting in the announce booth and making station breaks between network programs.

I was shocked out of my seat when the WADC line buzzed. Sometimes they just tested the line, saying, "This is a test! This is a test!", and hang up. This time the voice was urgent: "X-RAY! X-RAY! X-RAY!

I killed the net and cut in: "X-RAY! X-RAY! X-RAY!" Quickly, KHJ-Mutual's master control, in another building, called and excitedly asked, "Are you sure? Did WADC really say X-

RAY?" Shakily, I assured him it was true.

Southern California Gas and Electric also was monitoring KHJ. They pulled switches and L A was dark in a hurry.

I went outside to the parking lot and saw searchlights probing the sky in the San Pedro area. Then the anti-aircraft fire began. I was miles away from that action, but it was indeed spectacular.

The next day newspapers played it big. The following day they began to question the WADC about the action. To my knowledge, WADC has not, to this day, told what really happened. There was wide speculation that it was to scare America into remembering that it could happen here. Later, Santa Barbara received a brief shelling from a submarine. Perhaps it did happen here.

Standing in the parking lot in the pitch black, I was overwhelmed that by merely saying "X-RAY" three times, I had blacked out L.A. WR

Extra Class couples

CHRIS BALDO, AI6S

Surely many ECCers have been wondering when our unique group would become active again. It is true that ECC has been dormant for many winters but now it is almost spring and the dormancy is about to end.

At the first sign of new life there will be an attempt to bring the roster up to date. Without doubt there are address and call changes as well as newly qualified couples to be added to the list. As the name implies, Extra Class couples, and also any Extra who had a late Extra Class spouse, are eligible to participate.

For those who may have forgotten the past history of ECC, a review might be in order. At a dinner in our home in the late 1970s where there were hams in attendance, two of the couples held Extra Class licenses. The conversation got on the subject of Extra Class couples when one of the Extras, Lloyd Colvin, W8KG asked, "I wonder, how many Extra Class couples there are?" After a few moments another Extra, Betty Baldo, KB6P replied, "I'll find out." Then her quest began. At the last count there were well over 100 couples.

The two amateurs mentioned can well be considered the founders of ECC. Actually they were the catalyst for the group's beginning. The sad note is that they both became Silent Keys recently; KB6P in July and W6KG in December of last year. The unique legacy they have entrusted to us is for our continued enjoyment if we maintain an active interest.

If the founders were to leave some words of encouragement for ECC, it could well be the words in the famous poem by Joaquin Miller when Columbus, on hearing the mournful pleas of his mate to abandon the voyage, replied: "Sail on! Sail on! and On!"

That we intend to do. With that in mind and because of the recent lull in our activity, our task is to locate couples who qualify and include them on our new roster. All members are urged to seek out candidates in such likely places as radio contacts, club meetings, etc.

The ECC files indicate that Amateur Radio publications have been most cooperative in giving our project publicity. As soon as there is evidence that a reasonable attempt has been made to contact likely members, a revised roster will be prepared and distributed.

Members receiving this letter are invited to send any desired roster changes, notes about on and off the air activities, whether an ARRL member, suggestions, etc. Any information that would be of interest to members is welcome to aid in preparing a future newsletter. Items of interest would include novel club programs, promoting school radio clubs, emergency training, etc.

ECC can only become as active as the individual members are willing, therefore you are urged to send in suggestions as to what you would like to see our group do. The newsletter will be the forum for testing all the ideas. Please write me at: 3 Eaton Ct., Berkeley, CA 94708. WR

Emergency Locator Transmitters

VERNON L. PHILLIPS, W7KG

Emergency Locator Transmitters (ELTs) are currently required in a quarter of a million aircraft worldwide. The ELT is "armed" when installed in the aircraft and comes "on" from a 5g impact. ELTs transmit simultaneously on 121.5 MHz and 243.0 MHz with a power output of about 100 milliwatts. The ELT is battery powered and typically will transmit for 48 hours if the batteries are fresh.

Many aircraft accidents happen in remote areas and, if no flight plan has been filed, may go unnoticed for several hours if the signal from the ELT has not been detected.

Generally an ELT is first heard by another aircraft, but satellites have proven their worth in locating ELTs. The Oscar 6 ham satellite was the first one to be used (1975) to locate the ELTs. Although satellite accuracy and ability are quite impressive, it will still be some time before there can be continuous surveillance of all points on earth. There will remain a need for ground monitoring in desolate areas to confirm orbital detection and to possibly save valuable time.

An ELT receiver in a high mountain location would be in a position to detect an ELT from within a wide area. Coupled to an amateur repeater, an ELT alert signal would prompt a listener to notify the FAA.

ELT activation must not interfere with normal operation of the repeater and proper timing must be employed to minimize false alerts.

The following additional equipment would be desirable:

1) A steerable antenna to plot an azimuth to the ELT; 2) Beeper receivers for the repeater frequency; 3) ELT receivers at other repeater sites.

Financing such a project would involve the local radio club with solicitation from the agency(ies) being served.

Amateur radio exists for the public interest, convenience and necessity. Any public service helps justify our existence and leverages our access to mountain-top locations. Might an ELT monitor project be in our future?

— *Spotter* Yellowstone Radio Club

Lots of static

BY RAY GRIMES, W6RYS

The state-of-the art has given us low-cost, miniature electronics devices with capabilities beyond our wildest dreams of just 10 years ago. We have pocket televisions, computerized wrist watches and portable Amateur transceivers with countless capabilities — digital display, memory, scan, remote-control, multimode, etc. The heart of most of these devices is the microprocessor chip. While this equipment can be called a miracle when it is working, it gets other names when it becomes intermittent or unreliable.

Much of the blame for failure or unreliability can be assigned to electrostatic damage (ESD). ESD is subtle but destructive. ESD first became recognized in early aerospace efforts. An expensive, sophisticated rocket electronics payload could work flawlessly on the pad, but shortly fail in orbit. This government-funded ESD research and development has carried over to civilian markets, greatly benefiting consumer electronics designs that have led to reliable, quality, low-cost equipment.

The problems often begin when the static-sensitive interior workings of an electronics device have been invaded. Industry research has proven that electronics equipment that has been repaired in the field once is greatly more susceptible to unreliability and early failure than a factory-fresh unit which has never been repaired. The culprit is mishandling in the field. Many technicians still operate on the concept that, "If you can't see it, it can't be a problem." Touching a device with your fingers, using a non-ESD-protected soldering iron or solder-removal tool, or removing and replacing devices or modules with power applied can all damage electronics components.The industry recognizes two levels of component damage. These are outright "kills," where the equipment no longer functions after being handled. The other condition is known as "walking wounded," where a device is subtly damaged, and may exhibit very slight performance degradation, but will likely prematurely fail in short order.

These problems of ESD damage cost the US electronics repair industries millions of dollars each year. With the very high cost of domestic labor, many companies repair customer equipment by simply replacing circuit boards. Though expensive, this solves the ESD problem by minimizing field handling of components. These high costs are, of course, passed on to the customer. You probably don't have these large working budgets, so you need to treat your electronics equipment better.

Some typical electrostatic voltages

Relative humidity	10-20%	65-90%
Walking across carpet	3500V	1500V
Walking across vinyl floor	1200V	250V
Vinyl envelope	7000V	600V
Padded work chair (polyfoam)	1800V	1500V

You may have an occasional problem where your computer seems to go crazy, then fixes itself. This can be the result of static damage induced by walking across a carpet, then touching the computer keyboard. There are commercially available ESD mats and palm pads that will dissipate these electrostatic charges. You can also purchase antistatic spray, which will temporarily neutralize the static charges from carpets and linoleum (yes, even linoleum).

You should always use an antistatic wrist strap when handling modules

(please turn to page 16)

MFJ ACCESSORIES

Compact Speaker/Mics

Here's a Compact *Speaker/Mic that fits comfortably in your hand and has a* full size *speaker for crystal clear audio.*

No need to remove your handheld from your belt to talk or monitor calls. Clip it near your ears so you can easily hear every call with the volume turned down.

First-rate electret mic element and full size speaker gives superb audio on transmit *and* recieve. Earphone jack, PTT, lightweight retractable cord. Gray. 1¼x2x3 in.

MFJ-284 fits Icom and Yaesu. **MFJ-286** fits Kenwood.

MFJ-284 or MFJ-286 **$24.95**

Mini Speaker/Mics

These tiny MFJ Speaker/Mics are so small and so lightweight you'll forget they're there -- until you get a call.

Excellent audio from electret mic element and speaker. Has swiveling lapel /pocket clip, PTT button with transmit LED, earphone jack, lightweight retractable cord. Available with L or regular connector. *Tiny* 2x1¼x¼ in.

Order MFJ-285/MFJ-285L for ICOM, Yaesu, Alinco; **MFJ-287/MFJ- 287L** for Kenwood; **MFJ-283** for split plug Alinco; **MFJ-285W** for IC-W2A.

MFJ-283, MFJ-285, MFJ-285L, MFJ-285W, MFJ-287 or MFJ-287L **$24.95**

L Connector also available - order L model.

MFJ Artificial RF Ground

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Creates artifical RF ground that eliminates or reduces RF hot spots, RF feedback, TVI/RFI, weak signals caused by poor RF grounding.

Greatly improves your signal if you're using a random wire or longwire antenna with an ineffective ground.

Electrically places a far away RF ground directly at your rig by tuning out reactance of connecting wire.

20 Meter CW Transceiver

MFJ-9020 **$179.95**

Throw this *tiny* MFJ 20 Meter CW Transceiver in a corner of your briefcase and enjoy DXing and ragchewing wherever you go. You get a high performance superhet receiver, crystal filter, RIT, AGC, vernier tuning, sidetone, speaker, up to 5 watts output, semi/full break-in, much more. *Free* manual. See *free* MFJ catalog for 40, 30, 17, 15 Meter versions, keyer, audio filter, power pack, tuner, antennas.

Super *Active* Antenna

**``World Radio TV Handbook''** says MFJ-1024 is a ``first rate easy-to- operate active antenna...quiet...excellent dynamic range...good gain... low noise...broad frequency coverage... excellent choice."

Mount it outdoors away from electrical noise for maximum signal, minimum noise. Covers 50 KHz - 30 MHz.

Receives strong, clear signals from all over the world. 20 dB attenuator, gain control, ON LED. Switch two receivers and aux. or active antenna. 6x3x5 in. Remote has 54 inch whip, 50 ft. coax. 3x2x4 in. 12 VDC or 110 VAC with MFJ-1312, $12.95.

$129.95 MFJ-1024

Cross-Needle SWR Meter

MFJ-815B **$69.95**

Peak/ average Cross-Needle SWR/ Wattmeter. Shows SWR, forward/ reflected power in 2000/500 & 200/50 watt ranges. 1.8-60 MHz.

Mechanical zero. SO-239 connectors. Lamp uses 12 VDC or 110 VAC with MFJ-1312, $12.95.

"Teflon® is a registered trademark of Dupont"

MFJ Coax Antenna Switches

$34.95 MFJ-1701

$21.95 MFJ-1702B

$59.95 MFJ-1704

Select any of several antennas from your operating desk with these MFJ Coax Switches. They feature mounting holes and automatic grounding of unused terminals. One year *unconditional* guarantee.

MFJ-1701, $34.95. 6 position antenna switch. SO-239 connectors. 50-75 ohm loads. 2 KW PEP, 1 KW CW. 10x3x1½ in. DC-60 MHz.

MFJ-1702B, $21.95. 2 positions plus new Center Ground. 2.5 KW PEP, 1 KW CW. Insertion loss below .2 dB. 50 dB isolation at 450 MHz. 50 ohm. 3x2x2 in. *MFJ-1702BN, $31.95, N connectors, DC-1.1 GHz.*

MFJ-1704, $59.95. 4 position cavity switch with lightning/surge protection. Center ground. 2.5 KW PEP, 1 KW CW. 50 dB isolation at 500 MHz. 50 ohm. 6¼x4¼x1¼ in. *MFJ-1704N, $69.95, N connectors.*

Dry Dummy Loads for HF/VHF/UHF

MFJ has a full line of dummy loads to suit your needs. Use for tuning to reduce needless (and illegal) QRM and save your finals.

$29.95 MFJ-260B **$59.95** MFJ-264

MFJ-260B, $29.95. VHF/ HF. Air cooled, non-inductive 50 ohm resistor. SO-239 connector. 300 Watts for 30 seconds, derating curve. SWR less than 1.3:1 to 30 MHz, 1.5:1 to 150 MHz. 2½x2½x7 in. *MFJ-260BN, $34.95, N connectors.*

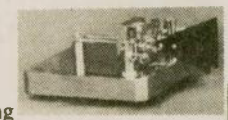
MFJ-264, $59.95. Versatile UHF/VHF/HF 1.5 KW load. Low SWR to 650 MHz, usable to 750 MHz. 100 watts/10 minutes, 1500 watts/10 seconds. SWR is 1.1:1 to 30 MHz, below 1.3:1 to 650 MHz. 3x3x7 in. *MFJ-264N, $69.95, N connector. MFJ-5803, $4.95, 3 ft. coax/ PL-259.*

MFJ Low Pass Filter

MFJ-704 **$39.95**

Suppress TVI, RFI, telephone and other interference by reducing unwanted harmonics going to your antenna. 9 poles, MFJ's exclusive *Teflon® Dielectric Technology™* capacitors, hi-Q inductors, ground plane shielding, RF tight cabinet gives excellent TVI/ RFI protection. Full legal power 1.8-30 MHz. Mounting tabs.

MFJ Iambic Paddles



MFJ-564 **$49.95**

MFJ Deluxe Iambic Paddles feature a full range of adjustments in tension and contact spacing, self-adjusting nylon and steel needle bearings, contact points that almost never need cleaning, precision machined frame and non-skid feet on heavy chrome base. For all electronic CW keyers.

Full Color FAX

MFJ-1214PC **$149.95**

Use your computer and transceiver to receive, display and transmit *brilliant full color* news photos and incredible WeFAX weather maps with all 16 gray levels. Also receive/transmit RTTY, ASCII and CW.

Animate weather maps. Display 10 global pictures simultaneously. Zoom any part of picture or map. Manager lists over 900 FAX stations. Automatic picture capture and save.

MFJ/Bencher Keyer

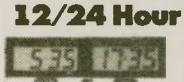
MFJ-422B **$134.95**

The best of all CW worlds --a deluxe MFJ Keyer using a Curtis 8044ABM chip in a compact package that fits right on the Bencher iambic paddle!

Iambic keying, speed (8-50 wpm), weight, tone, volume controls. Automatic keyer or semi-automatic ("bug")/tune mode. RF proof. 4⅛x2⅜x5½ in.

MFJ-422BX, $79.95, keyer only for mounting on your Bencher paddle.

12/24 Hour LCD Clocks



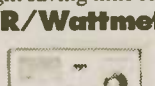
$19.95 MFJ-108B

$24.95 MFJ-112

MFJ-108B dual clock has separate UTC and local time displays. Huge 5/8 inch LCD digits are easy-to -see. Brushed aluminum frame.

MFJ-112 shows hour/minute/ second, day, month, date, year at any QTH on *world map*. 12 or 24 hour display. Daylight saving time feature.

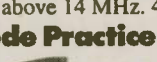
VHF SWR/Wattmeter



MFJ-812B **$29.95**

Covers 2 Meters and 220 MHz. 30 and 300 Watt scales. Relative field strength 1-250 MHz, SWR above 14 MHz. 4½x2¼x3 in.

Code Practice Oscillator

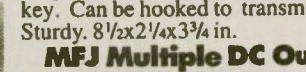


MFJ-557 **$24.95**

MFJ-557 Deluxe Code Practice Oscillator has a Morse key and oscillator unit mounted together on a heavy steel base so it stays put on you table. Portable. 9-volt battery or 110 VAC with MFJ-1305, $12.95.

Earphone jack for private practice tone and volume controls for a wide range of sound. Speaker. Adjustable key. Can be hooked to transmitter. Sturdy. 8½x2¼x3¾ in.

MFJ Multiple DC Outlet



MFJ-111 **$64.95**

Use your rig's 12 VDC power supply to power two HF/VHF rigs and six or more accessories with this MFJ *high current* multiple DC outlet.

2 pairs of 30 amp 5-way binding posts separately fused for rigs. 6 switched, fused pairs for accessories. DC voltmeter, "on" LED, RF bypassed, 6 ft. of 8 guage power cable. See *free* MFJ catalog for more DC outlets

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10 Bands -- 1 MFJ Antenna!

Full size performance . . . No ground or radials

Operate 10 bands: 75/80, 40, 30, 20, 17, 15, 12, 10, 6 and 2 Meters with one antenna
Separate full size radiators . . . End loading . . . Elevated top feed . . . Low Radiation Angle . . . Very wide bandwidth . . . Highest performance no ground vertical ever . . .

Operate 10 bands -- 75/80, 40, 30, 20, 17, 15, 12, 10, 6 and 2 Meters -- with this MFJ-1798 vertical antenna and get *full size performance* with no ground or radials!

Full size performance gives you high efficiency for more power radiated. The result? Stronger signals and more Q-5 QSOs.

Full size performance also gives you exceptionally wide bandwidths so you can use more of your hard earned frequencies.

Full size performance is achieved by using separate full size radiators for 2 through 20 Meters and highly efficient end loading for 30, 40 and 75 /80 Meters.

You get very low radiation angle for exciting DX, automatic bandswitching, omni-directional coverage, low SWR and it handles 1500 watts PEP SSB.

MFJ's unique *Elevated Top Feed*™ elevates the feedpoint *all the way to the top* of the antenna. It puts the maximum radiation point high up in the clear where it does the most good -- your signal gets out even if you're ground mounted.

It's easy to tune because adjusting one band has minimum effect on the resonant frequency of other bands.

Self-supporting and just 20 feet tall, the MFJ-1798 mounts easily from ground level to tower top -- on small lots, backyards, apartments, condos, roof tops, tower mounts.

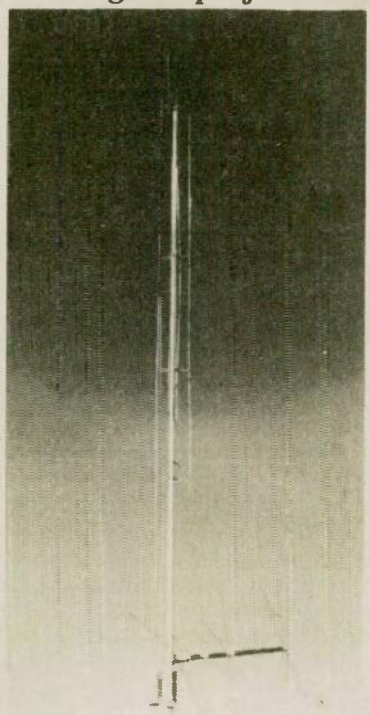
Separate *Full Size* Radiators

***Separate** full size* quarter wave radiators are used on 20, 17, 15, 12, 10 and 2 Meters. On 6 Meters, the 17 Meter radiator becomes a 3/4 wave radiator.

The active radiator works as a stub to decouple everything beyond it. *In phase* antenna current flows in all parallel radiators.

This forms a very large equivalent radiator and gives you incredible bandwidths.

These radiator stubs provide automatic bandswitching -- there is absolutely *no loss* due to loading coils or traps.



MFJ-1798
$269.95

End Loading

On 30, 40, 75/80 Meters, end loading -- the most efficient form of loading -- gives you highly efficient performance, excellent bandwidth, low angle radiation and automatic bandswitching.

MFJ's unique *Frequency Adaptive L-Network*™ provides automatic impedance matching for lowest SWR on these low bands.

Tuning to your favorite part of these bands is simple and is done at the *bottom* of the antenna.

No Ground or Radials Needed

You don't need a ground or radials because an effective counterpoise that's 12 feet across gives you *excellent* ground isolation.

You can mount it from ground level to roof top and get awesome performance.

No Feedline Radiation to Waste Power

The feedline is decoupled and isolated from the antenna with MFJ's exclusive *AirCore*™ high power current balun. It's wound with Teflon® coax and *can't* saturate, no matter how high your power.

Built to Last

Incredibly strong solid fiberglass rod and large diameter 6061 T-6 aircraft strength aluminum tubing is used in the main structure.

Efficient high-Q coils are wound on tough *low loss* fiberglass forms using highly weather resistant Teflon® covered wire.

Teflon® is registered trademark of Dupont

MFJ *Super Hi-Q Loop*™

MFJ-1786
$299.95

MFJ's *tiny* 36 inch diameter *high efficiency* loop antenna lets you operate 10 to 30 MHz *continuously* -- including the WARC bands!

It's ideal where space is limited -- apartments, small lots, mobile homes, attics, motor homes.

Enjoy both DX and local contacts when you mount it vertically. You get *both* low angle radiation for excellent DX *and* high angle radiation for local close-in contacts. Handles 150 watts.

Super easy-to-use! Only MFJ-1786 *Super* Remote Control has *Auto Band Selection*™. It auto-tunes to your desired band, then beeps to let you know. No control cable is needed.

Fast/slow tune push buttons and built-in two range *Cross-Needle* SWR/Wattmeter lets you quickly tune to your exact frequency.

All *welded* construction, no mechanical joints, welded butterfly capacitor with no rotating contacts, large 1.050 inch diameter *round* radiator -- not a lossy thin flat-strip -- gives you highest possible efficiency.

Each plate in MFJ's *superb* tuning capacitor is welded for low loss and *polished* to prevent high voltage arcing. It's welded to the radiator, has nylon bearing, anti-backlash mechanism, limit switches and a continuous *no-step* DC motor for *smooth precision* tuning.

A heavy duty 1/8 inch thick ABS plastic housing with ultraviolet inhibitors protects it.

MFJ-1782, $269.95. Same as MFJ-1786 but remote control has only fast/slow tune buttons.

Super 80/40M Vertical

MFJ-1792
$159.95

Designed as a *high performance* antenna for 80 and 40 Meters, the MFJ-1792 features a *full size* quarter wave radiator for 40 Meters - - that's a full 33 feet of ruthless radiating power.

End loading -- the most efficient form of loading -- is used for 80 Meters. It's accomplished by a virtually lossless 4½ foot capacitance hat and a high-Q coil wound with Teflon® wire on a *low-loss* fiberglass form.

The *entire length* radiates power.

High strength 6061-T6 aluminum tubing, super strong solid fiberglass insulator, *Frequency Adaptive L-Network*™, heavy duty *swing* mount. Handles 1500 watts PEP. Requires guying and radials, counterpoises or ground screen.

MFJ-1793, $179.95. Same as MFJ-1792 but includes *full size* 20 Meter quarter wave radiator.

Box Fan Portable Loop

MFJ-1780
$229.95

No, it's not a fan -- it's a high efficiency portable loop antenna that's about the same size and shape as a 2x2 foot box fan, complete with carrying handle.

Carry it like a suitcase, tuck it in a corner of your car or check it as baggage on a plane.

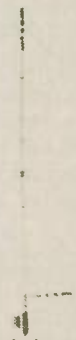
When you get there, set it on a table or desk and enjoy ragchewing or DXing.

All welded construction, covers 14-30 MHz *continuously* including WARC bands, handles 150 watts. Remote control has fast/slow tune buttons. Separate control cable not needed.

MFJ *halfwave* Vertical

6 bands: 40, 20, 15, 10, 6, 2 Meters . . . No radials or ground needed!

MFJ-1796
$199.95



Operate 6 bands -- 40, 20, 15, 10, 6 and 2 Meters -- with this MFJ-1796 *ground independent halfwave* vertical antenna! No radials or ground ever needed!

It's only 12 feet high and has a *tiny* 24 inch footprint! Mount it anywhere from ground level to tower top -- on apartments, condos, small lots, even motor homes. Perfect for vacations, field day, DX-pedition, camping.

Efficient *end loading*, no lossy traps. *Entire length* is always radiating. *Full size* halfwave on 2 and 6 Meters. High power *air-wound* choke balun eliminates feedline radiation. Adjusting one band has minimum effect on other bands.

Automatic bandswitching, low radiation angle, omni-directional, handles 1500 watts PEP. Goes together in an afternoon.

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Lots of static

(continued from page 13)

and static-sensitive components. The wrist strap doesn't do much good if it isn't grounded, though. Never heat-test electronics equipment using a heat-shrink gun or hair dryer. These also make great static generators, not to mention inducing thermal shock into components. I know of one technician who reported finding a 100% failure rate in a particular new model of two-way radios when he heat-tested each one fresh out of the box in this manner.

Do not store or package static-sensitive components in Styrofoam, white Styrofoam "peanuts," or plastic cabinet drawers, or wrap devices using cellophane tape. The separation voltage produced on a cellophane tape dispenser will destroy many static-sensitive devices.

Most people place a lot of confidence in "pink pearl" antistatic package material. This can be found in the form of opaque pink plastic bags or pink Styrofoam "peanuts" as packing material. The purpose of this specific material is to prevent what is called "triboelectric charging." This is frictional electricity produced when the conductive contents of a plastic bag rub against the insulating material. These bags only protect against triboelectric charging. Only the metallic semiopaque shielded ESD bags can provide antistatic protection from casual handling. Believe it, you can walk across a floor and produce a static buildup, then touch a so-called antistatic IC carrier, and "zap" the devices right through the packaging. The workbench must also be static-free. This requires that static-generating materials be removed from the work area. This includes paper, plastic bags, the carpeted work-table surface which is so popular, and Styrofoam cups, to name a few. The technician must be outfitted with nonconductive clothing. The polyester tie and shirt is definitely out! Even the foam-filled plastic-covered shop chair can be a static generator.

Some typical static-voltage susceptibilities	
JFET	140 V - 10.0 kV
CMOS	250 V - 2.0 kV
Schottky diodes, TTL	380 V - 7.0 kV
Bipolar transistors	380 V - 7.0 kV
SCR	680 V - 1.0 kV

Some think that humid environments do not require antistatic protection practices. A humid environment will reduce the probabilities of static damage, but will not totally eliminate the effects of static-generating materials.

CMOS devices can be damaged or destroyed at voltage levels too low to be seen or heard (250 V). A static-electricity spark that can be seen, felt and heard will have a minimum potential of around 3500 Volts. This is adequate voltage to damage or destroy most of the components in your handheld radio.

The next time you have an opportunity to visit an electronics repair shop, look around to see if they use wrist straps, antistatic work-table mats (with grounding), and ESD-protected soldering and solder-removal equipment. Are components stored and packaged in shielded ESD bags? Are you impressed or frightened?

Antistatic protection is a discipline and commitment that is hard to instill because the effects can't often be seen or felt. The benefits are clear enough, however, in terms of continued reliability and full service life of the electronics equipment you have invested in and depend upon. — *Net Control*, County of Orange, RACES.

Experience is a wonderful thing. It enables you to recognize a mistake every time you repeat it.
—Trident ARC, Summerville, SC

The chickens

GEORGIE BERGERON, KC6YYW

When we retired to the country after years of city living, we at last had time to do things we'd wanted to do as well as discover new hobbies. Among our first interests were chickens and Amateur Radio. How peaceful when the first sound of the morning is the crowing of Randy the rooster, and the last sounds of evening include the "73 es CUL" ending of a nice QSO.

I had always liked the idea of having chickens but now, with the acquisition of our little flock of Rhode Island Reds, I was learning just how delightful these creatures could be. They would wander around the hen yard seemingly at random, singing about a quarter tone off from one another, then all come running when they'd see me with the pail of corn. How sweet was their trust that I had only good intentions! This proved to be self-fulfilling, as I came to love them. There would be no stew pot for my chickens.

My favorite hen, bearing the original name of Henrietta, almost got eaten early on, when she had sampled one of her wares. An egg eater could do no good for my flock, I'd decided, and had taken her off to solitary confinement preparatory to having my OM lop off her head. Then, passing her lonely cell, I heard her melodious voice raised in a plaintive song. I took one look at her earnest little face and returned her to the rest of the flock. She seemed to have had intimations of her own mortality with that experience, for she never, to my knowledge, ate another egg.

I was determined to learn Morse code. A friendlier, more loyal group I've never found than my fellow hams. Tapes were made available to me and I began studying them. The tape player was near a back window. I'd wanted to play sweet music for my birds before I'd come to realize they could sing very well on their own. Chickens aren't very smart. Morse code isn't all that easy. So I was surprised one morning to hear the sound of a beak coming into contact with a metal pail in a recognizable pattern. Pick-scratch-scratch, pick-scratch, SCRATCH, pick, pick-scratch-pick.

Dumbfounded, I listened to a repetition of this pattern. "W-a-t-e-r." I scurried out to the hen house and saw that, indeed, the water was getting low. I looked around at the two-toned red faces turned in my direction. Chickens. Nothing more. I got fresh water and looked around again at my flock, who had generally lost interest by then, when no corn appeared. Had Henrietta

that learned Morse code

winked at me? It was hard to tell. Chickens have eyes on the sides of their heads so one must look directly at the front to see both eyes at the same time.

I had earned my Novice, then Tech and I began studying for the General class license. More Morse code tapes were broadcast in my home as my speed increased. More messages were heard from the hens in the form of picks and scratches, usually requests for more corn, but sometimes for fresher water.

I suppose I should have suspected something when I began getting calls for the latter several times in one day. How could water go bad so fast, or chickens be so finicky? I observed no signs of duplicity in their little faces when I would hop to it and bring whatever they'd requested. I sure had them trained. Sure!

It was one of those chilly, rainy mornings in early spring, the kind when we snuggle in the comfort of warm blankets and sleep in. Getting up early was never my strong suit. Our move to the country did nothing to change that. I was more than half asleep when I heard the familiar scratching. SCRATCH-pick, scratch-scratch-scratch. "N-o." I groaned and continued to listen. No what? No corn? No water? If the little buzzards wanted breakfast they could very well wait 'til I'd had mine. If they were without water, however, that would have to be taken care of at once. My chickens don't go thirsty if I can help it. I dreaded the sound of a W so much that I nearly missed the single little pick of an E. Another silence followed by scratch-scratch-pick, silence, then a perfect repetition of the G; silence, then pick-pick-pick. "No eggs." Good! I could sleep in. I rolled over and did just that.

Later that day I looked anyway. No eggs. They'd been right. My birds walked around in the subdued way they have when the weather is not to their liking. Henrietta glared at me from a corner of the hen house. She didn't even want to get up, it seemed. Well, I didn't blame her, on a day like that.

The weather hung in there, damp and dismal, as often happens in the spring. The "No eggs today" tapping became routine. I should really have tumbled then. How could Henrietta know there would be no eggs laid that day? I tumbled all right — right back into dreamland.

After three weeks, the weather changed. The air turned warm and balmy, and the sun splashed the eastern horizon like a broken yolk. I got up early and fixed a big breakfast. The scratching came faintly from the back: scratch-pick-scratch-pick, scratch-scratch-scratch, scratch scratch, pick. Silence, then pick-pick-pick-pick, pick, pick-scratch-pick, pick. "Come here."

I had my hens so well trained by then that I grabbed my coat in a reflex action that would have put Pavlov's dog to shame. I was out in the hen yard in a flash. My little girls were smiling at me, to the extent that chickens are able to smile, having rigid beaks and no teeth. It was more than the expected corn that had brought the entire flock, including the rooster, standing at attention. Wait, the entire flock? Where was Henrietta?

There should have been a fanfare when she appeared at the door of the coop with her brood of baby chicks, looking proud as only a mother hen can look proud. There was no fanfare. Instead, I heard the quarter-tone chanting that I had come to associate with the Reds and that I'd come to love. WR

DXCC — The hard way — by SWL cards —

JOHN SWANCARA, WA6LOD

The propagation on the ham bands has not been conducive to making many overseas contacts for the average DXer and conditions look to be turning into a real losing proposition for the next year or two.

Trying to think of something constructive to do rather than listening to static on 20, 15 and 10, I looked out the window and scrutinized my KT-34, nesting at 25 feet. Since I hadn't even bothered to crank it back up for the past three months, that crooked reflector was still pointing at the shack window as if to say "Get up here and fix me." Not feeling in the mood to make like a monkey, something else would have to occupy my time. My wife's suggestion about mowing the lawn or something to that effect was low on the totem pole and lost in the noise coming from the TS-940.

QSLing! My back-log to the Bureau was quite high with the cards all filled out and waiting for an envelope to get them on the way. Well, that took a good 20 minutes to accomplish and included making a fancy computer generated mailing label.

The quiet hum of the computer was broken by the chirp of my desk drawer where I hide my telephone. Just a call for the ham-tolerant wife, but it did bring to my attention a large number of bound QSL cards that I obviously hadn't touched in quite a while. Removing the ozone eaten remains of the rubber bands (Eayech! what is that smog doing to my lungs if it can do this to a rubber band?)

I carefully examined the bundle and discovered a batch of SWL cards. In all honesty, I always fill out a card and send it to the person that sent me his report (do you?) and had been "filing" them in the phone drawer.

The idea struck me!

Why not DXCC via SWL CARDS ?

Using a simple filer program that is in my trusty TANDY 1000 computer, I quickly compiled the cards and found some interesting statistics:

- 127 SWL cards have been received over the years, (I'm sure some had been thrown away).
- 99.4% were registered as SWL listeners with an SWL number.
- 31% were from Europe, almost all from behind the former "Iron Curtain."
- 10% were from Japan
- 9% other countries
- only 3 from the United States. I guess everyone now days is too busy with television.

Interestingly, their information was always on the money, give or take one or two minutes. Only two (both from the USA) has used local time instead of GMT.

Amazingly, the cards confirmed 53 countries for me, including several rare ones that have few active hams. They often heard me as I worked someone in a pile up! Their reports led me to believe (and made me feel good) that I really do have a good signal anywhere in the world emanating from my well used TS-940S transceiver and KT-34 antenna at 50 feet. At times, I do use a Collins 30L-1 when the situation warrants it, so I guess I can be considered a "Little Gun" with 307 countries confirmed on SSB and 107 on RTTY.

While reviewing the cards, the question struck me. Has anyone else compiled their SWL data and have confirmed either DXCC, WAZ, or WAS with only SWL cards?

Although not a sanctioned ARRL, *Worldradio, 73* or *CQ* event that I know of, the cards do give you a good picture of your station's capabilities and could be lots of fun to review them on a rainy evening.

Your quick reply will hopefully give inspiration to the many patient SWL operators in some of those rare countries who are obviously aspiring hams. I'm sure they would like to know that their cards are being used for something other than book marks or coffee cup coasters, especially if they got quick replies. So, please, remember to send a card back if you get one and be sure to include information on your rig, power out and antenna type. I am sure they are greatly appreciated by those "future" full fledged members of our "fraternity."

At this time, I have a way to go for my personal mixed DXCC-SWL Award. Yes, it would have to be a mixed mode award, since one SWL country was confirmed on CW and two were on RTTY. But what the heck, the band conditions are poor, my beam and rotator need repairs and anyway, maybe the next batch of cards from the bureau will include a few SWL cards confirming several new countries. Oh well, DXCC award progress is only measured in attempts, time and money. I'm beginning to think that some of these DXpeditions and QSL managers are out there to *make* money. Especially when they "recommend two green stamps and some even suggest a "donation" to boot! One European manager had the audacity to mail my card back in my self addressed envelope (which I sent with a "green stamp"). He had included another printed card stating I had not included sufficient money for postage(!), but I digress.

So, reply to those SWLers and catalog your cards. Is there someone out there with all of their coffee and beer stained SWL cards, just waiting to submit to someone for that first elusive, novel and non-sanctioned DXCC-SWL Award? WR

Packet humor

News of the Tate family . . . do you know how many members of the Tate family belong to the packet club? Well, there is old man Dic Tate who wants to run everything, while uncle Ro Tate tries to change everything. Their sister Agi Tate stirs up plenty of trouble, with help from her husband, Irri Tate. Whenever new projects are suggested, Hesi Tate and Vege Tate want to wait until next time. Then there is Mr. Imi Tate, who wants our radio club to be like all the others. Devas Tate provides the voice of doom while Poten Tate wants to be the big shot. Not all the members of the Tate family are bad. Facili Tate is quite helfpul in packet club matters, and a happy member is Felici Tate, while cousins Cogi Tate and Medi Tate always think things over and lend a helpful, steady hand. Then, of course, there is the black sheep, Ampu Tate, who has completely cut himself off from the club. —*Doug, N7KEJ, Allen County Amateur Radio Technical Society.*

ARRL national digital conference 1994 announced

Minneapolis, 12 January — The TwinsLAN ARC today announced that it will sponsor the 1994 ARRL National Digital Communications Conference on 19 through 21 August at the Thunderbird Hotel and Conference Center in Bloomington, MN. The theme for this year's conference is "Digital Communications — Amateur Radio of Today. . . and the Future."

The objective of the conference is to create a forum for radio amateurs and experts in digital communications to meet, publish their work and present new ideas and techniques for discussion. Presenters and attendees will have an opportunity to exchange ideas and learn about recent hardware and software advances, theories, experimental results and practical applications. Areas of interest include generation, coding, modulation and demodulation, transmission, networking, processing, presentation and application of voice, text, image and data information.

The conference site is located near the Minneapolis/St. Paul International Airport, just off Interstate I-494. Free 24-hr. airport shuttle service is available.

Agenda

The agenda for the three-day event includes informal activities for attendees and family members on Friday, 19 August through noon Sunday, 21 August. Formal conference activities, including presentation of papers and six forums are scheduled for Saturday, 20 August, from 8:30 a.m. to 5 p.m. A detailed agenda will be available when schedules are finalized.

Call for papers

Anyone interested in digital communications is invited to submit a formal paper for publication in the conference Proceedings. Presentation at the conference is not required for publication. Papers are due by 20 June and should be submitted to Maty Weinberg, ARRL, 225 Main St., Newington, CT 06111 or via Internet at Iweinber@arrl.org. A schedule for presentation of papers will be available in early July.

Accommodations

On-site accommodations are available at a special rate of $67 (plus tax) for single occupancy or $73 (plus tax) for double occupancy. Make reservations directly with the Thunderbird Hotel at 800/328-1931 before 29 July for these special rates. Be sure to mention you are attending the National Digital Communications Conference. Off-site accommodations are available in the area starting at $39.95. Contact the NDCC Info Line for a list of facilities. Early reservations are encouraged. A list of area campgrounds for RVs is also available. Northwest Airlines is offering an additional 5% discount on round-trip airfare for conference attendees. Call the NDCC Info Line for details.

A family weekend

Family participation in the NDCC is encouraged. The hotel has a large pool for guests. Informal outings are planned to the Minnesota Zoo (admission extra) and the Mall of America, the largest indoor shopping mall in the U.S. Free scheduled shuttle service is also available from the conference center to the Mall. Minnesota is a great place to visit in August. Consider making this weekend an addition to your family vacation plans. Twin Cities and Minnesota tourist information packets are available on request to the NDCC Info Line.

Registration

The conference registration fee is $45 per person, which includes a luncheon buffet, a set of conference papers (including those submitted but not presented) and transportation to the Mall of America on Saturday evening. Registration, by check payable to "TwinsLAN Conference," must be received by 12 August. Mail your registration form and check to: 1994 National Digital Communications Conference, c/o Paul Ramey, WGØG, 16266 Finland Ave., Rosemount, MN 55068.

Additional information

Contact Paul Ramey at the NDCC Info Line, 612/432-1149 (evenings and weekends) or Carl Estey via Internetemail at estey@skyler.mavd.honeywell.com. Mike Stapp, KEØWW, TwinsLAN Amateur Radio Club, home 612/823-2351, work 612/951-0232, or fax 612/951-2333. **WR**

Share your knowledge with fellow amateurs and *Worldradio* readers.

My visit to VE8 land

LARRY R. LUCHI, W7KZE

My trip started many years ago, when as a school child I worked a KL7 station (Alaska was a territory) and then the Western Arctic VE8, also a territory and both rare DX. When operating in the Northwest Territory, you can use your call sign with a portable VE8, that is, W7KZE/VE8.

Now as an electronics teacher for the Mukilteo School District, I can take my summers and explore through places that I was not able to do when I worked as an electrical engineer.

My jumping-off point was about 3,000 miles from Everett, Washington, where the Klondike highway intersects the Dempster Highway about 26 miles south of Dawson City, Yukon Territory. When I entered the Dempster Highway, I topped off the gas tank because the next gas station was 231 miles. Just before you get to Dawson City, the Dempster Highway heads north through some of the most spectacular northern scenery accessible by vehicle.

Now on to VE8 land. There are plenty of wonderful vistas all along the Dempster Highway (the Dempster is 460 miles one-way of gravel road). It is a highway with campsites and plenty of rivers for grayling fishing. This is one of the few unglaciated areas on the continent. For some reason, the glaciers during the last ice age didn't scrape and scour the landscape and it has remained untouched for over 20,000 years.

Once in Inuvik, (lat.68 N, 133°W) Northwest Territories (VE8 land), a major center built in the late 1950s, there were plenty of city activates in which to participate. The Dempster Highway is the only highway to cross the Arctic circle (lat. 66 N, 133°W) in North America.

VE8 land covers more than 3.4 million square kilometers of the Canadian Arctic. The Northwest Territories is the largest single Amateur Radio prefix call area in the world. Despite its immense size there are fewer than 30 active Amateur Radio operators on the HF bands with a VE8 call sign. For your next vacation think about taking a trip to this wonderful DX location.

I set up camp north of Inuvik, then walked into town for ice. On the way I stopped off for coffee. At the coffee shop I met John Boudrea, VE8EV, and his XYL. John said that he would stop by camp later in the day. In the mean time Carl Falsnes, VE8CF left a note on my camper, saying that he would return. He had spotted my Spider four band HF antenna.

With camp setup and a ground installed I was on the air with my new Kenwood TS-50, and W7KZE/VE8. My first contact was with Ed, OM3EY, Ed gave me a 5-8 signal report. My Spider four band antenna was working on 20 meters very well into Europe.

Pat May, AA7XI had attended one of my Advanced Amateur Radio courses. Pat was my next contact, he was stingy with a 5-5 signal report on 14.210MHz. Pat's YL Bobbie, KB7SBH, was my next QSO. My friend and assistant ARRL/VE team member, Del Talf, W7EVI, was my following contact with a 5-6 signal report on 20 meters. As a small group of hams assembled at my camp site, I made one more contact with my W7KZE/VE8 call sign. HAØNAR, gave me a quick 5-9 plus signal report.

Outside of my camper there was a mini-ham convention gathering. First Carl, VE8CF showed up with my camping neighbor, Gene Little, KC4NIE. Then John, VE8EV, arrived in camp with Peter Kupsch, DJ3FY. Peter is from Hamburg, Germany. Peter had a nightly schedule on 14.151MHz.

Wally Firth, VE8WF, heard about this Northwest Arctic Hamvention. Wally works for Canadian Broadcasting Corporation, and as the rest of these hams, had my Spider antenna apart trying to understand how it worked so well.

Wally asked me to come by the CBC studio for a cup of coffee. The next day I stopped by the studio. Wally pushed a mike in front of me (without any coffee) and asked me to talk about my favorite topic, "Integrating Amateur Radio into the Classroom." Wally did a great job interviewing me, but still, no coffee. But he is a really good guy; I will go any where to give my favorite speech about Amateur Radio and kids.

The Arctic tundra, with its permafrost only three or four feet below the tundra, provides a very poor ground for Amateur Radio antennas. Carl, VE8CF, has experimented with many different types of antennas.

I was working UAØFC, Al in Tiksi, with a signal report of 5-9 to him and a 5-7 for me. I never had any problem working Russia or Europe. The noise level was at all times any where from S-5 to S-6. I would forget what time of day it was due to the 24 hours of day light.

After my QSO with UAØFC, at 0321 UTC Hal, K7EYM, called me on 14.210 MHz asking information about the Dempster Highway and conditions in Inuvik. He was leaving on 8 August, 1993 for Inuvik. I could give him first hand information. Although the Western Arctic receives the second least rainfall in the world, the day I left Inuvik it was raining with road washouts.

Carl, VE8CF, is a bush pilot and one day asked me if I wanted to go on a fox hunt. I asked "what do you mean?" He said he had a contract to count wolverines. Each animal has a radio attached to its collar. Carl flies around the Richardsons Mountains until he makes radio contact. He then has to fly in low and make visual identification. Some guys have all the hard jobs.

After six days in Inuvik, my ball mount stripped where my Spider antenna screws into the ball. Well, old Carl, VE8CF (he is about 24) came to my rescue. He knew a ham who had a small machine shop. Off we went to George (Red) Chenyney, VE8GC, QTH. In no time Red had the threads like new. The 460 miles of gravel road caused far more vibration than the ball mount was designed for. That's the Dempster Highway for you.

Red asked if I wanted to see his shack, and of course I did. Red had ordered an AEA PK-232 and was uncertain how to connect his new toy. In no time we were on the air with a new VE8GC on AMTOR.

I spent the next two evenings at Red's QTH; he and his XYL are the friendliest folks you could meet.

I have already started planning my next trip to Herschel Island. Herschel Island is just north of the Yukon Territory, but still part of the Yukon located on the Beaufort Sea. WR

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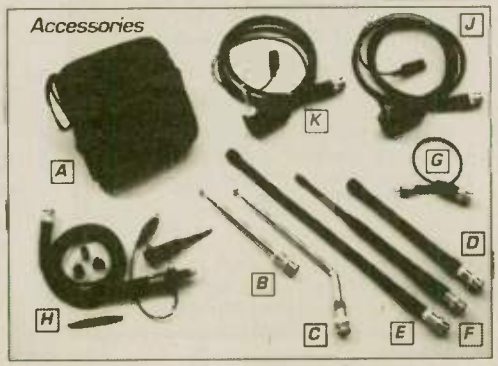

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The overseas visiting caper

GEORGE MCCARTHY, W6SUN

For many hams the opportunity will come for them to do a bit of traveling in some of the countries where they have made contacts with resident ham operators. It is easy to imagine that it would be interesting to meet in person with some of them, particularly those with whom one has had many contacts. I have known a couple of ham friends who spent time in Australia or New Zealand and rarely had to stay at a hotel. Those chaps down under are known for their hospitality and liking for Americans.

In the Fall of 1993 my wife and I were booked for a tour group formed primarily from members of her church. One of the priests, Father Jim Straukamp, was not only an experienced traveler, but also was a retired college history professor. He had organized and accompanied several groups in the past, so we felt comfortable putting ourselves in his hands. The tour we were to take consisted of a week in Ireland, a week in Scotland and a final week in England. We never stayed less than two days in any hotel, so there was a reasonable amount of "free time" for anyone to do some exploring on their own.

Although the daily itinerary was known, we did not yet know the specific hotel, so there was no way that I could simply send a message to call me at a specific number on certain days to arrange for a possible "eyeball" with a local ham. But time was running out. I really wanted to make at least a couple of contacts to see the voice on the other end. Perhaps my log books would provide a clue as to how I should proceed.

I picked a period of slightly over three years back from the current date and listed every EI, GW, GM and G station I had worked on the HF bands. To my surprise the total came to 291. There were a number of stations with whom I had made several contacts over that period. With this much information I needed some organization, so I set up a data bank on my computer, showing the date, the call sign, the name and the location. When I sorted alphabetically by call sign the stations worked more than once were obvious.

Now I got out relatively detailed maps of the areas we would be covering by tour bus and began the task of determining what stations might be close enough to the route we were taking to be worth a try. I ended up with fifteen hams who appeared to live within a reasonable distance of the seven hotels we would be using.

That may seem to be a small yield for such a large data bank, but my free time was quite limited, so I tried to choose only hams living close to our stops. Next, I wrote a one page letter explaining what I was hoping to do and listing the days and dates where we would be staying and what times were available. I enclosed a QSL card for the previous contact and a SASE which I asked be used to send me their phone number IF they were going to be available. However, time was really running short, allowing less than three weeks from my mailing date until the last day I would be collecting mail.

In spite of the tight time involved I received seven replies, a 46+% rate of return. It turned out that only three respondents were also free on the day in which I would be in their area, but at least I left with their phone numbers to use at the appropriate time. I am certain that had I started this whole routine much sooner the results would have been even better.

I did not hear from any of the three Irish hams to whom letters had been sent, so the first week of the tour would be a blank as far as ham visits were concerned. Our first contact was with Bill Murray, GM3AWW, who was kind enough to pick up Barbara and me at a Fish 'N Chips place in Glasgow where our group was having dinner. Bill drove us out to his home in Newton Mearns, a lovely suburb of Glasgow where we had a great evening visiting with Bill, his wife and daughter. Bill had just talked that afternoon with a friend of mine, Shell, K6RMM, who lives in Cambria on the central coast of California. That was part of the "small world" aspect of this hobby. Bill drove us back to our hotel in time to get some rest before continuing on our tour.

Our next contacts were both in London. Trevor, G3UAS, was occupied with some plumbing problems and not really available, but Hank, GØFAB, was the soul of hospitality, arranging for us to visit the RAF museum in his area for a couple of hours before driving us to his QTH. He had met us at the "tube" (subway) station after our first ride on the London system. Hank's wife, Shirley, had really taken out the stops to make our visit pleasant. First we were treated to a full English tea, with cake and cookies and sweets. Then a glass of sherry while we chatted.

Hank took me out to his backyard to show me his ham shack. His neighborhood had a row of very well maintained homes, quite narrow, but with fairly deep lots. All were two stories and had a small garden in the front yard. Near the house was a glass hothouse and Hank's shack was squeezed in right next to it. The English are avid gardeners and rarely let a small piece of ground go untended without something growing. Hank's answer to this was construction of a ham shack that lent real meaning to the expression. I estimated that it was about four feet wide and five feet deep with a steeply pitched roof. With his rigs and a small linear it looked quite a comfortable place from which to operate. A boomless quad antenna and a G5RV made up his antenna system.

When we went back in the house, Shirley had a full course dinner on the table, topped off with home made pie with thick cream on top. Poor Barbara simply could not do justice to this repast because she was ill from what would turn out to be a rather serious problem. Once again ham radio was helpful. Upon our return I suddenly was extremely busy due to the need for extensive medical attention to Barbara and the fact that UPS had lost the book manuscript I had mailed to ***Worldradio*** two days prior to leaving for Europe. I did not have time to write my thanks to Bill and Hank until recently. But Jim, KB6SX, did talk to Hank and explained the problem, so that he and Shirley could understand the lack of correspondence. I have since remedied that situation.

Actually, for both Barbara and me the two visits to ham families were high points of our trip. I would highly recommend that anyone contemplating a trip to another country where you have chatted with a few hams should try to set up a few meetings. Just allow for a lot more time than I did for postal arrangements to be made. I got the distinct feeling that I could have had the entire time booked just visiting ham clubs, but I know better than to push an XYL's tolerance too far. WR

A tale of two call signs

BOB MITCHELL, WBØRJJ/ VE4RJJ

If I had passed the first Amateur Radio exam I tried, I would have been VE3-who-knows-what way back in the spring of 1960. More than 33 years ago. My interest in ham radio began when I was a schoolboy in Southern Ontario. During high school days I was a member of the Quinte Amateur Radio Club, Belleville, Ontario. Soon after graduation I studied for the Amateur examination, given in a government office 50 miles away.

At that time the exam included a "fill in the blanks" theory and regulations test, drawing and describing the circuit diagrams of several pieces of ham equipment, code sending and receiving tests and a "face to face with the examiner" verbal test. I passed everything but four diagrams.

Before I could take the exam again (yes the whole thing), I was off to college. In 1969 we moved to Lincoln, Nebraska, where I have now served with *Back to the Bible* for 24 years. All the while lurking in the back of my mind was the wish that I had passed that Amateur exam.

In the spring of 1975, Congress passed a law that allowed aliens (including Canadians) to hold various kinds of radio licenses, including Amateur. By October, I was WNØRJJ, partially fulfilling that long-held goal. Novice calls went from WN to WB prefixes in 1976. In the summer of 1977 I upgraded to General and then to Advanced, flunking each exam once before passing it.

Through the years, our family has often made trips to Canada; like any other US licensed ham on two meters, I signed myself WBØRJJ plus mobile or portable plus whatever Canadian call district I was in plus a geographic description ("WBØRJJ Portable near Calgary," "WBØRJJ Mobile in Toronto," or whatever). Only a couple of years ago did I learn there was a problem.

Strictly speaking, the Canadian Department of Communications does not recognize US calls held by Canadians though no DOC "Mountie" pulls you over and asks to see your birth certificate, alien registration card and Amateur Radio license. Most Canadians ignore the rule. Lots of "snow birds" earn their US licenses in retirement in the southern states and use them when they visit home in the summer.

As I investigated the situation, I even got an unsolicited letter from the Radio Inspector in Winnipeg giving me permission to use my U.S. license in Canada during visits that were "occasional and of very short duration."

At this point I could have let the matter drop. But I looked at the situation as a challenge. Learning the Canadian rules and regulations, revisiting the theory books and, at long last, to earn my Canadian Ham licence. Yes, they even spell it differently.

It would also make a nice summertime trip, 700 miles straight north. Winnipeg is twice the size of Lincoln, but in many ways quite similar. Winnipeg is the capital of the Province of Manitoba. It has several universities, and it is a regional medical and commercial center.

Study materials were obtained from Canada's national Amateur Radio organization and from the Department of Communications. A date was agreed upon, and a campground was booked.

My wife, Doris, NØQVI, and I made a quick round trip to "the True North strong and free" returning home via the lovely International Peace Garden that straddles the border between Dunseith, ND, and Boissevain, MB.

On Friday at 10:00 a.m. I strode into the Communications Canada office on schedule. I was ushered alone into a small conference room, handed an examination book of 100 multiple choice questions and a sheet (much like those used in the US) to mark with my answers. I was also given some scratch paper and a TI-35 calculator and told to emerge when I was ready.

A little over an hour later, I had answered all questions "to the best of my ability." There were no "trick" questions, just lots of "read and think carefully."

While one examiner checked my answers another administered the 5 WPM code receiving test and sending test (yes, both). I didn't ace any of the three tests, but I got pretty good scores. At least good enough to pass! As I started filling out some paperwork, borrowing (with permission) the address of a friend in Winnipeg, the examiner asked, "And what call letters would you like, eh?"

I had anticipated this possibility. Canada has only 35,000 hams, mostly in Quebec (VE2) and in Ontario (VE3) among a population of less than 30 million. I said, "How about 'VE4RJJ,' to match my US call?" After briefly consulting first a printout and then the database itself, he said, "It's yours."

The examination fee was C$5 per element, and the annual C$35 license fee was prorated for August-December, for a total of C$27, or about US$22. Exactly two hours after entering the office, I walked out as VE4RJJ. I had a "Basic Plus 5 WPM" licence in hand and had fulfilled a goal that had taken root a third of a century earlier.

What privileges do I get with my Canadian licence? First of all, none in the US since I have a US license (97.107[b][4]). The "Basic" license gives Canadians all privileges above 30 MHz. Adding the 5 WPM code adds HF privileges on 160 and 75/80 meters. Sometime, perhaps next summer, I'll go back and pass the only other code test — 12 WPM — and then I'll have all privileges on all bands.

Maybe I'll also take the 50-question Advanced theory test, similar to the US Extra Class. Then I would be able to set up a repeater, operate a station by remote control, sponsor a club station, build a homebrew transmitter and/or amplifier and boost maximum transmitter power from 250 to 1000 watts. These privileges are denied to all other Canadian hams.

Next time we cross the world's longest undefended border 4000 miles, "protected" only by three-foot aluminum obelisks every few hundred yards with "Canada" on one side and "United States" on the other and marked by a 20-foot clearcut through vegetation, I'll simply change calls from WBØRJJ to VE4RJJ, and be perfectly legal on both sides. WR

SPECIAL EVENTS

SPARC notes 60th anniversary

St. Petersburg Amateur Radio Club (SPARC), organized in 1932, will operate special event station W4GAC to commemorate its 60th year of affiliation with ARRL.

Operating from the club station at the St. Petersburg, Florida Red Cross building, the station will open 1200Z 16 April and continue until 0100Z 17 April. Visitors are encouraged to stop by.

Operations will be in the Novice and General portions of the 10 15, 20 and 40 meter CW and phone bands. Satellite activities are also planned. For commemorative QSL card, please send your QSL card and SASE to SPARC, P.O. Box 4026, St. Petersburg, FL 33731.

QCWA banquet

The Southwest Ohio Chapter of the Quarter Century Wireless Association will hold its 1994 annual banquet on Friday, 22 April, the first evening of the Dayton Hamvention at Alex's Continental Restaurant. C.O.D. bar at 7:00 p.m., banquet at 7:30 p.m. Reservations required. QCWA membership is not a requirement for attendance. For tickets ($15 each) make a check payable to Robert L. Dingle, Treasurer Chapter 9 and mail to 1117 Big Hill Rd., Kettering, OH 45429-1201.

Valley of the Moon

The Valley of the Moon Amateur Radio Club, WB6DWY, will be operating a special event station commemorating the City of Sonoma and the Valley of the Moon's rich historical heritage on 30 April from 1700 to 2400 UTC. The station will be operating during the Valley of the Moon Amateur Radio Club's annual hamfest. The Sonoma Valley, known as the Valley of the Moon, is the home of famed writer Jack London, author of "Call of the Wild." It is the site of the northernmost Spanish mission and garrison, and of the Bear Flag Revolt of 1846 establishing California's independence. The town features many shops, restaurants and historical buildings within walking distance of the hamfest.

The club station, WB6DWY will be set up and operating throughout the day on the General phone portions of 10, 20 and 40 meters. QSL to VOMARC, 358 Patten Street, Sonoma, CA 95476 with SASE for a nice parchment certificate.

Admiral Dewey anniversary

The Olympia ARC will operate WA3BAT from 1300Z 30 April until 2000Z 1 May to commemorate the 96th anniversary of Admiral Dewey's triumph over the Spanish fleet at the Battle of Manila Bay. SSB/Phone — 3.898, 7.268, 14.268, 21.368, 28.368, 145.270 and packet.

For certificate, send QSL and a 9x12 inch SASE to Olympia ARC, P.O. Box 928, Philadelphia, PA 19105. **WR**

Amateur Radio has something for everyone!

AWARDS

The Irv Emig, W6GC, Memorial

The Directors of The Don Wallace Museum announce the creation of The Irv Emig, W6GC, Memorial.

Irv Emig became a Silent Key on 21 December, 1993, after 62 years of amateur radio. Irv was a DXer's DXer (at the top of the Honor Roll and over 220 on RTTY), Past President of the Southern California DX Club, and Chairman of the 1980 Southwestern Division Convention. It was at Irv's house, on 1 July, 1986, that the Manhattan Beach Amateur Radio Club was formed to successfully defeat a restrictive antenna ordinance.

The Memorial has been started with initial donations from friends of the MBARC, from others wanting to do "something" and by his children's donation of the entire proceeds from the sale of his radio gear to the Memorial. Thus, this Memorial has grown to become the largest combined contribution to the Museum. Every contributor will be individually recognized, listed and carried on the ledger, as are all contributors.

Your contributions will be combined with others contributing to the Memorial and will be used for interior features, installation of exhibits, audio/visual attractions and radio related displays, that, at the board's discretion, constitute a fitting memorial. Incidentally, the board expects that major funding will be found during 1994 and construction can begin in 1995.

As a guide, our contributor clubs include "Patron" at $25, "WAS" at $50, "Century" at $100, "Half-Kilowatt" at $500 and "Kilowatt" at $1000. Our average contribution, so far, is $151.

The Don Wallace Radio Ranch Foundation Inc. is a recognized 501 (c) (3) non-profit corporation. Donations are tax deductible to the full extent of the law. Please make out your checks to "The Don Wallace Museum" with a notation "Irv Emig Memorial." Send your check and any request for more information to The Don Wallace Museum, 5746 Wildbriar Drive, Rancho Palos Verdes, CA 90274; 310/378-8029; or fax 310/378-3557. **WR**

Silent Keys

Irvin L. Emig, W6GC

Long-time Manhattan Beach resident Irvin L. Emig passed away Dec. 21 of congestive heart failure. He was 81 years old.

Emig was an avid ham radio operator and was known throughout the world by his call letters, W6GC. Emig was a member of several ham-radio clubs and had received national recognition for his involvement. Some of his awards included the DXCC Honor Roll, recognition as a distinguished member of the Quarter Century Wireless Association and election as a Fellow to the Radio Club of America in 1982.

A graduate of the University of Southern California in physics, Emig worked as an aerospace engineer for Hughes Aircraft and Ralph M. Parsons Corporation. During World War II, Emig served in the Navy as a lieutenant from 1942 to 1945.

Before retirement in 1974 from the Jet Propulsion Laboratory, Emig was in charge of telecommunications for many manned and unmanned missions to the moon. Emig also was a part of the Apollo program including Apollo VIII and the Apollo XI, which was the first lunar landing mission.

Emig was preceded in death by his wife, Virginia, in 1975. He is survived by his sister, Mary Ash, and three children: John, Charles and Mary Hodge. He is also survived by four grandchildren.

Memorial services were held Dec. 23 at Forest Lawn Sunnyside in Long Beach.

G. Durham Ipock, K4JA

G. Durham Ipock, K4JA, a long time subscriber to ***Worldradio***, became a silent key on 23 September 1993. He was an Amateur for more than 60 years.

He received his first license at age 14 — W4EFX, later to upgrade to K4JA. His was a life-long story of a great hobby.

In this hobby, he was joined by wife, Mary S. Ipock, WB4TPM; son, Paul, WB4SHJ; and grandson, Jason Ipock, KA3NAU. Another son, G. Durham Ipock, Jr., received a ticket in the '60s but left radio while in graduate school.

K4JA will be deeply missed.

— Information submitted by Mary S. Ipock, WB4TPM.

The Secret of NiMH

We're not sure how to pronounce it yet, but "NiMH" stands for nickel-metal-hydride. It's a new battery technology that is succeeding nickel-cadmium (NiCd, pronounced ni-cad) in many applications. The huge cellular telephone and notebook computer markets, where weight and time between charges are key are driving rechargeable battery technology.

NiMH offers several advantages over NiCd. First is its 35% greater energy density, which means more capacity in a smaller space and weight. Second is a slower internal discharge rate. Both these characteristics result in a longer time between charges Since the batteries don't contain cadmium, they are said to pose a smaller threat to the environment when disposed. Other features include rapid charging, endurance of more than 500 charge/discharge cycles, and sealed construction. NiMH cells have the same voltage potential as NiCd. 1.2V, making them directly compatible as replacements.

On the down side, NiMH batteries are expensive, currently about twice the cost of NiCd. However, prices should fall over the next several years. They're more finicky than other batteries, with their custom charging profiles handled best by special battery-charger ICs. In the long run, these ICs will be embedded inside battery packs. They also work over a narrower temperature range. And although they don't contain cadmium, some expect that nickel will be declared a hazardous substance in the next year or so, so the perceived environmental benefit may prove to be short lived.

The NiMH cell uses a nickel oxide positive electrode, like NiCd cells. The negative electrode is a new rare-earth metal hydrogen absorbing alloy, which absorbs and desorbs hydrogen gas. Beyond that, all we know is that it stores energy!

Some say that NiMH will see limited success before being supplanted by the next battery technology. One nearly here already is lithium-ion (different from existing lithium batteries). We've already seen new lithium-ion camcorder batteries from Sony! Further away is zinc-air technology, being pioneered by AER Energy Resources, which promises three times the energy density of NiCd and NiMH.

On a larger scale, lead acid is apparently still the way to go for electric cars. California has mandated that electric cars must be on the road later this decade. After researching sodium sulphur, nickel zinc, lithium polymer, and other technologies, GM's Delco Remy unit says that lead acid is the way to go for high volume production through the 90s.

In any case, with several new large markets (notebook computers and portable cellular phones) driving battery technology, we'll all benefit as it works its way into our portable amateur radios. And don't try to pronounce NiMH: just call it "nickel-metal-hydride."

— acc notes as quoted in L'Anse Creuse ARC's Tuned Circuit. **WR**

OFF THE AIR

The instant L antenna

One weekend I was invited to go sailing between a couple of islands with an acquaintance from work on his new boat. One of the first things that I saw when I got on his boat was an HF transceiver that covered the ham bands but there was no evidence of any kind of HF antenna around the rigging.

Naturally I wanted to see if the rig worked and try to get on the air. Rummaging around in the rope locker I found a piece of RG 58 coax about 30 feet long with a PL-259 on one end but could not find any wire or insulators to make an antenna. Without a tuner or SWR meter it didn't seem practical to try to load into the rigging.

Then a thought hit me. If I separated the shield and center conductor of the coax for 1/4 wavelength from the open end and spread them out, I could run the center conductor up the wooden mast on a rope and lay the shield along the deck giving me a 1/4 wavelength vertical with one ground radial or an "Instant L" antenna.

With a 30 foot mast it looked like a 20 meter antenna would be just the right size. Since the antenna formulas always say to shorten the length for wire antennas by about 5% due to end effects, velocity factors and other things, we guessed that about 16 feet, 6 inches would be a good bet.

Carefully slitting the outside insulation for this distance back from the open end of the coax we split it off and then pushed the shield back until it was loose over its entire exposed length. After working a good sized hole in the shield about an inch from where it emerged from the uncut insulation we managed to pull the center conductor back through the hole out of the shield. Straightening and flattening out the shield ended up with it being about three inches longer than the exposed center conductor so we cut it off to the same length.

Tying the end of the center conductor to one of the ropes off the top of the mast we ran the wire up until the shield was right at deck level. After stretching out the shield on the deck the coax connector was screwed on the back of the rig and we tried it out. It worked great! During the weekend we made about 15 contacts on 20 meters SSB and had a great time.

The total time to build the entire antenna was less than 15 minutes. For simplicity this has to have been one of the easiest antennas I've ever built.

LARRY STRAIN, N7DF
Anchorage, AK

A different view

The recent bashing of Amateur Radio operating contests in ***Worldradio*** is unjustified. One letter had several misleading statements in it. It sounds as if the FCC condones only ragchew and emergency operations. According to that standard of interference, anybody operating with a wide bandpass filter would be interfered with.

The FCC recognizes the right of the contester to the ham bands as much as the ragchewer. . . .

I think that the best way to overcome this interference problem is through diversity. In the same way that a good investor diversifies his funds, a good ham should diversify his operating. By operating both CW and SSB it would be very easy to avoid the contesters, since only smaller contests run both modes at the same time. Also, by being able to operate other bands, another opportunity is created to move away from the contest activity. The WARC bands provide an excellent no-contest zone and can also be used to avoid the contesters.

There are really only a few major contests during the year that occupy all the bands with heavy activity. I am not counting Field Day, because so many hams operate it that anything except for Field Day would be outvoted by a hopeless majority. This is only a small portion of available weekends during a year, so I think the contesters are not overstepping any bounds.

So, the non-contesters' choices are very clear. Put up with crowded bands for the weekend; move to another frequency or mode; press the "off" button, or if you can't beat 'em — join 'em. Be careful — you might have fun. After all, "fun" is the "real world of Amateur Radio" and it can be had when you diversify your operating habits.

EARL MORSE, KZ8E
Benton Harbor, MI

Jim W. Roebuck, W4AXO

STATION APPEARANCE

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.

I have just completed renovation of my station and hopefully this will be the setup for a few years. The cabinets were designed and built by two co-workers. Shelves are adjustable and backs are removable. Two muffin fans are installed in the back of each cabinet for heat exhaust if needed.

The equipment from left to right: The floor cabinet on the left houses the DX Packetcluster which I SYSOP. On the bottom shelf is two Kenwood 2550s with Diawa SWR meters and an Alinco 30 amp power supply. The PC is a 286/16 clone. On the top is a VGA mono monitor and a caller ID telephone. The left cabinet on the desk top houses a Kenwood 440SAT with matching speaker and power supply. It also contains a MFJ 3kW tuner used with the Yaesu 980 in the center cabinet and two rotor control boxes and a 10 amp power supply for miscellaneous 12 volts. The center cabinet with the 980 and matching speaker also houses the Yaesu FL-7000 and YO-901. There are two clocks for central and universal time. The right cabinet has the SVGA monitor for the 386DX/40 which is a full height tower under the right ledge of the desk. Also, a PK-232 and Kenwood 7800 is on the top shelf for non-cluster packet. The desk top has a AEA MM3 keyer with Kent paddle, keyboard for the 386, a MFJ/Bencher memory keyer, a Vibroplex Presentation "bug," and a trackball mouse. The name plate on top reads "W4AXO Ham Radio Specialist."

In addition to the above, I operate 3 packet switching nodes which are outside in an all weather cabinet. These nodes use Alinco DR-1200 radios and MFJ 1270 TNCs with The Net software. **WR**

Amateur "Hi"

Ever had a funny or strange experience with Amateur Radio, either on or off the air? If so, type it up (or print neatly) and send it to us for consideration in our monthly AMATEUR "HI" contest. You could win a free year's subscription to Worldradio!

This electrifying story is from John Dould, WF1L.

A new house, new 2M FM radio and a new 2M vertical led to the following "incident."

My HF gear was all in place in the "closet shack" in the spare bedroom. Dick, WE1B and I only needed a moment to make room for the new VHF rig. We had mounted the vertical and the coax was to go out through the window. The antenna needed testing before we dared to secure the coax in its permanent position.

I dialed up the local repeater, made sure I was on low power (5 watts) and squeezed the microphone. The slight "picking" sensation in my right thumb was ignored because the repeater would not be coming up with just 5 watts! Both Dick and I were concerned.

"I hope high power will bring it up Dick!"

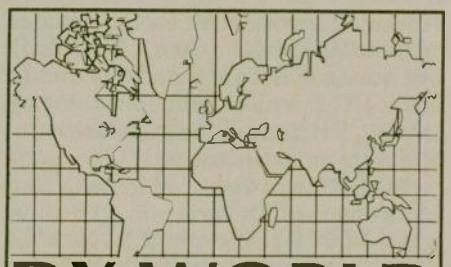
"Go for it John!"

Click goes the high power switch. Squeeze goes the microphone. The bellow of agony that flowed from me, as the searing pain shot through my right thumb, scared 10 years life out of WE1B!

In our haste and excitement to get the new rig on the air, we forgot to hook the coax to the antenna! I had been holding the PL259 in my hand with my thumb resting on the center pin!

My pride received more "damage" than my thumb!

I still get calls from locals who want to know if I'm available for antenna testing! They need a big dummy load!



DX WORLD

John F.W. Minke III, N6JM
P.O. Box 310 Carmichael, CA 95609-0310

Peter I Island (3Y)

The DXpediton team came on the air February 1 on schedule signing with 3YØPI. They had a good signal into California on both 15 and 20 meters when I got home from work that Monday afternoon. As I had worked the previous DXpedition a few years ago (15 meters SSB only) we were not that much of a hurry to work them. I did call them for a while on 15 meters CW but with no luck. However, we did manage to get through on 30 meters. On the more popular bands we shall wait a bit with our 100 watts and try later on.

The second night the word was out with many of the uninformed calling them on their transmitting frequency. Maybe they don't know what "up 5" means.

Ghana (9G)

More and more stations are showing from Ghana recently. 9G1SD, operated by WAØUOX, has been very active and has been reported on 75 meters around 2100 to 2200 UTC working Europeans on 3.789 MHz. He has also been reported on 21.333 MHz at 1445 UTC, 24.943 MHz at 1445 UTC and 28.480 MHz at 1715 UTC.

9G1WJ is also active and is operated by N9RPC. Look for this one between 14.181 and 14.226 MHz after 1900 UTC.

9G1SB has also been active. Look for this one between 14.197 and 14.201 MHz after 2130 UTC. Also on this band, 9G1MR has been worked near 14.243 MHz at 2145 UTC and 9G1UW has been on between 14.213 and 14.222 MHz after 2300 UTC. 9G1MR has also been on 75 meters between 3.792 and 3.799 MHz after 0500 UTC.

Other calls reported recently include the following:

9G1AR	3.800 MHz	0600 UTC
9G1DS	24.942 MHz	1500 UTC
9G1MQ	21.334 MHz	1715 UTC
9G1MR	3.793 MHz	0000 UTC
9G1NS	14.180 MHz	2200 UTC
9G1RQ	21.260 MHz	1200 UTC
9G1SQ	14.021 MHz	0015 UTC
9G1UW	14.213 MHz	2100 UTC
9G1VJ	14.240 MHz	0900 UTC
9G1XA	14.027 MHz	2319 MHz

West Malaysia (9M2)

From West Malaysia we have the following reports during the month of January:

9M2AX	1.833 MHz	2100 UTC
9M2DM	7.012 MHz	1515 UTC
9M2FK	7.005 MHz	1700 UTC
9M2HB	14.226 MHz	1645 UTC

Neil, G3NUG, was also there on vacation operating from three of the offshore islands for the IOTA chasers signing 9M2/G3NUG. There were no reports but we do know he was on as we could hear DXers working him.

East Malaysia (9M6)

JAØVBJ and JHØSPE were scheduled to be active from this one January 7 to 11, both CW and SSB, either with assigned 9M6 calls or their own calls appended with the 9M6 prefix. We have heard nothing from them.

However, two other calls were reported, those being 9M8DB on 3.789 MHz working Europeans around 2200 UTC, and 9M8FC on 7.004 MHz at 1500 UTC.

Mayotte (FH)

Very active recently from Mayotte is FH5CB. Look for him on 15 meters between 21.292 and 21.330 MHz from 1600 UTC. And, when the 10 meter band is open check 28.355 to 28.434 MHz.

Also reported from Mayotte is FH/F5NCU who will give out a CW contact to the deserving DXer. Check 7.005 to 7.012 MHz after 2300 UTC and 14.007 to 14.018 MHz around 1500 UTC.

Thailand (HS)

Fred Laun, K3ZO, is back in Thailand again. Much of his activity has been CW on 40 meters operating from club station HSØAC. Look for Fred signing with HSØZAR between 7.003 and 7.005 MHz 1100 to 1300 UTC. Fred was to have completed his tour of Thailand on 15 February.

Also on 40 meters HSØZBI has been found between 7.005 and 7.014 MHz around 1530 UTC.

On 20 meters SSB, HS8EFF was reported on 21 January at 2100 UTC on 14.260 MHz. We have seen no other reports for this one.

There were three other calls reported — those with reciprocal agreements, appending their calls with the HSØ, all working into Europe:

HSØ/DF1IG	21.370 MHz	1000 UTC
HSØ/G3NOM	21.237 MHz	0900 UTC
HSØ/G4UAV	14.189 MHz	1800 UTC
HSØC	3.505 MHz	2130 UTC

Greenland (OX)

Activity on the lower bands has been present from this one recently and will soon cease with the summer months approaching. One on 160 meters, OX3BV, has been reported several times near 1.833 MHz between 0015 and 0230 UTC.

On 80 meters, OX3XR has been worked near 3.506 MHz at 1045 UTC. Other band activity for this one includes 7.002 to 7.007 MHz around 0030 UTC, 10.101 MHz at 1645 UTC, 21.027 MHz at 1615 UTC and 24.898 MHz at 1430 UTC.

Other calls reported from Greenland include:

OX3DL	14.180 MHz	1800 UTC
OX3DU	14.186 MHz	1600 UTC
OX3GX	10.104 MHz	2115 UTC
OX3KM	14.226 MHz	2230 UTC
OX3LX	18.086 MHz	1400 UTC
OX5XR	14.025 MHz	1900 UTC

That second to the last call may be an error (OX3XR), but that is what was reported.

Faroe Islands (OY)

Jon Dam, OY9JD, has been quite active recently and was to have been busy with the recent 160 meter contest. Outside the contest he has been worked anywhere between 0800 and

2000 UTC, depending where you live, on 1.831 to 1.843 MHz. Jon has also been worked on 75 meters near 3.799 MHz around 1000 UTC and on 15 meters near 21.335 MHz after 1400 UTC.

Other calls from this one include:

OY1HJ	3.796 MHz	2315 UTC
OY1J	14.203 MHz	1430 UTC
OY1R	18.089 MHz	1300 UTC
OY2H	10.106 MHz	1400 UTC

Iceland (TF)

If you are looking for an 80 meter contact with Iceland, look for the following:

TF2AA	3.516 MHz	0445 UTC
TF3DX	3.501 MHz	1100 UTC
TF3TF	3.799 MHz	1045 UTC

Reported on at least three bands is TF3LB, found on 18.071 MHz around 2200 UTC, 21.015 MHz at 2000 UTC, and 24.898 MHz at 1430 UTC.

Also reported is TF3CW, who has been on at least two bands. Look for this one near 14.008 MHz at 1900 UTC and 21.002 to 21.019 MHz between 1530 and 1800 UTC. Another, two-bander is TF3GC. who was reported on 14.005 MHz at 1145 UTC and 18.083 MHz at 1645 UTC.

Canada (VA)

According to *Long Skip* the VA prefix is no longer a special event prefix. Calls with the VA prefix now have been assigned on a permanent basis. Such is the case of the editor of *Long Skip*, John Slepkowycz, VE3IPR. John now signs with VA3JS. Therefore, in the same call area you now may find two calls with the same suffix.

Amateurs in New Brunswick now have the option of changing their prefix from VE1 to VE9. All new calls will be assigned with the VE9 prefix.

With the change, now all of Canada's 13 provinces and territories have their own prefix. I'm counting Newfoundland and Labrador separately, that's how I came up with 13.

Antarctic bases

If you are looking for Antarctic bases you had better work them now before winter sets in. Several nations have bases in the Antarctic and are located on several of the islands in addition to the continent. All islands south of 60°S are considered as part of Antarctic. This includes such DXCC countries as South Shetland Islands, the South Orkneys, and even Peter I Island.

The Diamond DX Club of Italy sponsors an award for working Antarctic bases, known as W.A.B.A. (Worked Antarctic Bases Award) with all contacts made since 1961. We will discuss this award at a later date. Turn your beam south now and work those bases.

Recent activity from Antarctic includes a Norwegian station signing with 3Y9YBA from the Bluefield base in the Tierro Mountains. The operator is Aage, LA9YBA. Look for Aage on 30 meters near 10.102 MHz after 0200 UTC or on 20 meters near 14.005 MHz for CW and 14.260 MHz for SSB about the same time.

India also has a base there with the call AT3D, operated by Dinesh, VU3DEN. We have seen only two reports for this one with a contact made from the east coast on January 13th at 1815 UTC on 14.191 MHz and another on 14.179 MHz around 1800 working Europeans....

The Russians have 4K1DEE on the Antarctic continent and 4K1F reported to be located in the South Shetlands. We have a QSL card for a 1984 contact with 4K1F which indicated his location at Druzhnaya base, which is on the Antarctic continent.

4K1DEE was reported in *Long Skip* working into Ontario on 40 meters near 7.007 MHz around 2300 UTC. 4K1F has been very active and has been worked on several bands. Look for him between 1.830 and 1.836 MHz from 0300 to 0600 UTC, near 3.510 MHz around 0630 UTC, 7.006 MHz between 0600 and 0830 UTC, 10.101 to 10.107 MHz between 0330 and 0700 UTC, and near 14.260 MHz after 0100 UTC.

And, of course, we Americans also have bases there. KC4AAA operates from Amundsen-Scott base at the South Pole, with KC4AAC at Palmer Station located on the Palmer Peninsula, and KC4USB at Byrd base. Look for these stations between 14.250 and 14.270 MHz around 0130 UTC. However, the main interest of these stations is that of passing phonepatch traffic. If they are in the middle of traffic handling please respect this until they have finished. KC4AAA was also worked on 30 meters on 10.108 MHz at 0415 UTC on January 23rd and was not running phone patches!

Brazilian Base Commandata Ferraz is supported by ZVØASN and is operated by Alfredo Schneider de Miranda, PY3ASN. The station is located on King George Island in the South Shetlands. Al can be found on 20 meters between 14.187 and 14.217 MHz after 0100 UTC.

There is also activity from Chilean Antarctica. CE5BYE/9 was busy from Greenwich Island (also in the South Shetlands) and is operated by Vycente, who we worked on January 27th near 14.260 MHz at 0330 UTC. CE9MFK is at the Shirreff base but has not been active recently. There was also a report of a CE9AP the end of December on 14.260 MHz at 0130 UTC. We have no information on this one.

Many of the IOTA types have been working these bases with the IOTA gathering frequency of 14.260 MHz the place to look.

Brian, VP8CFM, is base commander at the British Antarctic Survey base. He is reported to be active as VP8HAL or using his own call. We have not seen any reports of his activity.

IOTA

Dr. Rich Dorsch, NE8Z, planned for two IOTA DXpeditions to Islas Marietas (NA-189) and Islas Los Arcos Mismaloya, an island yet to be acti-

vated for IOTA, for February. Rich would have been signing with XE1/NE8Z/XF1, which is a real mouthful.

Here is an sampling of the IOTA activity during the dead of the winter:

AS-007	Honshu Island	JA9IWU
	21.244 MHz	2300 UTC
AS-018	Sakhalin Island	RAØFA
	14.224 MHz	0100 UTC
AS-077	Kyushu Island	JI6KVR
	21.260 MHz	2315 UTC
NA-006	Victoria Island	VE8KM
	14.273 MHz	2100 UTC
NA-019	Kodiak Island	WL7EM
	14.260 MHz	1930 UTC
NA-028	St. Paul Island	N1KDS/KL7
	28.460 MHz	2345 UTC
NA-036	Vancouver Island	VE7DUG
	3.768 MHz	0730 UTC
NA-039	Adak Island	WDØHSP/KL7
	21.260 MHz	2100 UTC
NA-041	Douglas Island	N6IV/KL7
	14.273 MHz	2030 UTC
NA-041	Wrangell Island	WL7CG
	14.260 MHz	2100 UTC
NA-075	North Pender Island	VE7LQH
	14.260 MHz	2245 UTC
NA-168	Grand Island	WA5IJO/P
	14.258 MHz	0100 UTC
NA-190	Meanguera	YS9DC
	21.260 MHz	1800 UTC

Many of the above are operations we have observed by just listening around the band. From this you can see how easy it is to get started in IOTA chasing. Rhode Island even counts, provided that you work one of the islands that make up the state. Get out your Rhode Island QSL cards and check them against a map of the state.

Larry Arneson, WDØHSP, after giving out Adak Island (NA-039), has left the island and will soon be reassigned to Japan.

CIS Callsigns

The new CIS callsign structure was to have become affective the beginning of the year. *DX News Sheet* provides the latest assignments:

Russia	(UA)	RAA-RIZ, UAA-UIZ
Ukraine	(UB)	EMA-EOZ, URZ-UZZ
Balarus	(UC)	EUA-EWZ
Azerbaijan	(UD)	4JA-4JZ, 4KA-4KZ
Georgia	(UF)	4LA-4LZ
Armenia	(UG)	EKA-EKZ
Turkemistan	(UH)	EZA-EZZ
Uzbekistan	(UI)	UJA-UMZ
Tadzhikistan	(UJ)	EYA-EYZ
Kazakhstan	(UL)	UNA-UQZ
Kirghiz	(UM)	EXA-EXZ
Moldovo	(UO)	ERA-ERZ

The prefix given as parens is the former prefix. Some of these new calls are now showing on the bands.

We are not sure when all these changes will take place. Franz Josef Land appears to still be identified with the 4K2 prefix, with 4K1 in the Antarctic, and 4K3 and 4K4 Arctic islands in Europe and Asia, respectively.

Those of you who use automatic logging programs be sure to update your country files for the DX contests this month and next. Good luck!

DXCC desk

Documentation has been received at the DXCC desk in Newington for the following operations with the dates beginning as follows:

5R8DK	17 Mar 1993
C53GK	19 May 1992
D2SA	15 Sep 1993
J5TUBA	27 Apr 1993
JT1/KB9IBZ	10 Nov 1992
T5/TU4EC	10 Dec 1992
TR8YA	08 Apr 1992
TU4EC	30 Apr 1992
TU4EF	07 Jul 1992
TU5AX	25 Nov 1992
TU5BA	11 Dec 1992
TU5BD	11 Dec 1992

V26A	28 Oct 1993
VP9/K8PYD	22 Nov 1993
VP9/WB2YJF	22 Nov 1993
XU5DX	01 Jan 1993
XU5SE	01 Jan 1993
YI1RJ	22 Oct 1991

The DXCC desk also states that operation by D2SA 10 through 160 meters, including the WARC bands, is now authorized.

Northwest DX Convention

Ken Thompson, VE7BXG, informs us that the annual Pacific Northwest DX Convention again will be in the Vancouver area at the Richmond Inn the weekend of 23-24 July. It will be a week earlier than planned as there would have been a conflict the following weekend with their national convention in Calgary.

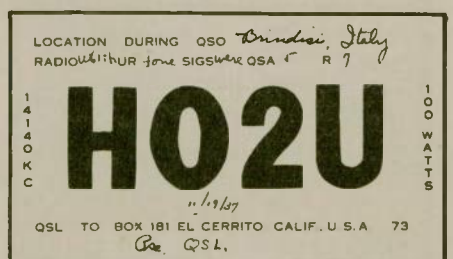
And on the subject of DX conventions, the W9DXCC Convention will be held in a Chicago suburb on Saturday, September 10th. Bill, N9US, via the Greater Milwaukee DX Association, promises a good program.

Clubs

The Southern California DX Club has elected the following officers for 1994: President, Robert W. Selbede, W9NQ; Vice President, Harvey G. Shore, K6EXO; Secretary, Willem A. Angenent, KN6DV, and Treasurer, Sharon P. Garvin, WB9UXR. Paul J. Garvin, KF6TC, was elected as Membership Chairman, with James A. Zimmerman, KG6VI, Keith D. Hoyt, K6GXO, and Richard J. Samoian, WB6OKK, elected as directors. Be sure to meet the new officers at the International DX Convention this April in Visalia.

Antique QSL Department

The following QSL card was submitted by Reg Tibbetts, W6ITH, with an interesting story. Reg writes, "John 'Stev' Steventson, W6CLH, (SK several years ago) went on a round-the-world trip on a Swedish registry ship. With permission of the captain, installed Collins equipment aboard.



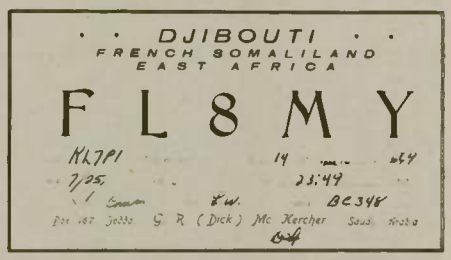
"I worked Steve from numerous locations including many rare ones; Egypt, Aden, Rhodes among others and sent me QSLs.

"To decide in what call to use I suggested HO2U, there at the time the HO prefix was vacant. HO - 2 YOU!

"There were numerous interesting stories during his trip, such as Japanese Coast Guard inspecting his radio gear, Balcony at Brindisi, Italy, etc. of which I will detail sometime."

Reg sent us four QSLs of the same card, but for operations from different locations. The one we have included is from Brindisi for a contact made back on November 19, 1937. Evidently, Steve operated on a fixed frequency of 14.140 MHz and all his contacts appear to be on PHONE.

All the cards were postmarked from the place of operation.



The second QSL card was submitted by John Munroe, W7KCN, from the estate of Joe Pacquette, KL7PI. Back in 1952, Joe worked FL8MY of Djibouti, operated by G.R. (Dick) Mc Kercher. The card indicated that Dick was using a "Comm" for a transmitter, which we think must have been a war surplus command set. Remember the ARC-5s? and an old BC-348 for a receiver.

John attached a note with the selection of cards of KL7PI that he sent in. "Who was (is) Dick Mc Kercher? He had some really FB callsigns." That name rang a bell with us and we checked the *Callbook* to confirm it. G.R. (Dick) Mc Kercher is WØMLY, retired and located in Iowa. Some of the those calls used by Dick included HZ1MY, 6L6MY and 4W1MY. Dick is the custodian for the Yasme Award.

QSL Routes

1AØKM	--IØIJ	3W/4K2OT	--UB1KA
1S1RR	--W4FRU	3W1A	--W4FRU
1SØXV	--W4FRU	3W4KZ	--W4FRU
3B9FR	--F6FNU	3W7A	--W4FRU
3D2CL	--JI3ACL	3X/VK4NIC	--W4FRU
3D2YO	--K6JYO	3X1Z	--W4FRU
3V8AS	--IK5GQM	3Y0PI	--KA6V
3W8A	--W4FRU	3Y9YBA	--LA9YBA

4K1DEE	--UZ1PWA	HH2LQ	--KM6ON
4K1F	--KF2KT	HP1/KB2DQE	--KB2DQE
4K4/UL7JIS	--RL7JA	HR1B	--NL7GP
4K8F	--UD6DFF	HR2BDC	--AA5ET
4K9W	--DL6KVA	HSØZAR	--K3ZO
4LØG	--RF6FM	IMØM	--IK2QIN
4L1FL	--4X6UF	J28EM	--W4FRU
4M1I	--I2CBM	J28GG	--F6DYE
4N7M	--YU7KMN	J6/JK4VSE	--JARL
4S7/KB4ATV	--W4FRU	J6/N9JCL	--N9JCL
4U1ITU	--IK2NCJ (See Note 2)	J68AG	--WD8IXE
4U48UN	--W8CZN	J68AR	--K9BQL
5H3JB	--NK2T	JA1LSY/JD1	--JA1LSY
5NØDOG	--W4FRU	JW4WIA	--LA4WIA
5NØROF	--W4FRU	JW9DFA	--LA9DWFA
5R8DM	--JE8XRF	JW9XG	--LA9XG
5R8RY	--F6FNU	K2TD/VP5	--K2TD
5T5AY	--W4FRU	KC4AAA	--NC6J
5T5ZZ	--W4FRU	KC4AAC	--KE9AS
5U7Y	--JG3UPM	KHØ/JA1CMD	--JA1CMD
5X1JM	--NK2T	KI3V/VP9	--KI3V
5Z4BI	--W4FRU	KP2A	--W3HNK
5Z4FA	--KB4EKY	N2VW/VP5	--N2VW
6Y5/K6JAH	--K6JAH	OA4CWR	--K3JXO
6Y5/W7WY	--W7WY	OMØM	--IK2QIN
7Q7OO	--K6VNX	OM3CQR	--OK3CQR
8P9GG	--VE2XB	OM3NA	--OK3NA
9A/K4XU	--K4XU	P29DX	--G3LQP
9DØRR	--NT2X	P48C	--AA2U
9D2UU	--LZ2UU	P49W	--N2MM
9G1FN	--W4FRU	P49I	--K4PI
9G1SD	--NØNLP	PYØSP	--PS7KM (SSB)
9G1WJ	--K1SE	PYØSP	--PT7WA (CW)
9G1XA	--KØEU	PZ5JR	--K3BTV
9K2ZZ	--W8CNL	PV2A	--PT2BW
9MØS	--W4FRU	RAØFA	--KM6ON
9L1CF	--W5TXV	RK1OWZ	--WA7OBH
9M2/G3NUG	--G3NUG	RK2FWA	--DK4VW
9V1YC	--AA5BT	RU9YY	--UA9YY
9X5AA	--W4FRU	RZ3DA	--EA8BAY
9X5CW	--F6ITD	S21YD	--SM6CST
9X5DX	--F2VX	S21ZG	--W4FRU
9Y5/I5JHW	--I5JHW	SPØKEH	--SP5KEH
A22MN	--WA8JOC	ST4/WZ6C	--W4FRU
A35CW	--DK7PE	SV/WY3V	--WB2RQW
A35JJ	--JR2KDN (See Note 1)	T23JJ	--JR2KDN (See Note 1)
A35MR	--VK9NS	T30JJ	--JR2KDN (See Note 1)
A4XYS	--W4FRU	T91ENS	--DJ0JV
AT3D	--VU2DVC	TA1A	--W4FRU
BZ4DHI	--I1YRL	TA2ZI	--WB6EQX
C21/WK3D	--JR2KDN (See Note 1)	TI4/AA7JM	--WA5TUD
C56/SM4TQO	--SM4NLL	TI4SU	--TI4PX
C6A/N3NCW	--N3NCW	TL8GR	--F5XX
C6AFP	--N4JQQ	TM5TLT	--F5GVA
C91AI	--CT1DGZ	TR8/F5JQG	--F5JDG
C91BH	--SM6CTQ	TU5EBL	--YU1FW
CEØY/JH2MRA	--JH2MRA	TYA11	--W4FRU
CH2MCZ	--VE2QK	U5WF	--SP5IUL
CH7CC	--VE7CC	UA8TAA	--AA7AN
CN2JA	--DL2EAD	UA9SAW	--W9PXR
CN2JR	--EA7KW	UH2E/UA9TZ	--DL1FCM
CP6RP	--I6WDX	UK8AA	--G3SWH
CT5P	--CT1AHU	UK8ACP	--G3LZK
CU2T	--CU2CR	UM7/UA3TT	--DF7RX
CX6VM	--CX4VA	UO5SM	--SP7LZD
CY9R	--VE3MRN	UR4WWT	--WR3L
D2EGH	--CT1EGH	US6WE	--SP5IUL
D2EYE	--OZ1ACB	UT5UDX	--UA3UA
ED5MCC	--EA5JC	UU2JZ	--W2FXA
EK7DX	--DL1VJ	UU7JM	--LZ1KDP
EL2PP	--N2CYL	UXØBB	--UB5BAX
ER1AM	--SP9HWN	UXØFF	--DF8BK
ER1DA	--FD1JOE	UXØZZ	--UB5ZND
ER1PE	--I8YGZ	UX1BZ	--UB5BA
ER8ZAL	--UB5ZAL	UX2FXX	--UB4FXX
ET3BH	--SM3EVR	UX5UO	--PA3BUD
ET3RA	--HB9CVB	V2/G6QQ	--G6QQ
ET3USE	--W4FRU	V21ZL	--W2HWS
EVØA	--F6AML	V26A	--WB3DNA
EW/R3AW	--GW3CDP	V29A	--W4FRU
EXØM	--DF8WS	V31EN	--KF8NN
EY8VV	--UJ8JKK	V31JZ	--NN7A
FB8WJ	--W4FRU	V31ML	--N5FTR
FG5FZ	--F6FNU	V31RL	--NG7S
FG5RP	--KA3DSW	V47NS	--W9NSZ
FH/DL5XU	--DL5XU	V47RM	--AA5DX
FH/DL9AWI	--DL9AWI	VA1S	--VE1AL
FJ/NØIMH	--NØIMH	VE9DH	--VE1DH
FK8GT	--F6GZA	VF1L	--VE1AL
FM5WE	--W4FRU	VK9LI	--K6VNX
FO0PT	--DJ0FX	VK9LO	--K6VNX
FR/JE8XRF	--JE8XRF	VK9LR	--K6VNX
FS4PL	--FG5BG	VK9LX	--W6XD
FR7BE	--W4FRU	VK9NJ	--G3SWH
FT5XJ	--F5NLL	VO1XA/VE8	--WB2YQH
FY5GF	--F2YT	VP2MFA	--K8SJ
FY5GJ	--F2YT	VP2V/W2GUP	--W2GUP
GB5DX	--G0CQW	VP2V/WA4DPU	--AB4JI
GDØSLY	--WA3CGE	VP8BZL	--AA6BB
HA8SY	--HA8RJ	VP8CEM	--CX3ABW
		VP8CPK	--KK6EK

DX Prediction — April 1994

Maximum usable frequency from West Coast, Central US and East Coast *(courtesy of Engineering Systems Incorporated, Box 939, Vienna, VA 22183).*

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.

WEST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
10	*(13)*	*16	*21	*(11)*	*18
12	*(18)*	*14	*18	*(11)*	*(16)*
14	*(24)*	*17	*15	18	24
16	*(26)*	16	*(15)*	21	29
18	28	*(12)*	*(14)*	20	32
20	26	20	27	17	*34
22	22	25	32	*(12)*	*33
24	*(19)*	*28	34	*(10)*	*31
2	*17	*28	34	*(10)*	*26
4	*17	*25	33	*17	*22
6	*(17)*	*23	*31	15	*19
8	*(15)*	*19	*25	13	*17

CENTRAL USA

UTC	AFRI	ASIA	OCEA	EURO	SO AM
8	17	*(12)*	*21	*(12)*	*16
10	*(21)*	11	*18	*(11)*	*17
12	28	*15	*16	18	20
14	32	17	*(16)*	21	*26
16	32	15	*(15)*	21	*30
18	*32	*(12)*	*(14)*	20	*33
20	26	21	27	17	*34
22	22	23	32	12	*34
24	*19	22	34	*(11)*	*28
2	*17	19	32	10	*24
4	*17	17	31	*15	*20
6	20	14	25	13	*18

EAST COAST

UTC	AFRI	ASIA	OCEA	EURO	SO AM
7	18	*(12)*	*21	11	*17
9	*(19)*	11	*18	15	*17
11	27	*16	17	*20	19
13	31	*(15)*	*(17)*	*22	*25
15	33	*(13)*	*(15)*	*22	*30
17	32	*(11)*	*(14)*	*21	*32
19	*29	*(15)*	*(22)*	19	*34
21	24	*(19)*	30	13	*33
23	*20	22	34	*12	*32
1	*18	*(19)*	32	11	*26
3	*14	17	30	*10	*22
5	*20	14	25	*13	*19

VP8CPL	--K8LJG	ZD9CO	--W4FRU
VP9/WA2MEQ	--WA2MEQ	ZD9CK	--W4FRU
VP9IN	--WB2YQH	ZD9CN	--W4FRU
VP9MZ	--WB2YQH	ZD9YL	--W4FRU
VQ9AB	--KY0A	ZF1CQ	--W8BLA
WB2YOF/VP5	--WB2YOF	ZF2NJ	--K0BJ
WD5N/HC8	--WD5N	ZF2SP	--KB0JBX
XE1/NE8Z/XF1	--K8LJG	ZF2SQ/ZF8	--WA0JTB
XF4CI	--XE1CI	ZF2VW	--W7WY
XV8SU	--W4FRU	ZK1ACW	--DK1EI
XV100HCM	--W4FRU	ZK1AIQ	--N7WTU
YB1AQC	--W4FRU	ZK1AT	--WB6EQX
YS1/NX1L	--NX1L	ZK1AVY	--N7WTU
YS1DRF	--W2PD	ZK1AYR	--N7WTU
YS1X	--N7 7GP	ZK1MTF	--N7WTU
YS9DC	--HR1RMG	ZK1WTU	--N7WTU
YZ94DX	--YU1DX	ZK1XE	--JI1NJC
ZD7BJ	--W4FRU	ZK1XYR	--N7WTU
ZD7HH	--W4FRU	ZK1ZRD	--N7WTU
ZD7XY	--W4FRU	ZP9XB	--PY5BI
ZD8HH	--W4FRU	ZS1EDR	--W4FRU
ZD8XX	--W4FRU	ZS1USA	--W4FRU
ZD9BV	--W4FRU	ZV0ASN	--PY3ASN

QSL Information

WE6V reports in *QRZ DX* that he received a note from QSL manager IK5GQM for 3V8AS that he was scolded for providing only two IRCs. This manager wants 3 IRCs!! Comments by N6JM on this is that on my first try with this one is my card only indicated me as plain N6! Of course, I went through the whole procedure again before he got the information right. Three IRCs is a lot considering that not only was the card a lousy print job, the contact is yet still not valid for DXCC credit. I can't remember how many IRCs I sent each time. Read on for more gripes!

Another DXer shares his thoughts on the direct QSL business that we are all familiar with. Bill, K4BUF, writes, "I have been chasing DX for many years, and still can't figure out some of the practices they lay on us. My most important gripe is, why is it when I send my QSL to a station, I send also the required amount of IRCs needed, with an Air Mail envelope with my address on it, and wait. Maybe within a year or two, if I'm lucky, I may get his QSL, *BUT*, it usually arrives via the bureau. What happened to my IRCs? What happened to my SAE? And, why did he send it via the bureau? Are these DX stations making money off of us USA hams? Just about all the DX stations I QSO with want a direct QSL. I know some of their bureaus are ripping the money and IRCs from the envelopes, surely not all of them."

We don't think any of the DXers we work are making any money from our IRCs or green stamps. If sufficient funds are provided there should be no problem with a direct return. Of course, the printing costs of the QSL cards may be high, but no where as much as the cost of their radio that they used to work you. We need some feedback on this. Any comments supporting either side of this issue?

From *The WNYDXA Report*, edited

by Peter Vasilion, KB2NMV, of the Western New York DX Association, there was a note from CN2AQ stating that many QSL cards sent to him either never arrived or the envelopes had been opened enroute. As a result he has a new mailing address (see QSL routes). He also suggests that you not send an SASE but a self-addressed mailing label. He also asked that you indicate on your QSL card to identify any IRCs or green stamps that are included.

Art Goddard, W6XD, writes in reference to our February note stating that Martin, G3ZAY, no longer holds the VK9LX call which has been reassigned. Our mystery has been solved! Art is the new holder of VK9LX.

Bert Lenny, N7SWU, had some questions regarding IOTA QSL cards valid for DXCC. There sounds if there is some confusion here between the IOTA program and DXCC, and probably ***Worldradio***'s Worked 100 Nations Award. If you worked a station on Long Island in New York the same QSL card would be valid for IOTA (Long Island) and DXCC (United States). It would also count for W100N. If you worked Hawaii the card would count as Hawaii for both IOTA and DXCC, but only as United States for W100N.

Now if you worked Haiti or the Dominican Republic (the mainland) they would count as two separate countries for DXCC and W100N, but would count the same for IOTA, which is the island of Hispaniola.

Bert, who joined the ranks of Amateur Radio back in 1940, had taken a 30 year leave of absence before joining the fun again 4 years ago. He says he is trying to collect the necessary QSL cards for DXCC. We wonder, Bert, if you are aware that contacts made since 1945 count for DXCC. If my computations are correct, you dropped out of Amateur Radio in 1960, leaving a period of 1945 to that year for valid DXCC cards. It doesn't matter what your previous call was and they all will count, provided all contacts were made from the same country. Many of the countries have gone through a prefix change or even in some cases a change in name. It makes no difference as they are still valid. And, don't forget the deleted countries, as they count too! If you have a QSL card from Newfoundland made prior to 1949 that counts too! You could have many deleted countries there, Bert.

5H3CC	--Camillo, P.O. Box 30, Njombe, TANZANIA
9N1HA	--P.O. Box 4292, Kathmandu, NEPAL
9X5LJ	--P.O. Box 825, Bandpark Ridge, RWANDA
A92C	--UKNDA, RAF Thatcham, Station Road, Thatcham Brooks, Berks RG13 4LY, ENGLAND
A92FV	--UKNDA, RAF Thatcham, Station Road, Thatcham Brooks, Berks RG13 4LY, ENGLAND
CE5BYE/9	--P.O. BOX 3016, Valparaiso, CHILE
CN2AQ	--S.J. Quast, P.O. Box 82, Asilah, MOROCCO
HJØVGJ	--P.O. Box 852, San Andres Island. COLOMBIA
J6/N9JCL	--Scott Francois, 1108 McAllister Ave, Marinette, WI 54143
OX3DU	--Per Jensen, Angissoq LORAN Station, Angissoq 3927, GREENLAND
OY9JD	--Jon Dam, Marknagilsvegur 26, 100 Torchavn, FAROE ISLANDS
S21AM	--Manju, P.O. Box 4000, Dhaka 1000, BANGLADESH
TR8XX	--P.O. Box 4069, Libreville, GABON
YI1HS	--Ms Hafsa, P.O. Box 7376, Baghdad CP12216, IRAQ
Z21HS	--P.O. Box 4110, Harare, ZIMBABWE
ZB2JK	--P.O. Box 292, GIBRALTAR

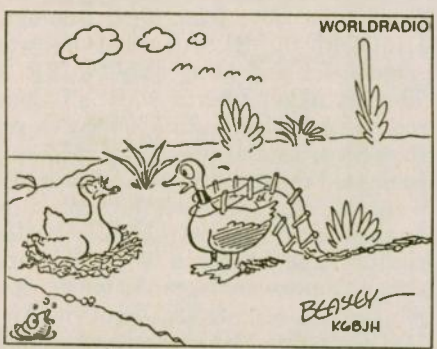
NOTES:

1. This manager requests SASE for each country and callsign.

2. This route applies for contacts made by IL2NCJ, IK2JUB and IK2PFL on 5-6 February, 1994, only.

Many thanks to the following contributors: VE7BXG, K4BUF, KC5ALW, KN6DV, W6ITH, W6XD, W7KCN, KI7NL, N7SWU, NE8Z, KJ9C, Northern Arizona DX Association (W7YS), Western New York DX Association (KB2NMV), Greater Milwaukee DX Association (N9XX), HamNet SysOp (W3VS) The American Radio Relay League (K5FUV), *CQ Ham Radio*, *The Low Band Monitor*, *The Long Island DX Bulletin* (W2IYX), *DX News Sheet* (G4DYO), *QRZ DX* (W5KNE), and *The DX Bulletin* (VP2ML).

Not necessarily a DX award but just as much a challenge is the ARRL Worked All States Award (WAS) with the Top Band endorsement. Bob Wertz, NF7E, of the Northern Arizona DX Association, received certificate number 516 in October. We received number 489 which was issued about 18 months before that. Bill Schuchman, W7YS, editor of the NADXA newsletter says he received number 336 back in 1986. It is a challenge, all right, and we think it is harder than working those 100 countries for DXCC. Incidentally, Top Band is 160 meters. 73 de John N6JM. **WR**



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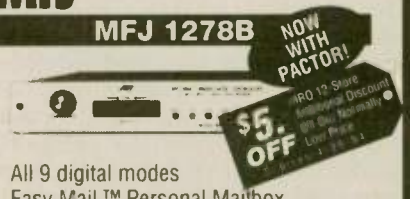

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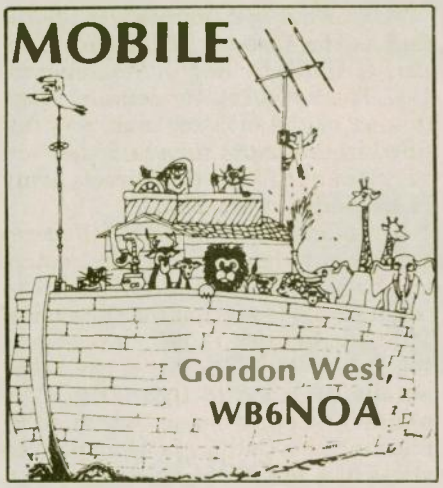


Your radio is "brain dead"

I find it unbelievable that manufacturers of 2M and 440 MHz equipment sell their radios "brain dead." You would think they would take a hint from the television industry to give us a radio that will start tuning things in as soon as you add 12 volts. Can you imagine buying a television and having to memorize the video and audio frequencies for every channel and every cable channel in your area? Ridiculous.

Some manufacturers, like Kenwood Corporation, give us a mobile radio that has automatic repeater offset information written into the microprocessor. This is good. When you dial up 146.940 MHz, the radio knows to give it a -600 split. Up at 147.060 MHz, it gives us a +600 split. This is smart, and this is good.

But now that mobile and handheld transceivers have capabilities of 100 memory channels and more, manufacturers might want to pre-memorize the country's 2M and 440 MHz most-active repeater channels. This way you can keep your eyes on the road while traveling from state to state, and not try to read the repeater directory to see where the activity is. And merely scanning the frequencies is not necessarily the answer because your radio will search for over a minute in an area on the band where there is little or no activity on a national basis.

Jay Mabey, NUØX, the American Radio Relay League's repeater directory editor, has identified the most popular frequency repeaters throughout the country, along with their most popular CTCSS tones. Out of the over 6,000 2M repeaters in the U.S. and Canada, and over 5,000 440 MHz repeaters in the U.S. and Canada, here are the top ten channels for each band that will probably give you the most activity when you are mobiling around the country:

Top Ten 2M Repeater Channels

146.940	-600
146.760	-600
146.880	-600
146.820	-600
147.000	+600
146.640	-600
146.700	-600
147.300	+600
147.360	+600
146.790	-600

Top Ten 440 MHz Repeater Channels

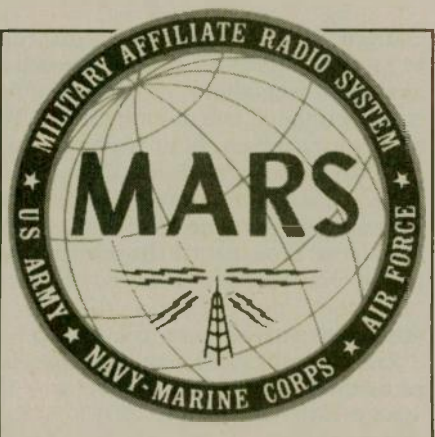
444.500	+5 MHz
444.100	+5 MHz
444.700	+5 MHz
444.800	+5 MHz
444.900	+5 MHz
444.975	+5 MHz
444.150	+5 MHz
444.200	+5 MHz
444.000	+5 MHz
444.850	+5 MHz

If you tune into a repeater, and try to key it up, yet it won't come up, and you have double-checked that your offset is correct, the repeater employs CTCSS tone squelch which is becoming extremely common throughout the country. Tone squelch does not necessarily mean the repeater is private, but CTCSS is required to trigger the repeater into operation and to keep the repeater from false key-ups from nearby stray RF. Here are the top ten tones to cycle through to try to key up an open CTCSS repeater:

100 Hz
103.5 Hz
107.2 Hz
114.8 Hz
127.3 Hz
136.5 Hz
88.5 Hz (Japanese Standard)
131.8 Hz
123.0 Hz
110.9 Hz

Manufacturers may soon pre-program their rigs with popular repeater channels.

"The ARRL repeater directory will tell you the frequencies of the repeaters, their call signs, who runs them, their coverage areas, and more," comments Jay Mabey, NUØX. "For $6, it's a good investment to anyone who travels around the country with a mobile or handheld single-band or dual-band rig to always stay in touch," adds Tom Hammond, NØSS, who assisted Jay in compiling this list of popular frequencies. WR



Lorraine S. Matthew, N4ZCF
MARS call AAA9PR

A draft copy of the "ARMY MARS WORLD-WIDE EMERGENCY CONTINGENCY OPLAN, 1000-001" arrived on my E-Mail system on 20 January 1994. Its reference for authenticity is the current (Field Manual) FM 11-490-7, (Army Regulations) AR 25-6. In view of the recent activities of Army MARS, this document is most interesting to read and to acknowledge that it not only exists but that it functions very well.

The document outlines the "TASK ORGANIZATION" for US Army MARS and addresses the situations under which Army MARS is declared a participant in any disaster or emergency. It identifies specific agencies to be served as well as general descriptions for rendering service to any emergency agency who requests help. The roles to be played by Army MARS personnel from the Headquarters level to the individual Army MARS volunteer member are well defined and blended into a cohesive and smoothly functioning entity. All elements are drawn together into close cooperation which serves to benefit all of the parties who need our help.

I share comments about the plan with you because it was implemented and worked very well just three days earlier on 17 January 1994. That date will live long in the minds of the victims of the Southern California Earthquake. That date will also remain with all of those men and women who provided assistance to the victims. Those of us who watched, prayed, and waited to be of help if possible, too, will remember.

Chief Army MARS, Robert Sutton, issued a MARS Information Message 06-94 dated 18 January 94. "California Thunder," the designated title of the OPLAN that had been put into action, was the subject of the message, which follows.

"1. Army MARS was again called upon to provide direct emergency communications support (California Thunder) in the aftermath of the Southern California Earthquake on 17 Jan 94. California Army MARS nets were activated in a matter of minutes after the earthquake and remained open for over 35 hours.

"2. Although the USAISC CMD MARS station and the Western Area MARS Gateway stations were involved in the movement of essential information and coordination efforts, the lion's share of credit goes to the volunteer membership of which we can all be proud."

The USAISC acronym in paragraph 2 stands for United States Army Information Systems Command which is the Army Command under which Army MARS operates. Each MARS region utilizes the services of a centrally located Gateway station through which traffic is funneled into and out of more localized stations. Thus, the Western Area MARS Gateway was an important adjunct to the operations in California itself. Without the local operators, however, as noted by Chief Sutton, the whole system would become inoperative.

"3. I am pleased to announce that this first emergency communications challenge of 1994 was met with the professionalism expected of MARS through the many efforts of MARS members in California as well as at least four other states within the Western Area.

"4. Our major customer was identified as the Director of Military Support (DOMS) located in Washington, D.C. Their requests for detailed information of the disaster area was fulfilled in minimum time and they are very thankful for the direct Army MARS support provided."

In reading the many FEMA (Federal Emergency Management Administration) reports that were forwarded to me, it was evident that the Director of Military Support (DOMS) was able to function well as a result of the information provided to that office. The military support teams which were dispatched to California were ready to serve in a wide variety of functions. Many relief flights, serving many different purposes, were directed into March AFB situated well east of the earthquake impacted area. It will be necessary to wait for the after-action reports in order to determine exactly which agency or who did what. The entire country, military and civilian, was pulled together to serve those in need in California. It is this spirit of unity in crisis which serves the United States so well and will preserve us as a nation.

The other key parts of Chief Sutton's information message included the following thoughts:

"5. The unique, diverse, and most successful communications methods utilized included MARS radio nets, E-Mail, FAX, and telephone.". . .

"8. Army MARS has again proved that it is proud, professional, ready."

As a proud, professional, and ready organization, Army MARS has shown that it also keeps abreast of technological advances — advances, very often, promoted by its volunteer members using their own skills and assets. I am proud to be a part of the Army MARS program. I salute you all with a special salute to the California operators who served so well. **WR**

The person who succeeds is not the one who holds back, fearing failure, nor the one who never fails . . . but rather the one who moves on in spite of failure.

—The Pitcairn Miscellany

10-10 INTERNATIONAL News

Chuck Imsande, W6YLJ
10-10 19636

New 10-10 treasurer

After approximately 14 years of voluntary service as 10-10's treasurer, Gerry Gross, WA6POZ #21274, has resigned in order to devote his full spare time to being the 10-10 data manager. Gerry's duties as data manager will include, among other things, the maintenance of all 10-10 records in a data base that provides complete and accurate membership records. He will also be responsible for collecting the dues for membership renewals ($7), call, name and/or address changes. New membership applications still go to each area manager. The address for dues renewals and any membership record changes is: 10-10 International Net, Inc., 643 N. 98th Street #142, Omaha, NE 68114.

A new 10-10 treasurer has been selected by the 10-10 board of directors and he is Keith Schlottman, KI7RK #63324. Keith, along with XYL Pamela, KB5UEU, Ryan, 2 years and Brad, 2 months, live is Tucson, AZ. Keith is a CPA in both NM and AZ and has had a lot of experience in keeping the books for "not for profit" organizations, such as one of the Girl Scout councils. Keith took over the treasurer's position from Gerry on 1 February 1994.

We thank Gerry for his many, many hours of volunteer service to 10-10 and welcome Keith aboard.

Lee Pasewalk, WB6MGM #213

We are saddened to report that our long time records manager, Lee Pasewalk, WB6MGM #213, has had a heart attack and stroke and at this writing is still in the hospital. We wish Lee well and hope by the time you read this, Lee is at home recovering.

New 10-10 roster

10-10 has a new roster program and policy. Rosters will now be available both in hard copy format and on computer disk. The hard copy format, for those without a computer is 8 1/2" x 11" printed on both sides of the paper and is 3-hole punched for insert into 3-ring notebook. The roster on disk is either 3.5" or 5.25," depending on your computer drive. The 3.5" is high density (1.44MB) and the 5.25 floppy is 360kB. It can search either for a 10-10 number if the call is known, or it can search for a call if the 10-10 number is known. The roster on disk is called 10-10 Inquiry, or XXIQ for short.

The hard copy roster will be published in January each year with an update in July, and the roster on disk will be published each quarter, in January, April, July and October.

The roster on disk will now include a key if a member is a Silent Key (SK), and will soon include the name, address, membership expiration date and has the ability to print address labels.

The cost of the hard copy being mailed to a US address is $9.00 or $12.00 if mailed to a DX address. Cost for the roster on disk is $5.00 each or $17.50 for four issues (one year) mailed to a US address ZIP code, or $7.00 each or $25.00 per year mailed to a DX address. The cost is the same regardless of 3.5 or 5.25 disk size. Note that there is only one roster, the cost difference is for postage, US ZIP code vs. foreign postage.

Mail your roster request to the 10-10 address: 10-10 International Net, 642 N. 98th Street #142, Omaha, NE 68114. Be sure to indicate which size disk you want if ordering the roster on disk.

The 10-10 board of directors believe with this new roster program, 10-10 members can have up-to-date information on new 10-10 numbers issued, changes in call or address, etc. In order to have the most current information available anywhere, it requires the cooperation of the membership. We need you to tell us about your new calls or address changes. Even if your dues have expired, we would like to keep your information current in the 10-10 data base. Please send the information to the Omaha address listed above.

Another milestone for 10-10

Another milestone was accomplished recently when 10-10 #65000 was issued to Jim Knowles, KC5BFE, of San Antonio, Texas. Jim was born in Texas. He was licensed, and also joined 10-10 in 1993. Jim is not married and is a law enforcement officer. The only other ham in Jim's family is his brother, WD5CGU.

Two directors resign

Two of four 10-10 directors have found it necessary to resign. Peggy Pinnell, G4MAE #32992 for health reasons, and Don Zielinski, KØPVI #9902 for personal reasons. We are sorry to lose these two fine directors, but health and personal reasons do take precedence over a "volunteer job." We will miss them both.

Information about 10-10?

If you are not now a 10-10 member and would like to learn more about the 10-10 organization, send a green stamp ($1.00) to help cover the cost of printing and postage, along with two first class stamps and an address label for the return of the 10-10 information package. Please no SASE as the 10-10 information package requires a 9 x 12 envelope. You will receive a copy of the 36 page informational manual along with a copy of the latest issue of the 32 page 10-10 International News. Send to: Mike Elliott, KF7ZQ #54625, 9832 Gurdon Court, Boise, ID 83704.

Finally. . .

If you have let your 10-10 membership dues expire, or have lost your 10-10 number, the same as above ($1.00 + 2 stamps + address label) to Mike will get you the info package along with your lost 10-10 number. WR

Computers & BASIC STUFF

C.H. Stewart, KD5DL
P.O. Box 181
Duncan, OK 73435

BASIC schematics

Author's Note: The technical experts at Avril & Fooster have done it again. They have taken what was essentially a very simple concept and, after months of research and development, they developed a very complex algorithm for computer aided design as it applies to drawing schematic diagrams. So, with all seriousness aside, I turn this month's column over to Avril & Fooster.

I bout me atypical spell checker. Witch i en stalled inside my p.c. It all ways marks fore my revue Mistake; I, myself, wooden sea. Thin Iran this little poem threw it, And i thought yew mite like too no, Its letter prefect en ever weigh: Cause my checker has tolled me sew. Avril & Fooster

The spell checker poem illustrates the difficulty we in the technical sciences run into when writing algorithms, whether it be for checking spelling and grammar to the more structured problems of communicating two- or three-dimensional concepts with traditional non-dimensional computing systems. The words, of course, are spelled correctly. It's just that it's nearly impossible to make sense of them.

We refer to computers as non-dimensional simply because they lack personality. They are essentially like a nerd at a friend's party — they would like to be helpful, but they're nearly impossible to do anything with. Hence the term "non-dimensional."

Our aim, then, is to write the programs that give dimension to computers, then write more programs to utilize the new dimensions intelligently.

Unfortunately, too many computer programmers go about it the wrong way. Why, for instance, does it take a book two-inches thick to explain the "user friendliness" of a program on a little biddy 3-1/2" diskette?

It's not really the programmer's fault. He knows exactly what he set out to do and, very probably, he knows what exactly it was he did. We think the real problem lies with the marketing department. They're the ones who always come up with the thick books and slick packaging. The excuse they use is that customers aren't willing to buy software that comes without instructions.

We at Avril & Fooster don't buy that philosophy. When we add dimension to a program, we don't muddle it up with a lot of hype about how "user friendly" it is. It's our belief that the user doesn't need to know anything about running software because that's the computer's job. All the user should ever need to do is turn the computer on and off and occasionally refill the printer's ink cartridge.

With that in mind, let's explore our latest offering, a schematic drawing program written exclusively in BASIC (specifically GW-BASIC or its IBM cousin, basica). The program, only 13 lines long, contains all the information you need to draw professional-looking schematics of practically anything electronic.

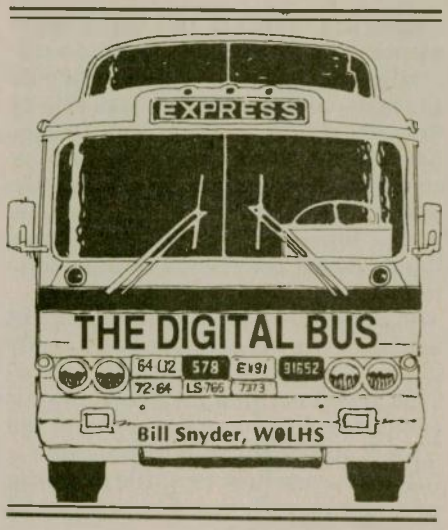
Astute BASIC programmers will recognize the CIRCLE and LINE statements, and will probably guess correctly that they somehow make up all the lines, circles and arcs representing components in schematic drawings. Everything, from the zigzags of a resistor to the loops of a coil can be represented with these two basic geometric forms, and all without paying top dollar for a two-inch thick book to tell them so.

(There's one more BASIC statement useful for drawing things, but it really isn't necessary for our purposes. However, if you really want to add to your computer literacy, try adding the DRAW statement to your programs).

To show you how versatile this little program is, we'll use it to design and lay out an inexpensive spectrum analyzer using off-the-shelf Radio Shack parts, and we'll try to keep the costs to less than $25 (which is easily possible if we use the family TV set as the monitor scope).

The first and most important consideration is to (continued on page 100).

```
0   REM: SCHEMATIC.BAS, BY AVRIL & FOOSTER, 1/4/94
10  PI = 3.1416: KEY OFF: SCREEN 2: CLS
20  LINE (80,50) - (60,100): LINE (160,50) - (180,100)
30  LINE (70,75) - (170,75): CIRCLE (120,50),40,1,0,PI
40  CIRCLE (490,185),5: CIRCLE (230,80),40,1,4.14,2.14
50  LINE (205,65) - (205,120): LINE (295,65) - (295,100)
60  CIRCLE (330,80),35,1,0.7,2.8: CIRCLE (390,60),2,1
70  LINE (295,65) - (295,100): LINE (390,70) - (390,100)
80  LINE (440,40) - (440,100): LINE (95,145) - (95,190)
90  CIRCLE (145,145),50,1,0,PI: CIRCLE (250,170),40
100 CIRCLE (350,170),40: LINE (430,130) - (430,185)
110 LINE (95,160) - (155,160): LINE (490,130) - (490,175)
120 LINE (490,130) - (500,135): LINE (500,135) - (490,175)
130 INPUT "Press [ENTER] to Continue",A$: CLS
```



In my February column I asked for help in making a non-scientific test of the packet system. I asked volunteers to send me 10 short packet messages — one a day — to see how the relay system worked. I did it because I've been critical of it for a long time: messages get lost, they arrive out of sequence, duplicates appear, and many get stuck in some BBSs for days. It's a rickety system at best.

Well, thanks to a number of packet fans, I have had my wishes fulfilled. I started getting traffic from all corners of the USA. I don't have enough data to do much with as yet, but I have a few early comments to make about the test.

Somehow the 10 messages from Ed Lappi, WB4LOO, in Carrboro, North Carolina managed to be transferred to the National Traffic System and were relayed by SSB and CW or whatever. It must have been the way they were addressed. The first one, message #2 arrived on the local packet system BBS in NTS format, but a local ham with SYSOP privileges downloaded it and forwarded it to me on packet. In the process we lost the sender's packet address. Next came message number 5. It arrived via 40 meter phone at blind operator Linda Lottes' station, NØLKX. Linda gave it to her boy friend, WQØJ, who forwarded it to me by packet. The next one, number 3, arrived by 75 phone at KFØVN and Jim forwarded it to me on packet. If WB4LOO had put his packet address in the body of the message, I could have answered him by packet, but until I get a packet message from him in my BBS, I'll have to do it this way, by magazine.

For a long time, I have suggested that everyone put their packet address in the body of each message. I know it's in the header, but if that item is lost or corrupted you are up a creek without an address.

At this writing, about two weeks since I received the first one in the test, I have not received all ten messages from any participant. My first arrival was from Ace Collins, K6VV, in San Diego. His first message arrival was number 2, and darned if I didn't get two copies of it. That was followed by two copies of number 4, three copies of number 1 and one copy of numbers 8, 6, and 7 in that order. All that happened in seven days. Numbers 3, 5, 9 and 10 are still out there in packet land or various bit buckets, who knows?

The next station I heard from was Jim Smith, KB6DJ, in Grants Pass, Oregon. I received #2, #1, #7, #9, #6, #5, #8, in that order. Now you can't say that does much to prove the system works very well. Years ago I traded messages almost every day with W7VFR, Bob Lawrence in Pasco, Washington. That was before the junk mail cluttered up every BBS between the Pacific and the Atlantic oceans. Bob and I had a shaky node path here in North Dakota, but many times we had messages to and from in hours, not days. I recall getting a message more than once from Pasco in less than four hours with seven relays and a lot of nodes in the path. But as the number of packet fans rose, the time went down to days and sometimes even weeks.

What is the reason? I can't say for certain, but our local BBS has over 2,000 messages piled into its file memory. A SYSOP can't possibly look at all that traffic unless he makes a career out of running a BBS. I know, when I had my full service board running, Many times I would have 700 messages in memory and it was a big job just to take a look at them. Most of it was classic "junk" mail and I enjoyed watching the local users read some of the ALLUSA stuff. The local "flea marketeers" went through the FORSALE stuff with speed and dispatch every day. They never missed a "handheld" ad from California or wherever. The "joke" messages were usually looked at by the plain vanilla type ham operators. But the readership of bulletins was pretty poor.

The BBS software tabulates the times a message is read, and I can tell you that with a hundred plus users of my BBS, there were many, many messages that never had anyone but me take a look at them, and frankly, I missed reading quite a few of them myself. It wasn't worth the time!

Packet DXing

Rod, AA7AJ, and I have been exchanging packet messages for quite some time. One of Rod's DX packet friends is Bill, G3CAQ @ GB7MAX.#28.GBR.EU. Bill who would like to exchange packet messages with the USA, or any place else in the world for that matter. So, if you would like to do a little DXing with jolly old England, have at it with Bill in the UK. Just put a message in your local BBS and wait for an answer. A couple years ago GØNJN was the target of a lot of American packeteers; now you can try G3CAQ for an overseas message exchange.

EAVESDROPPINGS

The "eavesdroppings" this month are lifted from the April 1985 issue of

Worldradio. I had forgotten all about the days of the "Woodpecker" which made working DX on RTTY a nightmare from time to time; so, when I recently scanned my column for that month, I thought it would be fun to reproduce some of those comments. For newcomers to the digital ham world, the Woodpecker was an over-the-horizon radar that the Soviet government aimed at the USA. It was in the high frequency bands and it was intermittent. It would run for four or five minutes and then be silent. When propagation was good we could hear it hammering away like crazy in the certain ham bands. It usually had an S-9 plus signals that drove the meter almost to the pin. It sounded much like a giant double-headed woodpecker trying to get grubs out of a tin roof. The wide spectrum scanning arrangement of the radar covered a big chunk of the radio frequency world, so you can imagine what it did to ham radio RTTY. When "Old Woody" sent out its signals, the amateur radio RTTY gang went into orbit, cursing the Russian radar people with all the four letter words known to humanity. Just about the time you would re-establish communications after a blast of radar, and Woody was quiet, the barstards would turn it on again for another multi-minute session of S-9 plus pecking. It weren't no fun, believe me.

April 1985 was also in the poor part of the solar cycle, so the eavesdroppings made reference to that phenomenon. In that column I also wrote a note about the 14.100 MHz beacon program. In those days there were a dozen ham beacons on that exact frequency, and they were spread all over the world. Each station would take its turn and broadcast about 50 seconds of tone at 100 watts, then reduce power to 10 watts for a like period, then 1 watt, .1 watt, and finally .01 watt.

The base beacon station was the UN station in New York. After its turn another DX beacon would come on for his five minutes of frequency use. There were hams all over the world making reception measurements of the various beacon stations, so I wrote to the RTTY users not to clobber the frequency with FSK transmissions.

"THIS RTTY MODE KEEPS YOUR MIND ACTIVE, EVEN IF YOU DON'T UNDERSTAND HOW IT WORKS... THE NICEST THING ABOUT POOR PROPAGATION IS THE FACT THAT THE WOODPECKER SIGNALS DON'T MAKE IF OVER THE NORTH POLE... BEEN TRYING TO FIGURE OUT HOW TO ENCODE THESE RTTY SIGNALS SO EAVEDROPPERS CAN'T DECODE THEM... DO YOU WANT ME TO RUN THE TEXAS BRAG TAPE OR THE REAL ONE?... I WORK RTTY AND MY WIFE WORKS "ASKY" (FOR MONEY) MOST OF THE TIME... RIG RUNS LIKE A WELL-OILED SEWING MACHINE BUT WOULD RATHER HAVE IT RUN LIKE A NEW TRANSCEIVER... DO YOU DRIVE A CAR THAT WAS CARRIED OUT IN YOUR LUNCH BUCKET (LIKE THAT NEW SONG)?... WE HAVE NO CRIME HERE EXCEPT FOR THE SKI CROWD ON THE WEEKENDS ... I'VE BEEN PRUNING A PEACH OF A PROGRAM FOR MY APPLE... YOUR SIGNAL WAS COVERED UP BY AN "RY" FACTORY... WHY IS IT, WHEN YOU WANT TO FIND OUT THE SOLAR FLUX AND YOU TUNE IN WWV, IT IS ALWAYS 19 MINUTES AFTER THE HOUR... PLEASE QSL AS DELAWARE IS JUST AS RARE AS NORTH DAKOTA... IT IS SUPPOSED TO READ: VEGETATION RECYCLED THROUGH A HEREFORD BULL... WHEN I ROTATE THE BEAM I LOSE THE RTTY PROGRAM ON THE COMPUTER... I TRANSMIT HIGH TOMES ON THIS ROBOT UNIT... THIS IS ONLY A HOBBY, I'M NOT TRYING TO SEE HOW MUCH WORK I CAN CREATE... I'VE GOT THOSE LOW-FLUX DX BLUES... THAT REMINDS ME OF A FUNNY STORY THAT I CAN'T THINK OF AT THE MOMENT...

My how time has flown by. The Woodpecker is gone, but the solar cycle is doing its eleven year fade. The experts tell us that the 11 year solar cycle is skewed: the bottom flux is 66 and it goes up in four years and down in seven. When I hear WWV broadcast the flux at about 100, I know the bottom is on the way.

Thanks to AA6AJ, K6VV, WØML, WCØM, for help with this column. If you wish to communicate with me, my address for postal mail is Bill Snyder, 1514 S. 12th St., Fargo, ND 58103. My packet address is WØLHS @ WØLHS.#SEND.ND.USA.NA. 73 de Bill. DIT DIT. WR

NO, HERMAN'S TALKING ON THE RADIO DOESN'T BOTHER ME A BIT!

YLs on the Air

Kay Eyman, WAØWOF
Route 2, Box 366
Garnett, KS 66032

Coming events

9-10 April NZ WARO Thelma Souper Memorial Contest
13-15 April DX YL to NA YL (CW)
27-29 April DX YL to NA YL (SSB)
30 April YLRL Forum at Dayton Hamvention
6 May YL Day at W1AW
YL Activity Day — The 6th of each month.

DX YL to North American YL Contest

If you're a YL who enjoys working YLs in other countries, this is the contest for you. 1994 will mark the 20th year for this YLRL contest, which was originally called DX-YL to Stateside YL. The CW portion of the first contest began on 9 January, 1974, and the Phone portion began on 23 January. Both ran for 24 hours.

The DX YL with the highest phone score in 1974 was May Jones, VE1AMB, who had 1075 points, and in second place was Darleen Magen, now WD5FQX, who was operating then as HC2YL, from Ecuador, with 666 points. The highest scoring stateside YL on phone was Phyllis Shanks, W2GLB, with 260 points, and Marcia Rast, K6DLL, was first on CW, with 150 points. Darleen, Phyllis, and Marcia are still among YLRL's top contesters. Make your plans now to join them in the 1994 DX YL to NA YL contest. Logs go to YLRL Vice-President Carla Watson, WO6X, and must be postmarked 30 days after each portion ends. Complete rules will be published in the major Amateur Radio magazines, or you can write me for a copy.

YLRL Forum at Dayton

YLRL President Dr. Christine Haycock, WB2YBA, will be the Moderator for the YLRL Forum at the Dayton Hamvention, which will be held at 11:45 a.m., on Saturday, April 30, in Room 2. Christine is planning an interesting program, and there will be some DX YLs in attendance, including Raija Ulin, SMØHNV. You should be forewarned, however, that there may be no scheduled bus service between the hotels and Hara Arena this year. You might want to read the fine print in the "free bus service" headlined in the Dayton Hamvention ads for 1994.

YL Day at W1AW

The Women Radio Operators of New England (WRONE) will be holding their annual spring luncheon in the Newington area on 7 April, with YLs attending from all the New England states. The Burdens, Dot, KA1LDS, and Bill, WB1BRE, have organized a special event at ARRL Headquarters for the day before, and there will be YLs operating throughout the day at W1AW. This will also coincide with YL Activity Day so 6 May should be a good day to meet some new YLs.

Girl Scouts and Amateur Radio

Special events station NØYL was set up at the 46th National Girl Scout Convention on 21-25 October, 1993, in the Minneapolis, Minnesota, Convention Center. Twenty-five operators from the 33s, a local YL club, helped operate the station during the exhibit hours. Ann Foster, NØLLC, was in charge of setting up the station, recruiting operators, and arranging the loan of equipment. The station call letters were loaned by Eddy Thorsen.

A packet station, HF station, and a 2M station were included. A large poster showing the world map, with call prefixes highlighted, listing the many activities of hams, and samples of QSL cards was displayed. This was made by Fran Warzeha, NØOKY, Terri Jacobson, NØOEK, and Audrey Zellman, NØOKX.

The station sent many radiograms to friends and relatives. Contacts on HF included Alaska, a Boy Scout special event station in Chicago, as well as stations in the South, Midwest, and far West. More than 47 stations were contacted on the 2M band.

A new flyer promoting Girl Scouting and ham radio was introduced and presented to more than 500 Girl Scout adults from around the United States. Questionnaires requesting information on ham radio were returned from 23 states.

Arline Berry, N1OMA, of Boston, Massachusetts, was in charge of the project. She's taken on the challenge of promoting Amateur Radio for the Girl Scouts and is now developing printed materials. ARRL sponsored the booth and supplied the printed materials. Contact Arline for materials if you're also working with the Girl Scouts. Her address is 6 Causeway Lane, Medfield, MA 02052.

The French YL Award

This award is available to any licensed Amateur Radio operator in the

world, as well as to SWLs. For the basic award, the Diplome de Base, you must work 10 YLs. Submit QSLs for 10 YL contacts, which must include 5 French YLs, and YLs on 3 different continents. For the second level, the Diplome d'Honneur, you must contact 100 YLs. Submit QSLs from 100 YLs, with 5 French YLs and YLs on 3 different continents. For the third level, the Trophee YL, submit QSLs from 500 YLs, including 5 French YLs, and YL contacts from 6 continents. For all three levels, include QSLs, a list of the claimed contacts, including the French department of the French YLs, and the country of the other YLs. (For VHF stations, the continents can be replaced by countries from the DXCC list.) Send your QSLs, list of contacts, and 12 IRCs to the Award Manager, Madame Gilda Le Gall, F6FMO, Quilvidic, 29300 Mellac, France.

YL Updates

Congratulations to Doris Smith, WD8IKC, of Canton, Ohio, who received the "Ham of the Year" award from the Massillon Amateur Radio Club at their recent awards banquet. Doris also received this award four years ago, so it was a special honor to be recognized again.

You'll need to hurry if you haven't worked Kiyoko Yamakami, 9N1KY. She's a nurse in Nepal, but she'll be leaving in April. If you made a contact, you can QSL to Box 3, Tokaimura 319-11, Japan. Kiyoko has also operated from the Pacific as NH6RT. (Courtesy of The DX Bulletin and DXNS.)

Linda Gibson, HSØZAL, can often be found on The Family Hour Net on 14.226.5 MHz. She is a missionary nurse at the Bangkla Baptist Hospital, and her husband John, HSØZAK, is a doctor. Linda and John are both members of the Southeastern DX Club, in Atlanta, and are active on the bands. Their address is Bangkla Baptist Hospital, Box 1 Bangkla 24110, Chachoengsao, Thailand.

Donna Schrage, 9K2YY, and her husband Tom, 9K2ZC, are on the air from Kuwait now. Donna can be found on all bands, but she prefers 20 and 15 meters, and the weekends are the best time to find them. Check Saturday and Sunday mornings around 14.190 MHz. Donna operates mainly on phone but is also active on CW. They're using a Kenwood TS-450S, a Kenwood TL-922 amplifier and a beam. The first QSL cards are being printed now and the computer logs are on the way to their QSL Manager, who is Derek McClure, KC4ELO. Please don't send cards through the bureau. Donna's stateside call is NØYKI, and Tom's is KIØK.

I'll be operating from Ireland as EI7HQ during the first two weeks of April. Ireland is not nearly as rare as Nepal, Thailand, or Kuwait, but the only EI YL that I've run into on the bands for the past three or four years is Sheena Mitchell, EI9GP, in Wicklow county. Sheena serves as the QSL Manager Outwards for the Irish Radio Transmitters Society (IRTS) and usually participates in the annual St. Patrick's Day operation. And, by the way, the IRTS offers a beautiful certificate for working at least 20 of the 26 counties in Ireland, and St. Patrick's Day is a good time to start on it. Only 36 certificates have been issued to date, so it isn't an easy one, but it's definitely a lot of fun to work for! **WR**

One of the most difficult things to give away is kindness — it is usually returned. — Cort R. Flint.

Search And Rescue Communications

Jerry Wellman, WB7ULH
P.O. Box 11445
Salt Lake City, UT 84147

A question facing many emergency service providers is when do you draw the line? Today's "line" is the risk involved in a rescue and the focus is on people who push the envelope of common sense.

Take for example the pilot who "forgets" a weather briefing and flies into severe weather. Or the skiers who venture into avalanche risk areas on purpose. More than one SAR team has expressed agitation at pulling hikers out of areas where they shouldn't have been.

People are generally compassionate when it comes to a child that has wandered off during a family outing, or the hiker, skier or pilot who is missing because of events they could not anticipate. But with today's potential for liability and expense to the SAR provider, many agencies are taking second looks at the lost people themselves.

Preventive SAR

Many years ago groups such as the National Association for Search and Rescue promoted preventive SAR. Children were taught to hug a tree and adults were asked to consider their abilities and leave trip plans before setting out. I recall American Red Cross courses that teach First Aid as well as how to avoid problems in the first place. Boy Scouts also receive common sense training such as not to camp in flood-prone areas and to employ the buddy system during activities.

You may recall a massive search for seven skiers a year ago that cost the Pitkin County (Colorado) sheriff about $16,000. When you add in snowmobiles, snow cats, airplanes, choppers and support, the cost adds up pretty fast. A great many volunteer SAR people (including Amateur Radio operators) donate their time, skills and equipment. However look at the costs to a helicopter provider — one day's search would pay for a real fine Amateur Radio shack! It would be unfair to ask such companies to donate that kind of money on (sometimes) a weekly basis.

Last November an Associated Press article from Canada reported that up to 60 hunters required rescue after they were stranded in a snow storm. These hunters were not prepared for the sub-zero temperatures and several even attempted to walk out, suffering major frost bite.

Although the story didn't say it, I'm sure a number of rescue people wondered why these idiots would take to the hills in the middle of winter and ignore the potential and be unprepared for cold and stormy weather.

A bill for services

Two climbers in Yosemite National Park were surprised when they got a bill after their rescue. Never mind that they ignored weather forecasts and got trapped in cold rain and became very hypothermic. Never mind that a Park Service rescue team had to helicopter to the site in the darkness and scale a difficult rock face to reach them.

The Park Service reported the climbers were experienced — seasoned mountaineers — and should have known better than to risk themselves AND rescuers. According to the Park Service they've begun an experimental program that will bill rescued people who engage in high-risk events. Park officials even say that some day it might come down to publishing a list of activities that are so dangerous and pose such a great risk to rescuers that rescues won't take place.

There are many on both sides of the debate. No one is suggesting that victims of unpredictable events be ignored or charged — for that isn't an issue. What is at issue is the huge cost to society when people take risks beyond what is prudent.

I think too, you're going to see this in non-rescue events such as when people smoke in bed and set their house on fire. You may see fire departments charge for the response as well as file criminal charges in the case of injury. There have been discussions during construction projects that large buildings impede emergency response efforts. When I read about firefighters taking HOURS to climb to the top of the World Trade Center towers, I was almost angry. Why should a firefighter have to lug rescue equipment up so many stairs? Why should a community have to incur tremendous costs at the expense of these large highrise structures?

You may argue about the tax revenues and convenience of such structures and this must be considered. I just wonder where the line will be drawn and who will draw the line.

The parallel I want to draw for communications people is that you not get caught unprepared. There's subtle reasoning that suggests the more experienced you are, the more that's expected of you.

Are you prepared?

In the midst of many, even heroic efforts during recent snow storms, floods and earthquakes on the part of Amateur Radio operators there are the stories of the unprepared hampering efforts. Don't ignore preparedness. Don't ignore training and practice. Being a volunteer still doesn't mean you're held to any less a standard than the paid folk.

When you show up at the Emergency Operations Center or the Red Cross shelter, you're the communications expert. They don't care if you're paid or not, they expect you to do a job. It concerns me that emergency critiques continually mention communications problems — the SAME communications problems.

I suggest that 95 percent of us know what to do to get prepared and trained but that only five percent are willing to get prepared and trained. Several communications managers reported turning away untrained operators during recent emergencies. These managers simply said these people never attended training, assumed they were qualified because of "longevity" and were poor team players.

What saddens me is the solutions are simple. Training is available! Per-

haps it's time to take a reflective look at ourselves, at our leadership skills, at our level of training and see if we're not part of the problem. The message isn't to quit or give up, but to make some changes to get on the right track. This isn't rocket science — it's simple common sense.

When we prepare and gain experience through training we also get a chance to work with people. These people are our most important resource. Learn people skills! Think about when you were badly treated or how a leader failed to inspire you. Then don't perpetuate the injustices — change your habits so you don't contribute to bad feelings. Don't do what you didn't like done to you!

You know what to do — Now DO IT!

No one knew

Did you know you missed the boat following the 17 February temblor in California? Yep, you did.

Raise your hand if you helped during the quake in any way. Lots of you handled health and welfare traffic. A great number worked within the quake area with disaster agencies. Packet messages were sent, teletype messages were sent, voice messages were sent and I even copied (more than I expected!) Morse code messages.

Put your hands down. Now, raise your hand if you issued a press release or got a news article published or on the air concerning your efforts. I see a couple of hands, but not many.

Shame on the rest of you!

My work computers are tied into Associated Press, United Press International, Reuter, New York Times Service, Los Angeles Times Service, Gannett News Service — heck we even get thousands of computerized press releases each day. But only one story came across the news network that mentioned Amateur Radio and the California earthquake. This story was from St. George, Utah and told of health and welfare traffic being handled via the Cactus system.

I did find articles about cellular phones being donated and about Red Cross volunteers. There was mention of volunteer urban SAR teams and one obscure mention of a FEMA activated communications team (although the story didn't give any facts as to who or where).

There were also radio reports both locally and on KFI (Los Angeles) claiming difficulty with the phone system and interviewing Red Cross people who expressed frustration in making contacts within the quake zone. Why didn't your local Red Cross chapter know about Amateur Radio?

Take a few minutes to consider the tremendous boost to Amateur Radio if some local contacts were made on a regular basis with the media and emergency service providers.

Taking names

On this issue I must take the ARRL field structure to task. Hey Section Managers are you listening? You've appointed people into these areas and you're in charge. What are you doing! The folks in Newington simply cannot do it alone! And section members! You elected them, it's time to hold them accountable! Are you getting tired of seeing nothing happen outside of the Amateur Radio circles?

I'm preaching activism here — find out who your ARRL Section Manager is and get specific. What are they doing to promote Amateur Radio? Ask them for copies of emergency plans and press releases. Find out who they're talking to at your local media outlets. Do you know each section manager has an annual budget? Where is this money going to help Amateur Radio in YOUR section?

Get involved. If you find these people you elected to be less than motivated, boot them out next election. If you really want to be scared — I did see one article about a Citizens Band group. And we wonder why people don't know what we can do during emergencies.

I repeat, get involved!

Until next month, best wishes from Salt Lake City. **WR**

BOY, THIS IS THE BEST 2 METER HOT SPOT I'VE EVER SEEN !

1940 Wetherly St.
Riverside, CA 92506

It's back! The HW-8 Handbook

What began about six months ago with a question from readers on where to find a copy of the "HW-8 Handbook" has ended with the long awaited reprint of the world renowned modification manual for the Heathkit series of QRP transceivers.

Copies of the much sought after handbook compiled by Michael Bryce, WB8VGE, rolled off the press in late January, well ahead of an "early spring" deadline.

The "HW-8 Handbook" is now available to North American radio amateurs (including VE) for $11, which also covers first class postage. For DX other than VE, it's $15, which covers air mail shipping. To order, send a check or money order to: Michael Bryce, WB8VGE, 2225 Mayflower NW, Massillon, OH, 44647.

Bryce says there are no new modifications added to the original text, but corrections have been made to errors that crept in to the early edition.

Readers of this column have for months been expressing interest in the reprint, and their comments were forwarded to Bryce.

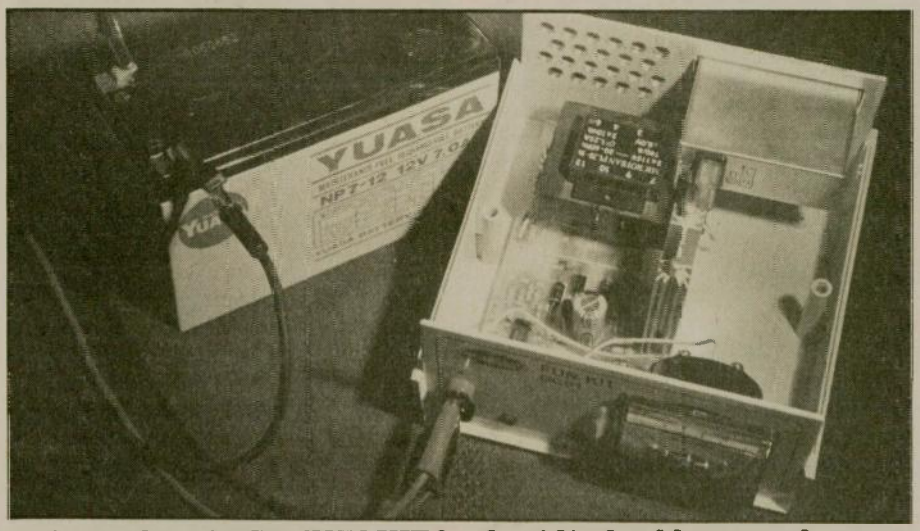
Among the latest in this group are: Ed Sylvester, KA6DBY, Long Beach, CA; Lee McPherron, KCØJS, Thornton, CO; Fred Weatherly, WA4QJE, Decatur, GA; Art Williamson, NØTNJ, Staples, MN; Bob Morgenstern, WA2EAW, Flushing, NY; and Doug Cannon, Livermore, CA.

To them, and all who took the time and effort to let their desire for a reprint be known, thank you very much.

A FUN-KIT for beginning builders

Many would-be, first time homebrewers have gazed out upon the QRP kit landscape lately, only to see a mine field.

Chief among the worries is that most of what's out there is just too complicated for someone who has never before used a soldering iron. And of the handful of kits that are relatively simple, many have sets of instructions that raise more questions than they answer.



Jade Products' BC01 FUN-KIT lead-acid/gel-cel battery charger.

For what is sometimes a substantial investment, many beginners balk at taking the risk.

Isn't there anything on the market today specifically designed and tailored for the radio amateur who has never built anything, but would like to give it a try?

Consider Jade Products' FUN-KIT dubbed the BC01. It's a lead-acid/gel-cel battery charger that not only has tremendous application in the world of QRP, but also is a simple, non-threatening way to take the plunge into QRP homebrewing.

In simple terms — and those are very important bywords here — it's a charger that has electronic circuitry designed to sense when a battery is getting low and to automatically apply a charge when necessary.

One printed circuit board holds the majority of parts in this kit, but there are also power connectors, LEDs, a meter and other off-board hardware to mount before the kit is completed. There are lots of fundamental building techniques to be learned and practiced by the simple task of putting this FUN-KIT together.

An indication that the people at Jade have taken nothing for granted in assuming builder experience is shown in the BC01's instruction manual. Its 90 pages take the builder through the most basic steps of everything from parts identification and soldering to the art of preparing an IC chip for board mounting and putting the cabinet together.

The manual is divided into 13 easy-to-understand sections. Parts are packaged in envelopes marked for each corresponding section during the construction process.

When you're working on Section 3, for example, you're dealing with only the handful of resistors that are needed to build that portion of the BC01. This methodology makes for a very tidy, logical and simple construction project. It also establishes some good places to take a breather along the way.

The manual has lots of diagrams and drawings to assist the builder in keeping focused on just that part of the project that needs attention at the moment.

Eight-plus pages of the manual are devoted to the unit's theory of opera-

tion, and after getting the BC01 up and running, there's a lot to be learned from sorting out just how it does its job so well.

The unit can be built for either of two service ranges: 1 amp service, for charging batteries with 4 to 20 amp hour capacity; or 0.5 amp service, for charging smaller 2 to 10 amp hour batteries.

Since the bulk of my stock of batteries ranges from 6.5 to 17 amp hours, I selected the 1 amp service range.

Having previously kept lead-acid batteries charged with a small, homebrew solar panel, I found that some were in need of a hefty charge.

Two cables attached to the BC01's front panel connected one of those tired batteries to the charger. After plugging the unit into a 110 VAC wall outlet, the power switch was flipped to "ON," and the FUN-KIT went to work.

A green LED on the front panel glowed, showing the power was on. The needle on the large panel meter rose quickly, indicating the unit was charging the battery. As the afternoon went on, the needle slowly worked its way down lower and lower, indicating that the charging current was diminishing. As the battery got closer to being "topped off," a yellow LED glowed, indicating FINAL CHARGE.

When the battery is fully charged, the meter needle sits at zero, and the yellow LED no longer glows.

The BC01 makes it very easy to see the operating condition of the battery.

The tools needed to assemble the BC01 are nothing exotic: pliers, needle nose pliers, diagonal wire cutters, Phillips screwdriver, 22 to 25 watt soldering iron, a ruler, and a digital volt-ohm meter.

While this may be a beginner's project, don't think that the quality of the parts, PC board or cabinet suffer as a result. It's all top flight, very nicely packaged, and fits together like a glove.

Behind this kit and Jade Products, Inc., are Jane Blanchard, KA1FUN, and Dennis Blanchard, K1YPP, who established this East Hampstead, NH-based company in June 1993.

"Our goals are a bit unique," Dennis says. "My amateur radio experience goes back some 35 years to when I was 12 years old. At that time Heath was in its prime. I grew up with Heathkit.

"Today's youngsters — and oldersters — don't have that Heathkit experience to enjoy any longer. Our long term goal is to fill that void and give people kits that are enjoyable, easy to build and high quality."

Rest assured that Jade is well on its way to reaching its goals.

The BC01 FUN-KIT Lead-Acid/Gel-Cel Battery Charger is $79.95. More inexpensive versions of the kit are available for amateurs who opt to build the unit without Jade's enclosure or other key parts.

For complete information about the BC01, or other items in Jade Products' kit line, contact the company at P.O. Box 368, East Hampstead, NH 03826. Telephone 603-329-6995.

Catalog of the month

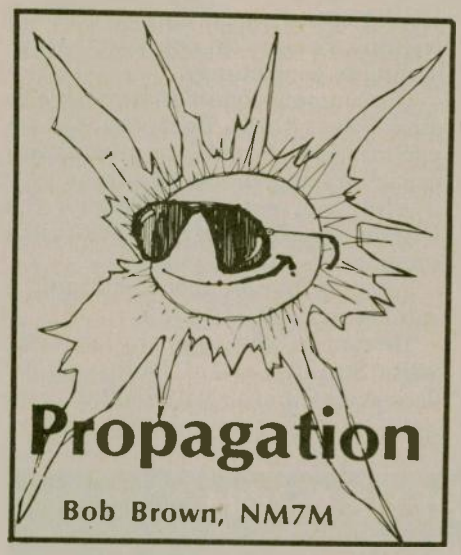
If you're occasionally in the hunt for some of those hard-to-find components for antenna tuners, transmitters, receivers or antennas, Surplus Sales of Nebraska's hefty catalog is well worth adding to your library.

The company, based in Omaha, NE, stocks everything from variable capacitors and toroids, to silver mica capacitors and enameled wire.

While not catering solely to the QRPer, there's plenty of QRP-suited components to be found.

For information about obtaining a catalog call 402-346-4750.

To contact the company by mail, write: Surplus Sales of Nebraska, 1502 Jones St., Omaha, NE 68102. WR



For better or worse, most of us take the ionosphere, and the propagation that goes with it, just as it comes. True, we do keep an eye on the indicators of solar activity and refresh our memories about paths when DXpeditions loom over the horizon. Of course, when it comes to DXing, we know that disturbances are part of the scene. In fact, sometimes I dwell on them too much, perhaps giving the reader that they're more the norm than the exception. For that, I apologize.

At this point, I want to change your vocabulary a bit, speaking of "modifications" rather than disturbances. Thus, I want you to think that the significant disturbances or changes of the ionosphere, beyond those associated with the rising and setting of the sun, represent some sort of "modification" produced by an outside source.

Well you might say that's not quite right as back in February '93 I wrote about the ionospheric effects that one might observe in connection with a total eclipse. There, sunlight on the ionosphere was turned off briefly along the path of the eclipse. I would argue that the moon was the outside source of the "modification." Fair enough?

Of course, the ionosphere is modified whenever it is bombarded by charged particles or photons coming from the sun or an aurora. In those cases, additional ionization is created in the various regions and we note the effects usually by the signal absorption which results. Clearly, the particles and photons are the outside source I refer to.

While I won't call ionospheric modification a "crime," I should point out that there are "inside jobs" as well, the properties of the ionosphere sometimes changed from below. How about that? So let me tell about some of them.

In the '60s, when rocket technology had come on the scene, nuclear explosions were carried out at high altitudes, most often over the Pacific Ocean. A nuclear "fireball" right at ionospheric heights could "blow a hole" in the ionosphere, the large energy release carrying away local atmospheric constituents and ionization at the time of the blast while ionizing more distant regions by radiation effects.

One aspect of weapons blasts that might interest you results from the effect of the geomagnetic field on charged particles. From our discussions about ionospheric physics, you know that the geomagnetic field really is the controlling factor of the ionosphere. It has that role by virtue of the fact that ionospheric electrons, on being released by solar photo-ionization, are restrained to spiral around the field lines.

That would be true of electrons released by a nuclear blast although the electrons would be much more energetic, by a factor of about a million, and spiral around the field lines with larger radii. But the thing that's different about nuclear explosions is that the nuclear debris, fission products, are thrust up into the atmosphere and may undergo radioactive decay at great heights and later times.

As a result, decay electrons from fission products may be placed on geomagnetic field lines far from the explosion site. And if the decay electrons start their motions with a significant component of velocity along the direction of the geomagnetic field, they essentially "slide down" the field lines until they run into the denser parts of the atmosphere below.

At this point, you must see what I was driving at: decay electrons entering the lower ionosphere and producing effects such as D-region absorption at sites thousands of miles from the explosion. But, as I mentioned, those decay electrons can be quite energetic and not only produce local ionization but also X-rays which can go even deeper into the atmosphere.

That's where I got involved back in the '60s, trying to pick up X-rays over Alaska from fission electrons which got their start out in the Pacific Ocean over Johnston Island. I had plenty of balloon-borne X-ray detectors but never seemed to have a payload up at the right time. A friend in Tasmania was luckier, picking up a burst of X-rays from electrons which went down field lines toward the Southern Hemisphere.

There were other "inside jobs" which affected the ionosphere back in the '60s and '70s, now due to spacecraft going through ionospheric heights. Back in the early days of manned spaceflights, we often heard about the communications black-out on re-entry, the shock wave in front of the vehicle raising temperatures to the point that atmospheric gases were ionized. Those levels of ionization were very high as VHF/UHF signals could not be received from the vehicle during that part of its re-entry.

Oddly enough, there were other "inside jobs" where ionization was essentially removed from ionospheric heights, not created. A wonderful example of that showed up in the days of Skylab. As the story goes, some radio scientists in Massaschusetts were monitoring the ATS-3 satellite, using the Faraday rotation of its signals to find the total electron content of the ionosphere along its line of sight. All of a sudden, at about 1240 EST on May 14, 1973, the electron content started dropping and reached 50% of normal in less than an hour.

As you've already guessed, the launch of Skylab on a big Saturn V rocket was the cause, its large exhaust plume V depleting the electron content for several hours. Those observations were from Sagamore Hill, MA; observations from several other sites showed that the depletion produced a "hole in the F-region" that not only lasted several hours but had a radius of about 1000 km!

But what goes on during such depletions? How are free electrons removed from the F-region? Earlier, in July '93 issue of ***Worldradio***, I pointed out that shifts in the molecular/atomic ratio at F-layer heights is responsible for the changes in critical frequencies, summer and winter. That's something like a self-inflicted "inside job," ionization loss being stronger (summer) when the ratio increases and production of ionization being stronger (winter) when the ratio decreases.

So we're really down to the chemistry that goes on at F-region heights and in the case of the Skylab flight, the mechanism apparently involved a rapid interaction between atomic oxygen ions at F-region heights and molecules of hydrogen and water-vapor from the exhaust of the second-stage engines. Of course, the aerodynamic turbulence of the rocket flight and winds at those altitudes served to disperse the material over great distances.

Normally, electrons and atomic oxygen ions recombine very slowly by a radiative process in which a light quantum is emitted as an oxygen atom is reformed from the ion and the electron. But at F-region heights, the atomic oxygen ions slowly swap positions with oxygen atoms in molecules to form molecular ions which then recombine with electrons at a faster rate.

As a result, there is a slow, indirect decay of the F-region with night-time while the D-and E-regions essentially disappear as electrons recombine directly with molecular ions after sunset. The introduction of large amounts of hydrogen and water-vapor from the flight of Skylab served to alter the ionospheric chemistry along the same lines, thus changing atomic oxygen ions into hydroxyl ions which then recombined very rapidly with electrons.

The "inside jobs" discussed thus far are all man-made, of electro-magnetic, radioactive or chemical origin. But what about F-region effects of mechanical origin, either natural or man-made? Surely, that would be a possibility, say with earthquakes or explosions. So let's look at what goes on there.

As you know, our F-region is nothing but a collection of free electrons and positive ions surrounded by many more atoms and molecules. In short, it is a lightly ionized gas. But being a gas, it will carry sound waves and show all the mechanical motions that we think about when it comes to weather. There is one difference, however; except for down in the D-region, there is little water vapor to worry about so puffy clouds are not our concern but any lumpiness or localization in the electron concentration would be of interest.

The natural modifications that take place are associated with powerful effects, say severe weather disturbances like hurricanes, thunderstorms, earthquakes and volcanic eruptions. Thus, waves may originate as deep as the earth's surface and then travel upward, exciting changes in the ionization in the F-region which may be picked up by their effect on radio propagation. Even the relatively tame, slow moving eclipse will give rise to acoustic-gravity waves in the ionosphere by the cooling which results from the Moon's shadow moving across the atmosphere.

Man-made modifications by mechanical means of something as remote and extensive as the ionosphere also requires powerful disturbances as well. Thus, accidental explosions of ammunition dumps or large chemical plants may produce detectable ionospheric effects. Of course, the pressure waves from nuclear explosions produce powerful pressure waves which may propagate to great distances and affect the ionosphere along the way.

In summary, you now have a new term to mull over, ionospheric modification. So the next time you hear a big signal on the bands and think, as I often do, "That guy's burning a hole in the sky," you know that the phrase actually has some meaning. And if you live near one of the rocket launch sites, say in Florida and California, you might take note of rocket launches and whether you detected any ionospheric effect at the times in question. It would be interesting to know! WR

WITH THE HANDI-HAMS

Camp? Are you kidding me?

A nervous young woman listens intently as her instructor explains F.C.C. rules about power limits. She cannot see, so she will have to remember what she hears to pass the test at the end of the week. In another class, a middle-aged man wheels his chair closer to the table, so that he can pass a tactile diagram of the ionosphere to a fellow student, who will "see" it with his fingers. . . .Everyone is expected to help, because this is HANDI-HAM Radio Camp, a time to learn radio, but also a time to experience the very best tradition that Amateur Radio has to offer: hams helping hams, sharing the world's finest hobby with people who have physical disabilities!

The word "camp" might bring to mind those days of basic training you enjoyed so much when you joined the military, or maybe you think of roughing it in the great outdoors, backpacking to a secluded campsite, pitching a tent, and hanging your lunch from a tree branch so that the bears won't beat you to it.

Radio Camp isn't like that.

Yes, I know we call it "camp, but it's really something quite different; kind of an eclectic mix of people, ideas, and things to do a la carte. It's almost as if you combined parts of your local hamfest with Field Day, a club meeting, and Saturday morning coffee, only for a week. In Malibu. In fully accessible buildings, not tents.

Here's how it works: HANDI-HAM members with physical disabilities or sensory impairments are eligible to be "campers," which means that they can attend camp for the purpose of upgrading their licenses, getting that all important first ticket, or sharpening their operating skills. Volunteer members of HANDI-HAMS, who may or may not be disabled themselves, attend camp as instructors. Counselors are trained caregivers, employed by Courage Center's Camping Department to attend to the physical needs of campers through the week. Camp staff provide the rest of the things needed to make the week MOST un-camplike: delicious food and comfortable accommodations!

Daily classes cover Novice through Extra theory. Operating Skills class offers the opportunity to learn message handling, net operation, digital modes, and code. One-on-one instruction is available, and campers get "hands-on" experience with rigs and computers throughout the week.

Evening and afternoon programs range from the offbeat (Karoke!) to the practical (emergency preparedness). Sometimes we DO roast marshmallows and sit around a fire. . . .This IS camp, after all!

By Saturday everyone is ready for testing. The VE team arrives and sets up shop, then it's, "NEXT!" But you pass your exam, as do most of your fellow campers, and you're ready to join the worldwide community of Amateur Radio!

Now, who'da thought you could do THAT at a camp?

Do you know someone with a physical disability who would enjoy Amateur Radio? HANDI-HAMs can assist persons with physical disabilities or sensory impairments to study for their tickets. Do you want to help a group of special people to help themselves to a fuller life? Contact:

Courage HANDI-HAM System, 3915 Golden Valley Road, Golden Valley, MN 55422; 612/520-0515, fax 612/520-0577. PAT.TICEOGIZ.COM (Internet) **WR**

Volunteer instructor Dr. Dave Justis, KNØS, and camper Ken Carey, KN6CK, enjoy a session at the rig. Dr. Dave's Zepp pulled in Pitcairn the first day!

Visit Your Local RADIO CLUB

ALABAMA

Montgomery Amateur Radio Club, (W4AP). P.O. Box 3141, Montgomery, AL 36109. Meets 3rd Mon./monthly, 7 p.m., State Trooper Dist. Office, Coliseum Blvd. & Federal Dr. Nets Sun. 8:30 p.m. 146.84- & Thurs. 8:15 p.m. 147.18+. Info: Fred, K8AJX, (205) 270-0909.

ALASKA

North Pole Hamsters ARC. Meets 1st Mon./monthly, 7 p.m., VFW Bldg., Old Rich Hwy. & VFW St., P.O. Box 56424, North Pole, AK 99705.

South Central Radio Club. 8023 E. 11th Ct., Anchorage, AK. Meets 2nd Fri./monthly, 7 p.m., UAA Business Ed. Bldg., Rm. 220. KL7CC, (907) 338-0662 for info. Club rptr: KL7CC/R 146.37/146.97 PL 103.5 Hz.

ARIZONA

Central Arizona DX Assoc., (CADXA). Meets 1st Thurs./monthly, 7 p.m., Salt River Project Pera Club, 1/2 mi. West of 68th & Continental Dr., Scottsdale, AZ. Rptr. K5VT 147.32/92. Packet Cluster nodes (S): 145.09, 144.93, 145.03. Info: (800) 283-4319 or (602) 876-2718.

Cochise Amateur Radio Assn., (CARA). Meets 1st Mon./monthly, 7:30 p.m. at club facility on Moson Rd., Sierra Vista, AZ. WA7KYT/R 146.16/76 rptr.

Scottsdale Amateur Club. Meets 1st Wed./monthly, 7:30 p.m., Scottsdale Sr. Cntr., 7375 E. 2nd St., Scottsdale, AZ. Net Tues., 7 p.m., 147.18 rptr. Info: Barney Fagan, KB7KOE, (602) 861-2817.

Tucson Repeater Assoc., P.O. Box 40371, Tucson, AZ 85717-0371. Meets 2nd Sat./monthly, 7:15 p.m., Pima Co. Sheriff Bldg., 1750 E. Benson Hwy. Net Thurs. 7:30 p.m. 146.22/82 (146.88-, 147.08-, 448.550-, & 145.15 Packet).

CALIFORNIA

Amador County Amateur Radio Club. P.O. Box 1094, Pine Grove, CA 95665. Meets 1st Thurs./monthly, 7:30 p.m., Jackson Sr. Cntr., 229 New York Ranch Rd., Jackson, CA. Info: call 146.835.

Amateur Radio Club of El Cajon, WA6BGS. P.O. Box 50, El Cajon, CA 92022. Meets 2nd Thurs./monthly, 7 p.m., La Mesa Church of Christ, 5150 Jackson Dr., La Mesa, CA. Rptrs. 147.675(-), 224.08-. PL 107.2. Nets 147.570 Wed./Sat., 7 p.m. Info: (619) 697-2700.

Calveras Amateur Radio Society, (CARS), WA6YGA. P.O. Box 391, Angels Camp, CA 95222. Meets 3rd Thurs./monthly, 7:30 p.m., Fire Dept., 1404 Hwy 4, Angels Camp, CA. Net each Mon., 7:30 p.m., WB6MFV/R, 145.170(-), PL 100 Hz. Contact N6EL, Lloyd, (209) 754-3714.

Conejo Valley Amateur Radio Club, (CVARC). Meets 2nd Thurs./monthly, 7:30 p.m. Thousand Oaks Elks Lodge, 158 Conejo School Rd., Thousand Oaks, CA 91360.

Contra Costa Communications Club, Inc., WD6EZC/R. P.O. Box 20661, El Sobrante, CA 94803-0661. Meets 2nd Sun./monthly (except May & Dec.), 7 a.m., Baker's Square Restaurant in Richmond, CA. Info: Ed Caine, KA60FR, (707) 996-0962.

East Bay Amateur Radio Club, Inc. Meets 2nd Fri./monthly, 8 p.m.-10 p.m., West Co Times Bldg., 4301 Lakeside Dr., Richmond, CA 94806. Info: Rachel Lewellen KB6LHR, (510) 233-5034.

Fullerton Radio Club, Inc., W6ULI. P.O. Box 545, Fullerton, CA 92632. Meets: 3rd Wed./monthly, 7:30 p.m., Sr. Citizens Ctr., 340 W. Commonwealth, Fullerton. Net ea. Tue., 8 p.m. 147.975 (-600). Info: Bob Hastings, K6PHE (714) 990-9203.

Golden Empire Amateur Radio Society, (VEC). P.O. Box 508, Chico, CA 95927. Club call W6RHC, rptr. 146.25/85. Meets: 3rd Fri./monthly, 8 p.m. at 1528 Esplanade, Rm. 110B, Chico.

Golden Triangle ARC, (GTARC). Meets 4th Mon./monthly, 7:30 p.m., Sharp Health Care Activities Rm., 25500 Med. Ctr. Dr., Murrieta, CA 92562.

Kern River Valley Amateur Radio Club. P.O. Box 2611, Lake Isabella, CA 93240. Meets 4th Sat./monthly, 4 p.m. with potluck supper following. Talk-in on 144.50 Simplex.

Lake County Amateur Radio Society, (LCARS). Meets last Thurs./monthly at either Red Cross HQ, Clearlake, or the Nice Community Clubhouse, Nice, CA, 7 p.m. Net Mon., 7 p.m. 146.775(-) for info.

Lee DeForest Amateur Radio Club. Meets 3rd Thurs./monthly, 7:30 p.m., Simpson Neighborhood Center, 305 E. Devonshire, Hemet, CA.

Livermore Amateur Radio Klub, (LARK). Meets 3rd Sat./monthly, 9:30 a.m., City Council Chamber, 3575 Pacific Ave., Livermore, CA. Net Mon. 1900 on 147.12+. For info: LARK Secretary, P.O. Box 3190, Livermore, CA 94551-3190. (510) 447-3815.

Manteca Amateur Radio Club (MARC). P.O. Box 545, Manteca, CA 95336. Meets 1st Thurs./monthly, #1 Firehouse, 7 p.m. Talk-in on club rptr. 146.985- PL 100Hz. Info: (209) 823-3611.

Marin Amateur Radio Club (MARC). W6SG. Box 151231, San Rafael, CA 94915-1231. Meets 1st Fri./8 p.m.; MARC Clubhouse Bldg. 549, HAFB, Novato, CA. (415) 883-9789 (Summer exceptions; contact Pete N6IYU, 924-1578). Sun. AM Club at Red Cross, San Rafael.

Motorcycling Amateur Radio Club. Meets 2nd Sat./monthly, 8 a.m., Denny's Restaurant, 2314 17th St., Santa Ana, CA, (100 yds. west of the 55 Fwy.) Info: Ray Davis, KD6FHN, (714) 551-2010 or (714) 551-1036.

Mount Diablo Amateur Radio Club. P.O. Box 23222 Pleasant Hill, CA 94523. Meets 3rd Fri/monthly, 8 p.m., Our Savior's Lutheran Church, 1035 Carol Ln., Lafayette, CA. Net Thurs. 7:30 p.m. on 147.06(+). Info: George KI6YK, (510) 837-9316.

North Hills Radio Club. Meets 3rd Tue./monthly, 7:30 p.m., Elks Lodge, on Cypress at Hackberry in Carmichael, CA. (P.L. 162.2) Net K61S Thurs., 8 p.m. 145.190. 220 Net, Tue. 8 p.m. 224.40(-).

North Shores ARC. Meets 1st Tues./monthly, 7:30 p.m., So. Clairemont Rec. Cntr., 3605 Clairemont Dr., San Diego, CA. Info: (619) 224-1294.

River City A.R.C.S. Meets 1st Tues./monthly, 7 p.m., SMUD Bldg., Don Julio at Elkhorn, Sacramento, CA. License classes offered. For info contact Lyle, AA6DJ, (916) 483-3293.

Sacramento Amateur Radio Club. Meets 2nd Wed./monthly, 7 p.m. Sac. Blood Ctr., 32nd St. + Stockton Blvd., Sacramento, CA. Info net every noon on rptr. W6AK/R 146.910. Jim L. White, N6UGO, (916) 773-5890.

Sacramento "Old Timers" Amateur Radio Society and Sacramento Valley Chapter #169 QCWA (Quarter Century Wireless Assn.). Meets 2nd Wed./monthly, 8 a.m., Lyon's Restaurant, 1000 Howe Ave. For info contact Paul Wolf, W6RLP (916) 331-1830.

San Fernando Valley ARC. Meets 3rd Fri./monthly, 7:30 p.m., Red Cross, 14717 Sherman Way., Van Nuys, CA. Net every Thur., 8 p.m. KB6C/R 147.735.

Santa Clara County Amateur Radio Assoc., (SCCARA) W6UW & W6UU. P.O. Box 6, San Jose, CA 95103-0006. (408) 249-6909. Meets 2nd Mon./monthly, 7:30 p.m., United Way, 1922 The Alameda, San Jose. Net all other Mon., 7:30 p.m. W6UU/R 146.385+/442.425(+) PL 107.2

Santa Clara Valley Rptr. Society, (SCVRS). P.O. Box 2085, Sunnyvale, CA 94087. (408) 247-2877. 146.76(-), 224.26(-), 444.60(+). 2 meter/220 net Mon. 9 p.m. Mtgs./3rd Fri.

Santa Monica—Westside Amateur Radio Club. Meets 3rd Thurs./monthly, 7:30 p.m., Santa Monica Red Cross, 1450 11th St., Santa Monica, CA. Info Net every Tues., 8 p.m., 146.67(-).

Shasta Cascade Amateur Radio Society, (SCARS). P.O. Box 664, Anderson, CA 96007. Meets: 3rd Wed./monthly, 7 p.m. at the C.D.F. Conf. Rm. Grape St., near Parkview Ave., Redding, CA. Net 146.64, Wed., 8 p.m.

Sierra Foothills ARC. P.O. 3262, Auburn, CA 95604. Meets 2nd Fri./monthly, 7:30 p.m., Firehouse, 226 Sacramento St. Auburn. 10m, Wed. 7:30 p.m., 28.415, 2/220m, Thurs. 7:30 p.m., 145.430(-) (PL 94.8) & 223.86- .

South Bay ARC. P.O. Box 536, Torrance, CA 90508. Meets 3rd Thurs./monthly, 7:30 p.m., Torrance Airport, 3301 Airport Dr., Torrance, CA. Talk-in on WB6MYD rpt. 244.38/78. Info: (310) 328-0817.

Southern California Six Meter Club. P.O. Box 10441, Fullerton, CA 92635. USB Net Tue., 8 p.m., 50.150. FM Rpt. Net Thurs., 8 p.m., 52.86/52.36 tx. FM Smplx, call freq. 50.300.

Stanislaus Amateur Radio Assoc., Inc. (SARA). Meets 3rd Tues./monthly, 7:30 p.m., Stanislaus County Admin. Bldg. (lower level conf. rm.), 11th & H St., Modesto, CA.

Stockton-Delta ARC. Meets 2nd Thurs./monthy, 7:30 p.m., Red Cross Bldg., 747 N. Pershing Ave., Stockton, CA Rptr. 147.165(+). Net Wed., 8 p.m. 146.655.

Tri-County Amateur Radio Assoc. P.O. Box 142, Pomona, CA 91769. Meets: 2nd Mon./monthly, 7:30 p.m., Covenant United Methodist Church, corner of Towne Ave. & San Bernardino Rd. in Pomona, CA.

United Radio Amateur Club, K6AA. L.A. Maritime Museum, Berth 84, Foot of 6th St. San Pedro, CA 90731. Meets 3rd Fri./monthly (except Dec.), 7:00 p.m. Monitors 145.52 Simplex 10 a.m.—5 p.m.

Vaca Valley Radio Club. Meets 2nd Wed./monthly, 7 p.m., Vaca Fire Dist. Stn. on Vine St. in Vacaville, CA. Rptr.: WD6BUS 145.470- PL 127.3. Dan Bissell (707) 446-7411.

Victor Valley Amateur Radio Club. P.O. Box 869, Victorville, CA 92392. Meets 2nd Tues./monthly, 7:30 p.m., Victor Valley Museum, 11873 Apple Valley Rd., Apple Valley, CA. Talk-in 146.94(-), info net Sun. 7 p.m. 146.94(-).

West Valley Amateur Radio Assoc. P.O. Box 6544, San Jose, CA 95150-6544. Meets: 3rd Wed./monthly, 7:30 p.m. (except Dec.) Cambrian Sch. Dist. Office, 4115 Jacksol Dr., San Jose, CA. W6PIY/R. Net Tue., 8:30 p.m. 147.39(+), 223.96(-).

Willits Amateur Radio Society, (WARS). P.O. Box 73, Willits, CA 95490. Meets 4th Mon./monthly, 7 p.m., Brooktrails Fire Dept. (northwest of Willits). Talk-in: 145.13(-), PL 103.5.

Yuba-Sutter Amateur Radio Club, (YSARC). P.O. Box 1169, Yuba City, CA 95991. Meets 2nd Tue./monthly, 7:30 p.m., Yuba City Police Bldg., 1545 Poole Blvd., Yuba City.

CONNECTICUT

Shoreline ARC, (SARC). P.O. Box 256, Westbrook, CT 06498. Meets 3rd Thurs./monthly, 7:30 p.m., Westbrook Ingraham Sch., (203) 245-1969. Call-in: 145.29.

Tri-City Amateur Radio Club. P.O. Box 686, Groton, CT 06340. Meets 2nd Tue./monthly, 7 p.m., St. Lukes Lutheran Church on Rt. 12. Info: Bob, KA1BB, (203) 739-8016.

FLORIDA

Gulf Coast ARC, Inc. P.O. Box 595, New Port Richey, FL 34656. Meets 4th Mon./monthly, 7:30 p.m., 3852 Prime Place, New Port Richey. WA4GDN rptr. 146.67(-).

Indian River ARC, Inc., (IRARC). 597 Capri Rd., Cocoa Beach, FL 32931-3011. Meets 1st Thurs./monthly, 7:30 p.m., Community Church of the Nazarene, 400 Crockett Blvd., Merritt Island, FL.

Orlando Amateur Radio Club. P.O. Box 3262, Orlando, FL 32802. Meets 1st Wed./monthly, Beardall Center, Gore St. & Orange Ave., Orlando. 146.76(-), 145.11(-), 146.82(-), 147.015(+), 443.275. CTCSS 103.5 Hz on all except 146.76.

South Brevard Amateur Radio Club. P.O. Box 2205, Melbourne, FL 32902. Meets 1st Tue./monthly, 7 p.m., Melbourne Public Library, 540 Fee Ave., Melbourne, FL.

Suncoast Amateur Radio Club. P.O. Box 1992, New Port Richey, FL 34656-1992. Meets 2nd Mon./monthly, 7:30 p.m., First Lutheran Church, corner of Polk & Delaware, New Port Richey, FL. Sponsor of WC2G/rptr. on 145.35, serving west Pasco County.

GEORGIA

Dalton Amateur Radio Club, Inc., (DARC). Meets 4th Mon./monthly, 7:30 p.m., Magistrate Court Bldg., corner of Waugh St. & Thornton Ave., Dalton, GA. Info: Bill Jourdain, N4XOG, (404) 226-3793.

HAWAII

Big Island Amateur Radio Club. P.O. Box 1938, Hilo, HI 96721-1938. Meets: 2nd Tue./monthly, 7 p.m., HELCO Auditorium, 1200 Kilauea Ave., Hilo. Talk-in on 146.68(-), 146.76(-), 146.88(-), 147.02(+) & 147.04(+).

Emergency Amateur Radio Club, (EARC). P.O. Box 30315, Honolulu, HI 96820-0315. Meets 4th Thurs./monthly, 7 p.m., Lincoln Elem. Sch., 615 Auwaiolimu, Honolulu. Nets: nightly 7:30 p.m., 146.88 & 146.80. Rptrs: 146.76(-), 148.80(-), 148.88(-), 148.98(-) 146.94(-). Info: (808) 621-5916.

IDAHO

Idaho Society Radio Amateurs. Boise Chapter 146.94. Meets 3rd Tues./monthly, Borah H.S., 7 p.m. Rptr. at 8000. Membership welcome.

Kootenai Amateur Radio Society, (KARS). P.O. Box 5222, Coeur d'Alene, ID 83814. Meets 2nd Mon./monthly, 7:30 p.m., Sheprock Bldg., Coeur d'Alene Airport.

ILLINOIS

Chicago FM Club Inc., (CFMC). 146.76 (PL 107.2)/224.10/224.18/443.75 (PL 114.8). P.O. Box 1532, Evanston, IL 60204. Ham help line: (312) 262-6773. Info net Tues., 9 p.m. on 146.76. Meets 3rd Wed./monthly, 8 p.m.

Chicago Suburban Radio Assn., (CSRA). P.O. Box 88, Lyons, IL 60534. Meets 3rd Tues./monthly, 7 p.m., Mid City Nat'l Bank, 7222 W. Cermak Rd., N. Riverside, IL.

Dupage Amateur Radio Club. (DARC). P.O. Box 71, Clarendon Hills, IL 60514. Meets 4th Mon./monthly, 7:30 p.m., Holy Trinity Church, SE corner of Cass & Richmond, Westmont, IL. Net Sun., 9 p.m. on 145.250. W9DUP repeaters 145.250(-) (107.2PL), 442.550(+) (114.8PL), 224.680(-).

Fox River Radio League. Meets 2nd Tue./monthly, 7:30 p.m., Old Bank Bldg., 900 No. Lake St., lower level, Northgate Shopping Ctr. & Rt. 31, Aurora, IL.

Hamfesters Radio Club, W9AA. P.O. Box 42792, Chicago, IL 60642. Meets 1st Fri./monthly, 8 p.m., Crestwood Civ. Ctr., 139th & Kostner, Crestwood, IL. Nets: Sun. (local) 0100 UTC, 28.41 MHz; Mon. 9 p.m. 146.43 S., Packet Mailbox 145.07. Info: (312) 974-3291.

Peoria Area Amateur Radio Club, (PAARC). Meets 2nd Fri./monthly, 7 p.m., 1401 N. Knoxville Ave. Info: (309) 685-6698. Rptrs: 146.25/85 & 147.675/075.

Schaumburg ARC, (SARC). Meets: 3rd Thurs./monthly, 7:30 p.m., Schaumburg Park Dist. Community Rec. Ctr. at Bode & Springinsguth Rds. Schaumburg, IL. Net 145.23, 8 p.m. Thurs. Info: (708) 213-0910.

Six Meter Club of Chicago, Inc., K9ONA. Meets 2nd Fri./monthly, 7:30 p.m., St. John's Lutheran Church, 47th St. & Brainard Ave., La Grange Pk., IL. Info net every Tue., 9 p.m. K9ONA/R 146.970(-), 443.300(+), 107.2 Hz PL.

The Starved Rock Radio Club, W9MKS. P.O. Box 22, Tabor St., Leonore, IL 61332. Meets 1st Mon./monthly, 7:30 p.m. Rptr. net 7 p.m. Wed./wkly., 147.72/.12.

Tri-Town Radio Amateur Club. P.O. Box 302, Hazel Crest, IL 60429. Meets 1st & 3rd Fri. (Sept.-June), 8 p.m., Hazel Crest Village Hall, 3000 W. 170th Pl. Net Wed. 146.49. Info: (708) 335-9572.

Wheaton Community Radio Amateurs, (WCRA). P.O. Box QSL, Wheaton, IL 60189. Meets 7:30 p.m., 1st Fri./monthly, College of DuPage, Glen Ellyn, IL. Nets Sun. & Tue. 8 p.m., 145.39 MHz. 440 MHz net on Tues., 8:30 p.m. on 444.475 MHz.

York Radio Club. Meets 3rd Fri./monthly, 8 p.m., Elmhurst College (Science Bldg.) Elmhurst, IL. Net Mon., 8 p.m. W9PCS/147.42 simplex. Rptr. 442.875.

MICHIGAN

Chelsea Amateur Radio Club, Inc. Meets 4th Tue./monthly, 7 p.m., Society Bank, 1478 Chelsea-Manchester Rd., Chelsea, MI 48118.

Oak Park Amateur Radio Club. Oak Park Comm. Ctr., 14300 Oak Park Blvd., (same as 9 1/2 Mile Rd., west of Coolidge) Oak Park, MI 48237. Meets 2nd Mon./monthly, 7:45 p.m. Talk-in on our 224.36 MHz or 146.64 MHz.

Utica Shelby Emergency Communications Assoc., (USECA). P.O. Box 1222, Sterling Hgts., MI 48311-1222. Meets 2nd Tue./monthly, (Sept.-June), Donald Bemis Jr. High Sch., 12500 Nineteen Mile Rd., Sterling Hgts, MI (between Schoennher & Clinton River Rds.) Talk-in on 147.18+ 100Hz PL. 24-hr. hot line: (313) 268-6730.

MINNESOTA

Minneapolis Radio Club. P.O. Box 583281, Minneapolis, MN 55458-3281. Meets 3rd Fri./monthly, Mpls. Red Cross Bldg., 11 Dell Place, Mpls, 7:30 p.m. Making waves since 1916.

MISSISSIPPI

Jackson Amateur Radio Club, Inc. Meets 3rd Thurs./monthly, 7 p.m., Am. Red Cross Bldg., Riverside Dr., Jackson, MS 39202.

MISSOURI

Central Missouri Radio Assoc. P.O. Box 283, Columbia, MO 65202. Meets 2nd Tues./monthly, 7 p.m., Boone Electric Coop, 1413 Rangeline Rd., Columbia, MO. Talk-in 146.76.

Gateway To Ham Radio Club, N0DN. Young hams of all ages. Meets 1st Sun./monthly, 2-4 p.m., Sacred Heart Sch., 10 Ann Ave., Valley Park, MO 63088 (St. Louis). Net Sun., 8:30 p.m. 146.94 rptr. Beginners classes, VE exams, Club station & mtgs. Info: Rev. Dave Novak (314) 225-1952 (voice or Fax).

PHD Amateur Radio Assn., Inc. P.O. Box 11, Liberty, MO 64068. Meets last Tue./monthly, 7 p.m., Gladstone Comm. Bldg. (816) 781-7313, Volunteer Examiner Coordinator.

NEBRASKA

The Ak-Sar-Ben ARC of Omaha, NE. Meets 2nd Fri./monthly, 7:30 p.m., Omaha Red Cross near 38th & Dewey St. 146.34/94. Contact Jim Miller (NØORV), (402) 253-8272.

NEVADA

Frontier Amateur Radio Society, (FARS). Meets: 3rd Mon./monthly, 7 p.m., Denny's Restaurant across from Nevada Palace, 5318 Boulder Hwy, Las Vegas, NV. Net Mon. 7:30 p.m., 145.39 Rptr. on Black Mountain. Club info: Jim Frye, NW70, 456-5396.

NEW HAMPSHIRE

Great Bay Radio Assn., WB1CAG. P.O. Box 911, Dover, NH 03820. (603) 755-2600/335-6643. Meets 2nd Sun./monthly, 7 p.m., Rochester Fire Dept. Training Rm.. Talk-in: 147.57.

NEW JERSEY

10-70 Repeater Assn., Inc. 235 Van Emburgh Ave., Ridgewood, NJ 07450. Meets 1st Wed./monthly (except July & Aug.), 8 p.m., VFW, Valley Rd., Clifton, NJ. Rptrs.: 146.10/70, 223.24/224.84, 449.15/444.15.

Bergen Amateur Radio Assoc., (BARA). P.O. Box 304, Hackensack, NJ 07601. Meets 1st Sun./monthly, New Milford Elks Lodge, Patrolman Ray Woods Dr., New Milford, NJ 07646. Nets: 28.350 Mon. 9 p.m., 144.40 9 p.m. Wed.

South Jersey Radio Assoc., (SJRA). Pennsauken Sr. Hi Sch. at Hylton Rd. & Remmington Ave., Pennsauken, NJ 08109. Meets Jan.-Oct., 4th Wed./monthly, 7:30 p.m. (Nov.-Dec. 3rd Wed.). Talk-in: 145.29 rptr. Club call K2AA.

NEW YORK

Amateur Radio Assoc. of the Tonawandas, (ARATS). P.O. Box 430, No. Tonawanda, NY 14120. Meets 3rd Tues./monthly (except July & Aug.), 7:30 p.m., Sweeney Hose Co., 499 Zimmerman St., No. Tonawanda, NY. Talk-in: 146.955/.355 rptr. W2PVL.

Genesee Radio Amateurs, (GRAM). N.Y.S. Civil Defense Ctr., State St., Batavia, NY 14020. Meets 3rd Fri./monthly, 7:30 p.m. 147.285+ W2RCX.

Hall of Science Amateur Radio Club. P.O. Box 131, Jamaica, NY 11415. HOSARC, 2nd Tue./monthly, Hall of Science Bldg., 47-01 111 St., Flushing Meadow Park, 7:30 p.m. Info: Charlie, WA2JUJ, (518) 420-0046.

Orleans County Amateur Radio Club, (WA2DQL). Meets at Emergency Management Office, West County House Rd., Albion, NY 14411, 2nd Mon./monthly, 7:30 p.m. 145.27 — WA2DQL.

PROS, Pioneer Radio Operators Society. Meets 1st Wed./monthly (except July/Aug.), 7 p.m., Masonic Temple, Rt. 78, Java Village, NY. Other Wed., 8 p.m. 145.1701 144.57- Repeater KC2JY.

The Radio Club of J.H.S. 22, N.Y.C., Inc. WB2JKJ. P.O. Box 1052, New York, NY 10002. 24-hr. hotline: (516) 674-4072. Fax: (516) 674-9600. Non-profit org. using Ham Radio to enhance the education of youngsters, nationwide. Join us — "Classroom Net", 7.238 MHz, 7 a.m. E.S.T. PSE QSL!

Suffolk County Radio Club, (SCRC). Meets 3rd Tues./monthly, 8 p.m., Bohemia Rec. Ctr., Ruzicka Way, Bohemia, NY. Talk-in: 145.21 rpt. Morten Eriksen, KA2UIU, (516) 929-6911.

Westchester Amateur Radio Assoc., (WARA). Meets 1st Thurs./monthly, 7:30 p.m., Scarsdale Town Hall, Scarsdale, NY 10583. All invited. Info: Dan Grabel, N2FLR, Pres. (914) 723-8625.

Westchester Emergency Comm. Assoc., (WECA). Meets 2nd Mon./monthly, 7:30 p.m., Westchester County Ctr., White Plains. Contact WB2VUK or call WECA INFORLINE (914) 962-9666 or WECA landline BBS (914) 738-6857 for details. Talk-in WB2ZII/R 147.66/06 MHz.

Yonkers Amateur Radio Club, (YARC). Meets 2nd Sun./monthly, 10 a.m., 1st Pct., Yonkers Police Station, E. Grassy Sprain Rd., Yonkers, NY. Info: P.O. Box 378, Centuck Sta., Yonkers, NY 10710. (914) 963-8995. 146.865-, 445.15/440.15.

NORTH CAROLINA

North Carolina Chapter TSRAC. Meets Mondays, 28.35 on the air, 8:30 p.m. local time, Sat. 10 a.m. on 7240 and Wed. 9 p.m. on 7259. "The Alligators" — all mouth, no ears.

Stanly County Amateur Radio Club. P.O. Box 188, Stanfield, N.C. 28163. Meets 4th Thurs./monthly, 7 p.m. at Stanly Community College, Albemarle, N.C.

OHIO

Ashtabula County ARC. Ken Stenback, AI8S (964-7316). County Justice Ctr, Jefferson, OH. Meets 3rd Tue./monthly, 7:30 p.m. County rptr., 146.715.

Clyde Amateur Radio Society (CARS). Meets 2nd Tue./monthly, 7:30 p.m., Municipal Bldg., Clyde, OH 44811. NF8E rptr. 145.35 and 442.625 MHz. Net Sun. 9 p.m. Info: E. Remaley, KA8CAS.

Firelands Area Rptr. Assn., (FARA). Meets 4th Tue./monthly, 7 p.m., Ohio Veterans Home, Sandusky, OH. WB8LLY rptr. 146.805-/205. Net Sundays, 8 p.m. Info: Rob Harshbarger, N5XRB.

Greater Cincinnati Amateur Radio Assn., (GCARA). Meets 4th Wed./monthly, 7:45 p.m., Cincinnati Museum of Nat. History, 1720 Gilbert Ave. Amateur Radio Station W8DZ. Info: WA8STX or (613) 563-7373.

Lancaster & Fairfield County ARC. Meets 1st Thurs./monthly, 7:30 p.m., American Red Cross, 121 W. Mulberry St., Lancaster, OH 43130. Info net Mondays, 8 p.m., K8QIK/R 147.63- rptr.

Northern Ohio Amateur Radio Society, (NOARS). Meets 3rd Mon./monthly, 7:30 p.m., Gargus Hall, Rt. 254, Lorain, OH. Info: rptr. K8KRG 146.70, DX alert rptr. 145.15.

Springfield Independent Radio Assoc., (SIRA). Call-in 145.45—224.26. Meets 2nd Tues./monthly, 7:30 p.m., Mercy Hosp. & 4th Tues./monthly, 7:30 p.m., Am. Red Cross. Info: Rodney Myers, KB8WV, (513) 399-1022.

Toledo Mobile Radio Association. P.O. Box 273, Toledo, OH 43697. Meets 2nd Wed./monthly, 7:30 p.m., Luke's Barn, Lucas County Rec. Ctr., 2901 Key St., Maumee, OH. Contact: Brian, WD8MXR, 385-5624.

Triple States Radio Amateur Club. Meets Wed./weekly on 28.48 at 8:30 p.m., 7260 at 9 p.m. Rptrs. 146.91- & 146.115/715-. P.O. Box 240, Rd. #1, Adena, OH 43901. (614) 546-3930.

Van Wert Amateur Radio Club, Inc. 1220 E. Ridge Rd., Van Wert, OH 45891. Call-in: 25/85. Meets 1st & 3rd Sat./monthly, 8 p.m.

OKLAHOMA

Enid Amateur Radio Club, Inc. W5HTK, WA5QYE, WA5OUB. P.O. Box 261, Enid, OK 73702. Meets 4th Thurs./monthly, OK Hwy. Patrol Stn.

OREGON

Central Oregon Radio Amateurs, (CORA). P.O. Box 723, Bend, OR 97709. Meets last Thurs./monthly, 7 p.m., Bend Sr. Ctr., 1036 NE 5th, Bend, OR. Net Sun. 7:30 p.m. 147.06(+) MHz. Info: (503) 382-1739.

Keno Amateur Radio Club. P.O. Box 653, Keno, OR 97627. Meets 3rd Thurs./monthly, 7 p.m., Keno Fire Stn. Rptr. 147.32(+) W7UFM. Info: Tom Hamilton, WD6EAW, (503) 883-2736.

Oregon Coast Emergency Rptr., Inc. P.O. Box 254, Florence, OR 97439. Meets 3rd Sat./monthly, 9 a.m. for brkfst. Net, Wed. 7 p.m., 146.80. Info: 997-2323 or 997-3081.

Salem Amateur Radio Club, (SARC). Meets 4th Tues./monthly, 7:30 p.m., Four Corners School, 500 Elma Ave., SE, Salem, OR. Talk-in 146.86. Info: (503) 390-1386.

Umpqua Valley Amateur Radio Club, Inc. P.O. Box 925, Roseburg, OR 97470. Meets 3rd Thurs./monthly, 7:30 p.m., Douglas County Courthouse, Rm. 311, Douglas St., Roseburg, OR. Info: W5PII/R 146.90(-) or (503) 673-1310.

PENNSYLVANIA

Butler County Amateur Radio Assn. P.O. Box 1787, Butler, PA 16001-1787. Meets 1st Tues./monthly, 7:30 p.m., Boy Scout Cntr., 830 Morton Rd., Butler, PA. Call-in W3UDX/R 147.96/36. Net 10:10 p.m. nightly.

Mercer County Amateur Radio Club, W3LIF. P.O. Box 996, Sharon, PA 16146. Meets 4th Tue./monthly, 7:30 p.m., Shenango Valley Med. Ctr, Farrell, PA. Net, Thurs. 9 p.m. on 145.35 W3LIF, Digi. 145.01.

TEXAS

Brazos Valley Amateur Radio Club, (B-VARC). P.O. Box 1630, Missouri City, TX 77459. Meets 2nd Thurs./monthly, 7:30 p.m., Sugar Land Community Ctr., 226 Matlage Way., 3 blks SW of Imperial Sugar Co. at HWY US-90A & Brooks St. (HWY 58) in Sugar Land, TX. Talk-in: 145.47, 442.5 rptrs.

VIRGINIA

Southern Peninsula Amateur Radio Klub, (SPARK). Meets 1st & 3rd Tue., Salvation Army Community Bldg., Hampton, VA. Repeaters 146.13/73 & 449.55(-5). VE Exam Info: (804) 898-8031, W4RTZ

Virginia Beach ARC. Meets 1st Thurs./monthly (except July), 7:30 p.m., St. Andrews United Methodist Church, Tucson & Princess Anne Rds., Virginia Beach, VA 23462.

WASHINGTON

The Mike & Key Amateur Radio Club. Meets 3rd Sat./monthly, 10 a.m., Salvation Army Renton HQ., 720 Tobin St., Renton, WA. Talk-in on 146.82 rptr. Doors open at 9:30 a.m.

WEST VIRGINIA

Jackson County Amateur Radio Club. Clark Stewart, W8TN, Pres., 104 Henrietta St. Ravenswood, WV 26164. Meets 1st Thurs./monthly, 7:30 p.m., United Nat'l Bank of Ripley. Net Mon. 9 p.m. on 146.67/.07 WD8JNU/R.

Tri-State Amateur Radio Assn. Meets 3rd Tues./monthly, 7 p.m., Green Valley Fire Dept., 16th & Norwood Rd., Huntington, WV. Monthly breakfast 1st Sat., 9:15 a.m., Bonanza.

WYOMING

Sheridan Radio Amateur League, 146.82. 926 La Clede, Sheridan, WY 82801. Meets 4th Thurs./monthly, 7 p.m., Sheridan College Tech. Cntr.; Saturdays, 8 a.m. at J.B.'s. Info: (307) 674-6666, WA7B.

MEXICO

Lake Chipala Amateur Radio Group. Meets Fri./weekly, 10 a.m., St. Andrew's Episcopal Church, Chipala, Jalisco, Mexico (30 mi. so. of Guadalajara). Simplex 146.49. Info: W4AFW/XE1. Charles C. Leonard, APDO 381 Ajijic, Jalisco, Mexico.

OLD-TIME RADIO

Memoirs of a junior Forest Guard

ROBERT W. VREELAND, W6YBT

In the years just prior to World War II, mysterious signals appeared in the region between 2.5 MHz and 3.5 MHz. You might hear "Hello Little Rattlesnake. This is SPF195." Could this have been a foreign submarine calling a spy coded named Little Rattlesnake? While this would have made good copy for a James Bond novel, the truth was somewhat less exciting. The signal was from a US Forest Service firefighter using his manpack SPF serial number 195. He was calling a fire lookout on Little Rattlesnake mountain. In those days, official callsigns were seldom issued to Forest Service stations. When I worked as a fire lookout in the summer of 1942, we identified using our station location. This was later considered to be a security risk and we were instructed to identify using first names only. (And for good reason!) Subsequently an enemy submarine was reported to have launched a small float plane which fire bombed a district north of mine. It is difficult to believe that a submarine could carry even a small airplane, but that is what press reports said. I didn't see the plane. If true, this was probably the only bombing raid ever on the continental United States. There were however a few incendiary balloons that reached this country.

As a junior Forest Guard I received a small salary from which there was a deduction for "government quarters furnished." You, of course, bought all your own food. It was brought in by pack train at the beginning of the season. The pack train wrangler carried an S set. It was a 36 MHz super-regenerative transceiver (not crystal controlled). About a week later I was visited by the District Ranger. He traveled on horseback and carried his Pulaski and a very large revolver. A Pulaski is a combination axe and hoe. He gave me some canned food to replace what the packer had eaten. Personnel were always very careful to replace any food they ate. I had to demonstrate that I could use my Pulaski to cut a line around an imaginary fire.

My lookout radio was an SX set. It had a crystal controlled transmitter and a super-regenerative receiver. There were two frequencies; blue for general use and red for the fire net. There was also an SXA attachment consisting of a loudspeaker and an antenna tuner. The antenna was a vertical 36 MHz Zepp. The receiver radiated a signal strong enough to be heard in a different ranger district. There were two sets of batteries. The SX set had its own self-contained batteries making it a complete portable station. Very large B batteries were provided for fixed station use. I once visited a repeater which used a large number of 1.5 volt ignition type cells connected in series to form a high voltage B battery. Due to their relatively low internal resistance batteries can give you a severe shock. This is something you definitely don't need when you are alone on a mountain top.

Robert W. Vreeland, W6YBT, carrying his one man fire fighter's pack in 1942. The pile of stones is a US Coast and Geodetic Survey monument.

— all photos submitted by W6YBT

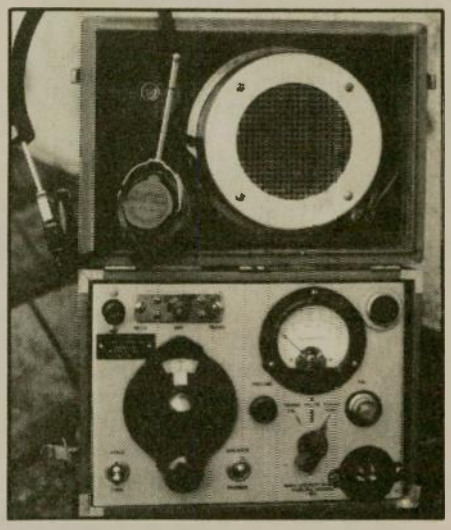
For entertainment I used a homebrew regenerative receiver. I copied the 100 kHz time signals from NPG in San Francisco. I also listened to

Radio Rome. They were complaining that the allies were dropping poisoned toothpaste over Italy! To report fires I called Lou on Red Mountain. He had a TL set which connected me to the telephone line so I could talk to the District Ranger. Lou monitored the frequency all day. The rest of us checked in just once daily.

One day Lou's TL set quit working. He telephoned the district ranger who sent for the radio repair man. Every national forest had its own radio repair man who installed antennas and repaired breakdowns. Ours lived in a trailer at Forest Headquarters. He drove 50 miles to the trail head and then hiked 10 miles to Lou's station. In his pack he carried a spare radio, a tube tester, spare tubes and his tool kit. The problem turned out to be more than a simple tube replacement. He stayed overnight at Lou's station. The next day he left the spare radio and hiked out carrying the defective one. Actually Lou was never without radio communication. Because his station was the central relay point he had been issued an SX set as a backup.

Every fire lookout was equipped with a stool which had telephone insulators on its legs. During an electrical storm we were supposed to stand on the stool and mark the lightening strikes on our map. The lookouts were well protected with a grounded lightening rod system. At guard school I met a man who said that his lookout had been struck by lightening a year before. As the strike burned out half a mile of telephone wire it was not clear whether the lightening hit the line or the station itself. Fortunately no one was injured.

Working as a lookout was a great way for a kid to spend his summer. The fire protection system was based on locating and putting out small fires quickly before they became big ones. If yours was the closest station you were sent to put out the fire. Every lookout was issued a one man outfit on a pack board. It contained a very large canteen, one man-day of canned food, rubber back pump, shovel and a Pulaski. In addition to maps and a compass, the kit even contained time slips for hiring fire fighters (who of course were never available). For exercise, the lookout had a five mile walk to get water. Water time was in the evening or early morning when the fire danger was lower. I wore tennis shoes for a better feel of the trail when traveling in the dark. One day I saw a small black bear. Bears of course are not dangerous. Rattlesnakes, however, are a different story. I found one in the woodpile under the lookout. The lookout didn't



A military model of the SPF.

have an outhouse so I always took a careful look around for snakes.

The lookout station was on a tower about twenty feet above the ground. There were window on all sides. Around the living quarters was an outdoor balcony for better viewing. You were expected to take a careful look around every half hour. The rest of the time you kept your eyes open for smoke. There were shutters to protect the windows when the station was closed for the winter. In summer the shutters were swung upward to form a sunshade. This formed a good support for the 36 MHz Zepp.

One day I was visited by a US Coast and Geodetic Survey theodolite party. They were taking bearings on light keepers on the various mountains. When I asked them which way was north, they said that they wouldn't know until their data were worked up at the central office. They suggested that I orient my fire finder by taking a shot at the north star. I did this taking into account the proper azimuth correction for that day. The fire finder was a beautiful instrument made by Norden which later became famous as a manufacturer of bomb sights. The theodolite party left a nice new stone and concrete bench mark. They had their own Q signal system. When a light blinked DG1 it meant, "That's all for today. See you at your next station in one day."

Although I was not yet a ham I could copy CW somewhat. I built a heliograph from a shaving mirror and some pieces of orange crate. There was a definite shortage of raw materials on the mountain top. When I flashed Lou on Red Mountain, 30 miles away, he acknowledged my signal by radio. Unfortunately Lou didn't know CW. I also studied fire fighting from the lookout's manual. The approved way to determine whether a fire was out was to feel the ashes. If they were warm it was not safe to leave the area. The manual also gave specific instructions for storing paint cans upside down.

Keeping fresh foods was of course out of the question. I ate mostly dried food like rice, lentils and lima beans.

Lou had an unfortunate accident when he was sent to put out a small fire. He made the mistake of stepping on a wet log. This caused him to slip and fall cracking a couple of vertebrae. Fortunately he had brought along his SX set so that he could check in. Of course no helicopters were available in those days. The nearest horse was thirty miles away so Lou had to hike out. In his absence Charlie, the man on Little Rattlesnake, took over as net control. He had a phone line connecting him to the district ranger station.

From where did all the exotic radio equipment come? It was designed at the US Forest Service Radio Laboratory in Portland, Oregon. The manufacturing was done by the Radio Specialty Manufacturing Company also in Portland. I have a war surplus SPF. It was manufactured under a US Army Signal Corp. contract in 1942. The words "US Forest Service" are molded into the headphones. This was a truly remarkable radio. It was dry battery powered including the transmitter which required 180 volts. The final was a 1J6-G modulated by another 1J6-G. It put out about two to five watts. The receiver was a Superhet with a National type B velvet vernier dial. These radios could be heard at night all over California. In fact, there was sometimes a QRM problem between stations in Northern California and those in the South. Their wide coverage was due to the use of half-wave dipoles or long wire antennas. These were sometimes permanent installations on 60 foot telephone poles. Portable whip antennas were never used. The operator had to find a way to

jury-rig his wire antenna. Even the 36 MHz S sets and SX sets used wire antennas.

The SPF receiver's circuit was more or less standard for portables of that period. In the SPF there was a 1N5-G RF stage. It was followed by a 1A7-G pentagrid convertor and a 1N5-G IF stage. After that the circuit gets interesting. A 1A7-G was used as a combination detector and BFO. It was followed by a 3Q5-GT to drive the loudspeaker. There was a toggle switch for selecting either the speaker or headphones. Another toggle switch turned on the BFO. A telephone type center off lever switch (S2) was used for "receive-off-transmit." It switched off the unused filaments to save batteries. Battery life was of course extremely important. If you were at a remote station where radio was your only contact with the outside world, the last thing you needed was dead batteries. A lookout without a radio could not report fires. There was a three position meter switch (S1) for checking the batteries. It was also used for setting the transmitter filament voltage at 2.15 volts. Two volt tubes were used through out the transmitter. The third position of the switch measured the final plate current. The final tank circuit was a Collins coupler mounted at the rear of the rig. It was tuned for the dip in plate current. The two large unshielded tubes at the rear are the 1H4-G crystal oscillator and the 1J6-G final. Rice neutralization was used in the final. The other two large unshielded tubes are the modulator. Inserting the plug

(please turn to page 57)

QUARTER CENTURY WIRELESS ASSOCIATION INC.

John G. Troster, W6ISQ

This month we have a lot of things to discuss with you. A comment there and here from members, officers and directors asking for your input. So pay attention and RSVP where indicated.

From on high

I hadn't heard from our illustrious QCWA president Harry Dannals, W2HD, for some time, so I did just as any good, red-blooded radio amateur would do, I called him on the telephone. We chatted for a while about that and this, and after lamenting the fact that the Dodgers had moved to Los Angeles from Brooklyn, Harry requested this message be passed on to all loyal QCWAers.

"The QCWA board will meet the third weekend of April. We are looking for input from the membership, suggestions, ideas etc. for the benefit and betterment of the organization. So, if you have ideas which you'd like the board to consider, please send them to secretary John Swafford, W4HU, or to any member of the board."

Harry's not running for re-election, so after this board meeting, he will just be Old Joe Ham again. His stint with QCWA followed ten strenuous years with ARRL, so he's looking forward to DXing and a rag chew or two. However, I'm sure we we'll be hearing more from Harry before the meeting. Meanwhile start your suggestions flowing. NOW.

Flash from headquarters

I like to call up general manager Jim Walsh, W7LVN, every few weeks just so he will know I'm not mad at him. Also, he always has something funny to say. Then sometimes he gets tough and tells me like it is. Sure glad I wasn't under him in the Navy! (Or even in the Navy!) Report from Gentleman Jim: "QCWA station W2MM has all the equipment it needs. What we do need are some clear days when we can clamp on some chimney brackets and then haul up the vertical. I have a volunteer crew standing by for the job. When we get on, we will probably monitor around 7230 for the West Coast and 14347 for the USA. Will keep you advised." So, be patient and we'll all look forward to the Old Mechanic manning the spark gap at W2MM/7.

New members

Over the past couple of months Jim has forwarded names and calls of those who admit that they responded to the QCWA advertisement here in ***Worldradio***. He is sure there were others who did not mention the ad. It's amazing what just a small two-inch ad can do. Thanks and welcome to QCWA membership to, Russ Simpson, WAØJTL; R.E.Hager, K3HOX; Glenn Davis, KQ4ZB; Bill Berkley, K2CPS; Les Miller, (don't have his call yet). We're very happy about all of you who made inquiry and we hope all of you who are eligible will join.

Ted Heithecker, W5EJ

After our long-time general manager Ted, W5EJ, passed on, Leland Smith, W5KL, chairMAN (not person) of the scholarship committee and present GM W7LVN, got together and promulgated the idea that it would be proper and fitting to establish a QCWA college scholarship in Ted's name to honor his years of outstanding service to QCWA. This was discussed on the QCWA Net and retiring director Art Miligan, W8KW, immediately sent in a check for $500 to get things started. It has grown from there. At present day interest rates, it is estimated that $10,000 would be necessary to assure proper funding for the scholarship. It's a fact: if every QCWA member sent in one dollar, we'd have it. You can send your contribution, honoring Ted, to QCWA Headquarters, 159 E. 16th Ave., Eugene, OR 97401-4017.

OOTC

Ted was also the long-time editor of the OOTC Newsletter (Old Old Timers Club, for hams licensed 40 years ago). There was no assistant editor or publisher for the monthly newsletter so at present the publication is in danger of being suspended. If anyone reading this would be interested in filling the job, or knows someone who'd like to, Contact Harry Gartsman, W6ATS, ASAP! He'll tell you all about it.

Feedback

Letter from Joe Fairclough, WB2JKJ, about the story reporting his New York Junior High School Crew 22. Joe writes: "Have to tell you the response has been really amazing to the story. Yes, many new check-ins on both 7.238 and 21.395 all mentioning the article. . ." If you haven't checked into the WB2JKJ school net recently, try those frequencies in the mornings eastern time and say hello to Joe and the Crew at JHS 22. Ask them to locate your QTH on a map.

Correction

In the past couple of columns, I made mistakes in two calls, and surprise, I received letters to that effect. First Bob Baird, W9NN, whom I called N9NN on a photo caption. Then there was Walt Brink, W3WPY, whom I mistakenly identified as that well-know Svalbard DX station, JW3WPY. But look at the results! Bob wrote and sent a photo of himself and friend Nancy Evans, long time soloist with Big Band leader Wayne King. Nancy was with Bob at the convention in St. Petersburg last October.

Then from JW3WPY, er, W3WPY, an endorsement of the Chef McCoy, Green Chili recipe, plus a secret recipe of Walt's own to share with you. It's apparent, of course, that I made those two call errors on purpose, knowing I would get fast attention and interesting information to share to boot. I may make other mistakes soon, so be on

Walt's Down Home Salsa

Improves with age and can be frozen. Makes 4 cups. Recipe can be halved.

Ingredients:
4 cups diced ripe tomatoes
4 cloves garlic, minced fine
12 jalapeño peppers, chopped fine with seeds
2 large red onions, chopped fine
¼ cup chopped fresh cilantro
1 tbs. virgin olive oil
Juice of 1 fresh lime
Pinch of sugar, and salt and pepper to taste.

Be sure to use a plastic bowl for mixing. Mix throughly.
Serve with nacho chips and Margaritas.

the alert for ensuing good results.

Here's Walt's comments about McCoy's Chili. "We have been enjoying McCoy's green chili chicken since he sent me the recipe in 1988. (Ahhhaa, McCoy leaked the recipe once before). . . .the recipe has been included in the Delmarva Chicken Cookbook since 1989. (I think Delmarva is an island in the Chesapeake where Walt lives and cooks). Walt changes the recipe slightly.

"Rather than use a bullion cube, I use 3 cans of chicken broth instead of water, and 2 cloves of garlic. Instead of the optional jalapeños I use ONE ONLY dried Habañero pepper, which is carefully removed before serving. We do not keep asbestos bushings on hand."

I'd say if your QCWA stomach can withstand this dip, you are certain to be eligible for OOTC in due time.

Walt also included his mix for "Walt's Perfect Margaritas" which is intriguing, but this is a family tabloid, so write directly to Walt, and apply for his recipe for liquid lightning. Or ask him on the Sunday net.

McCoy too bland

Thanks to those who wrote in saluting and salivating over McCoy's recipe for Pollo con Chili Verde. Bob Cronberg, KBØXR, from Minnesota, about as far away from McCoy's Mexican connection as can be and still be in the US of A, writes: "I'm eligible for membership in QCWA. First licensed in 1959 but haven't gotten around to doing it yet. (application form on the way, Bob). Yesterday I made a batch of "Chef McCoy's Pollo con Chili Verde — outstanding but a little bland. Had to jazz up the spice a little bit. Please get (McCoy's) recipe for Pork Surprise." Thanks Bob. We'll ask Lew to submit his Pork recipe, and comments about palate temperature of the Pollo con Chili Verde.

Final finally

Everybody, please advise W3WPY whether you thought his salsa was really hot enough. Frankly, when he said leave the seeds in the 12 jalapenos, I began to sweat. Whadaya think? Most important, please send your ideas for the QCWA board to W4HU. And don't forget the W5EJ scholarship fund. I hope we all worked each other during the QCWA QSO Party. Until next time 73 + 25. Jack, W6ISQ. WR

Old-time Radio

(continued from page 55)

for the key switched off the modulator filaments. The rig used grid block keying. It also had a carbon microphone. Voice operation was used most due to the shortage of CW operators. One voice operator ordered 25 pounds of rice to be delivered by pack train. He received only a wet gunny sack. They had sent 25 pounds of ice. After all, CW does have its advantages!

The 1J6-G was designed for use as an audio power amplifier. It was used extensively in the Beachmaster PA systems of World War II. Shortly after the war, a 1J6-G transmitter appeared in *QST*. It was a push-pull crystal oscillator for 40 and 80 meters. The rig was called "The Last Ditcher." I built a modified version into my battery powered regenerative receiver. I also added an HY114B two meter super-regenerative transceiver. A 1965 update was designed to use a quarter wave wire antenna with a spider web ground counterpoise. The antenna resonator was slug tuned. It was band switching for 40 or 80 meters. Also included was a meter for tuning and for checking the batteries. WR

Field Day 1994

Now is the time to start in depth planning for this year's Field Day. Start assembling your portable SATCOM gear and antennas now. Don't wait until the second weekend in June to start planning for a SATCOM Field Day effort. Remember, your local club will be more than happy to see you show up with your satellite comgear to give them extra QSO and bonus points with out the penalty of additional transmitters. Concentrate on the LEO EasySats (RS-10/11, 12/13 & AO-21) since these birds take far less equipment and preparation to produce successful SATCOM QSOs than OSCAR-10 & 13.

With the frustration still fresh in my mind from last year's FD operation, remember: work your SATCOM contact early in the game. Do not wait until the last pass to nail a satellite QSO. Don't forget to get on the birds regularly and practice, practice, practice making QSOs. The more at ease you are during FD, the easier it will be to make satellite contacts and boost your club's score.

Don't forget to have some information readily available for the flock of interested club members that will hover around your SATCOM station during a pass. When they see how easy you make it look to work through RS-10/11, 12/13 and AO-21, more than a few of them will be bitten by the SATCOM bug. Don't miss out on any chance to provide information and guidance on how to become active on the amateur satellites.

Packet BBSs and the satellite operator

If you are serious about amateur satellite communications and do not spend any time on your local Packet Radio BBS, you are missing out on a lot of valuable information. In addition to the bi-weekly Keplerian Data that is posted on the BBS, a large quantity of information about the U.S. space program, shuttle launches and amateur satellite programs also find their way onto the boards.

One of my favorite items is *SpaceNews* edited by Jack Magliacane, KD2BD, in Wall Township, NJ. Jack's weekly synopsis of space oriented events makes for some great reading. *SpaceNews* covers topics relating to NASA, various unmanned satellite missions (the Hubble Space Telescope and the Mars Observer to name two) U.S. and Russian manned missions (the shuttle and MIR) as well as OSCAR news, AMSAT-NA news releases and major astronomical events like the Perseid meteor shower. KD2DB welcomes input and comments and can be reached via FAX: 908/747-7107, Packet: KD2BD@NN2Z.NJ.USA.NA.

AMSAT-NA also uses Packet BBSs to distribute their Amsat news releases via the Amsat News Service (ANS). If you want to keep up with the latest information and direction that AMSAT-NA is headed, this is must reading. ANS news releases also provide information on the current happenings (like the multiple launch of four new hamsats via an Ariane-4 launch vehicle on September 26, 1993) and progress on the Phase-3D project, which is due to replace OSCAR-13 in late 1995 or early 1996. Since P3D will be the satellite that will furnish the bulk of the long-haul amateur SATCOM into the 21st century, all active SATOPS should make every effort to stay abreast of the latest developments on this project. A few minutes once or twice a week scanning through the listings of messages on your local Packet BBS will keep you in reading material for quite a while.

New HAMSATS

Speaking of the four new amateur satellites, OSCARs 25, 26, 27 & 28 were launched from the European Space Agency (ESA) facility in Kouru, French Guiana via an Ariane-4 booster on September 26, 1993. Of the four hamsats, the Italian ITAMSAT-OSCAR 26 the Virginia-base AMRAD-OSCAR 27 are microsat-type digital satellites. The other two hamsats, Korea's KITSAT-OSCAR 25 and Portugal's POSAT-OSCAR 28 are Surrey Satellite Technology Limited (SSTL) designs which have on-board imaging via CCD cameras. 1993 was definately a banner year for satellite communicators. A tip of the hat and a hearty "Well done" to the folks at ESA for lofting this latest quartet of hamsats. (Thanks ARMSAT-NA News Service.)

SATCOM bookshelf

This month I am starting a regular feature in my SPACECOM column to showcase a book or periodical that is of interest to the satellite operator. The featured book this month is the ARRL's *Satellite Experimenter's Handbook* by Marty Davidoff, K2UBC.

This book is the definitive source of information for the serious satellite user. The sixteen chapters and six appendices contain so much information, it will take the average SATOP a lot of reading to wade through the material. Make no mistake about it, this book is intense and packed with essential information.

The book is divided into three parts. Part one (chapters one through four) deals with the history of amateur satellites and presents a chronological

history of events starting with the launch of Sputnik on October 4, 1957 and concludes with the Phase-4 geosynchronous satellites proposed by AMSAT for launch in the beginning of the 21st century. Part two details the fundamentals of satellite communications and how to assemble a SATCOM station. These six chapters form the basics of satellite communications for the radio amateur and are very informative. The last six chapters in Part three, are geared for the advanced satellite experimenter. Emphasis here is on orbital mechanics, in depth satellite tracking, radio links, weather and TV satellites, to name a few.

The appendices contain detailed information on satellites, their operational parameters, tracking data, computer programs, and much more. In short, just about everything you'll need to know to become active in amateur SATCOM is presented within the pages of *The Satellite Experimenter's Handbook*. Beginner and seasoned SATOP will find tons of useful information in this book. Price is $20 (excluding shipping) direct from the ARRL (225 Main St., Newington, CT 06111), R. Myers Communications (P.O. Box 17108, Fountain Hills, AZ 85269-7108) or AMSAT-NA (P.O. Box 27, Washington, D.C. 20044).

Antennas for low earth orbit satellites

One of the nice things about Low Earth Orbit (LEO) satellite communications is station simplicity. LEO SATCOM, unlike the high orbit satellites, is not hardware intensive. If you have a 2 meter omnidirectional antenna and a dipole antenna that will resonate on 10 meters, you have the basic antenna farm needed to enjoy many hours of fun on the LEO Mode-A (2 meters uplink, 10 meters downlink). Mode-K (15 meters uplink, 10 meters downlink) will require two HF antennas.

At K7YHA, I have used several different types of uplink and downlink antennas for Modes A and K. Originally I started with a 2 element HF beam for 10 meter downlink and a 2 meter J-pole for Mode-A uplink. Mode-K uplink was accomplished using a Radio Works Carolina Windom-II at 25 feet. This configuration worked well for many months.

After digging around in my basement I unearthed a CB vertical antenna that I had used in England for 10 meter FM. This replaced the HF beam for the 10 meter downlink. Initial installation of this antenna was on my second story flat roof (about 30 feet above ground). It worked very well in this location. However, after erecting a set of K1FO long-boom yagis for V/UHF terrestrial work, it became quite evident that the 10 meter downlink vertical antenna would have to be moved as it interfered with the rotation of the V/UHF antennas!

The 10 meter downlink antenna was reinstalled on a 10 ft piece of pipe attached to my chain link fence. It now sits much lower and closer to the aluminum siding on my three story house. Performance was reduced accordingly. While it still serves me well, it does not perform the same way it did when mounted in the clear at 25 feet. There are several "dead" spots in the antenna pattern that are very noticeable on near-over-head passes.

For a short while, I erected a 10 meter dipole at 20 ft, oriented almost due north/south. This antenna was a marginal performer at best since it was situated between two aluminum sided houses and did not have a clear view of the horizon. Unfortunately, I was unable to try different orientation on this antenna due to the limits of property and the sense of humor (or lack of it) of my next door neighbor. Having used dipoles for SATCOM work before, I am convinced that had I been able to properly erect this 10 meter dipole in the clear, it would have solved my "dead" spot problem on the Mode-A downlink.

Some might question my reliance upon a vertical antenna with its inherent low angle of radiation for use as a SATCOM antenna. Since most vertical antennas have a major radiation lobe between 7 and 20 degrees above the horizontal, initial thinking would dictate that this antenna would be great for passes that are near the horizon, but perform poorly on passes that appear overhead. Yes and no. A properly installed vertical antenna (this can be either a modified CB antenna or a multi-band vertical like the Hustler 5BTV or Butternutt HF-6V) will have a low angle of radiation. This is why they work so well on DX. As the satellite breaks the local horizon and Acquisition of Signal (AOS) is encountered, downlink signal strengths should remain fairly constant. On passes where the satellite never exceeds 25 to 30 degrees altitude consistent downlink signals should be the order of the day.

The "holes" in antenna coverage pattern are compensated somewhat by the decreasing distance between the satellite and the downlink antenna, as the satellite approaches overhead. The increased downlink signal strength will, in most cases, cancel out the nulls in the antenna pattern. Hence, using a low cost CB vertical antenna (converted to 10 meters) as a Mode-A and K downlink antenna is not such a bad idea after all.

Mode-A uplink (2 meters) follows the same logic. While you can spend the time building a turnstile or "egg beater" antenna for the uplink skyhook, a simple J-pole or quarter wave vertical with radials will work very well. The main advantage of the turnstile or "egg beater" antenna is the hemispherical radiation pattern that virtually eliminates all overhead nulls in the antenna pattern. This should provide highly reliable signals (either up or downlink) irrespective of the altitude and/or distance of the satellite with respect to your SATCOM ground station.

In reality, building or (shudder) buying one of these antennas just to eliminate a couple of nulls in your 2 meter antenna system is a questionable exercise. In my particular case, I have found that a homebrew 2 meter J-pole works great for terrestrial contacts as well as Mode-A uplink. Listening to the 2 meter downlink signal on AO-21 leads me to believe that my J-pole provides very good coverage, despite a theoretical low angle radiation pattern. This antenna is mounted high on the end of my 3 story house and has a very good look at the horizon in all directions.

Very shortly, I will be erecting a set of V/UHF quarter wave antennas for LEO Mode-B (AO-21) and Mode-A uplink. This set of antennas is designed to replace my dual-band J-pole built from an AMSAT-NA design by Dick Jansson, WD4FAB. Unfortunately this dual-band J-pole never played very well. The 2 meter portion worked fine, but the 70 cm portion could never be properly adjusted and constantly suffered from high VSWR.

That's a wrap for this installment.
73 Rich, K7YHA WR

DX Contest Calendar for April

April gives us two excellent European Contests, the SP-DX (Polish) Contest and the Helvetia (Swiss) Contest.

Polish Contest: 1500 UTC 2 April, 2400 UTC 3 April.

Helvetia Contest: 1300 UTC 23 April; 1300 UTC 24 April.

SP-DX Contest

The Polish contest takes place the first weekend in April of each year. W/K/VE stations send RST and serial number (i.e. 001). Polish stations send RST plus 2 letter abbreviation for province, i.e. 599 PO. The Polska Award is offered in 3 classes: 3rd class for contacting 20 Provinces, 2nd class for 35 provinces and 1st class for all 49 Provinces. This is also a good opportunity to pick up the Polish prefixes. Copies of log and summary sheets may be obtained by sending SASE to K4IIF, P.O. Box 205, Winter Haven, Florida 33882.

Helvetia Contest

This is the annual contest by the Union of Swiss Shortwave Amateurs (USKA) and provides certificate hunters a good chance to work all 26 Swiss cantons for the Helvetia Award. Use the 6 bands 1.8-28.0 on CW, but only the 5 bands 3.5-28.0 MHz on SSB. (No SSB on 160M). The exchange is RS(T) plus serial number beginning 001. The Swiss will send an additional 2 letters designating their canton, i.e., 59001AR. For complete rules and application blank, send SASE to K4IIF, P.O. Box 205, Winter Haven, Florida 33882. Manager of the Helvetia award is HB9MX.

Results of the 1993 Helvetia Contest

Worldradio thanks HB9BOI for sending the booklet of results from last year's event. Congratulations to VP2EY for his top score for North America with 23,868 points, and to KA1DWX for, his high USA score with 10,290 points. Other U.S. entries in order of score were WZ9B, W8DA, KM3D, K2SX, W5FO, W2OFB, K8JLF, K2LP, W7UIC and K6XO. High for Mexico was XE1CYY, while VE4MF and VE2AH entered from Canada. Winners in each category from Switzerland were:

Single Operator CW:
HB9BXE — 343,596 points

Single Operator SSB:
HB9IQP — 183,264 points

Multi Operator CW:
HB9ADD — 429,533 points

Multi Operator CW/SSB:
HB9H — 591,745 points;
HB9MM — 551,670 points

It is interesting to note that, aside from the host country, there were more entries from Japan than from any other country. The top scorer from Japan was JA6GCE followed by JA7SN, JG3CQJ, JA1BNW, JA1WYQ, JA1PUK, JA3UWB and a host of others.

Contesting from Africa

Morocco

Jack, WAØRJY/CN2JF, sends this interesting information regarding operation from CN2-land.

"Here's what I can tell you about Morocco. All operations in Morocco are coordinated by Mustapha El Khtib, CN8MK. He is the head of the Association Royale des Radio Amateurs du Maroc. The Association has a very nice building with an IC-735 connected to a log periodic and also a 2 element 40 meter yagi. Unfortunately, they do not have antennas for 80 or 160, and the log periodic has a very high (6:1) SWR on 20 meters.

"Anyone wanting to operate from Morocco will need CN8MK's approval. He can be reached at: Association Royale des Radio Amateurs du Maroc, 12 Rue Ahmed Arabi Agdal, Box 299, Rabat, Morocco; phone 67-37-03 or fax 67-47-57.

"Do not send money or documents without sending them "Registered" with a return receipt. Several of my letters sent regular mail were either "lost" or "delayed", but when I sent them registered, they went through fine in about 2 weeks from Seattle to Morocco.

"Mustapha will need a copy of the passport and US license of anyone applying for a Moroccan callsign. He also needs to know dates for the license to be valid. I'm not sure about the charge, but it is probably less than $30. The callsign will start with CN2, as op-

posed to Moroccan hams who have CN8 calls.

"I operated with the CNØA group (F6EEM, F2CW, etc.) in 1990 from a house near the beach south of Rabat. The French hams brought all the equipment and we lived in the house which was owned by one of the local hams. The towers and antennas were taken down after the event.

The Gambia

Warren Hill, KF7AY, has provided the following very helpful letter about C5 operation. "I handled the licensing and hotel arrangements for the C56V operation and can answer some of your questions.

"Most of the upscale tourist hotels in The Gambia are amenable to radio amateurs operating from them as long as everything is arranged well in advance. The two hotels, and their managers, who I know have hosted major contest DXpeditions in the past are the following:

"Hotel Kombo Beach, Mr. Modibo Taal, Room Division Manager, P. O. Box 694, Banjul, THE GAMBIA, West Africa; phone +220-465467 or fax +220-495490.

"Sunwing Resort Gambia, Mr. Sheikh Tejang Nyang, Room Division Manager, P. O. Box 2638, Serrekunda, THE GAMBIA, West Africa; phone +220-495428 or fax +220-496102.

"If reservations at the two hotels listed above are unavailable, the Senegambia Hotel, Bungalow Beach Hotel, Atlantic Hotel, and the Palma Rim Hotel should also be considered. The addresses and telephone numbers can be obtained from knowledgeable travel agents. It should be kept in mind that November through March is the peak European tourist season and many hotels are booked to capacity during this period. Reservations should be made well in advance for fall or winter DXpeditions to The Gambia.

"For C5 licensing, this is done through the offices of The Gambia Telecommunications Company, Ltd. As long as plenty of time is allowed, you will find the staff of Gamtel remarkably friendly and cooperative. Initial contacts should be made with Mr. M. M. Cham, Senior Operations Manager, The Gambia Telecommunications Company, Ltd., Gamtel House, 3 Nelson Mandela Street, P. O. Box 387, Banjul, THE GAMBIA, West Africa; phone +220-229999 or fax +220-227214.

"A valid Amateur Radio license with proof of CW proficiency at 12 wpm or better, a completed application form for a Gambian amateur station license and payment of the license fee in either Gambian Dalasi or British Pounds is required to obtain a temporary "guest License." C56/(home call) is the usual designation. Special call signs are typically reserved for special events or DX contest operations.

"If Mr. Cham needs anything additional, he will let you know. He is quite knowledgeable and seems to completely understand the unique needs of DX operations. Amateur Radio in The Gambia has a good friend in Mr. Cham.

"At the present time, it is required that citizens of the United States have a visa for travel to The Gambia. Visas are good for a period of only 90 days and should be applied for no sooner than three to four weeks prior to your date of departure. Most visas are issued through the Embassy of The Gambia located in Washington, D.C. An application form and additional important visa information can be obtained by sending a request for such with a SASE to: His Excellency Ousman A. Sallah, Embassy of The Gambia, 1155 15th Street, N.W., Washington, D.C. 20005; 202/785-1399.

"However, during my time in The Gambia I was told that the Director of Customs recently changed; it would be best to contact their office directly for current recommendations. Mr. Cham of Gamtel may also be able to lend some assistance in this regard. Director General of Customs Affairs, Customs House, Wellington St., Banjul, THE GAMBIA, West Africa; 220-472017.

"At the risk of repeating myself, I strongly recommend doing as much as possible, as far as possible, in advance. At all costs, avoid waiting until the last minute. Via well-written FAXs and letters, one can build a remarkably good relationship with most of the officials with whom you will come into contact. It goes without saying that courtesy and respect on the part of visiting American radio amateurs will pay big dividends throughout the whole process. As with any DXpeditions, there are usually many things to consider other than simply being able to get a license and a place from which to operate. Those who are seriously planning an operation from C5 are welcome to contact me and I will give them as much information and help as I am able. I also have most of the necessary forms for visa applications, licensure, etc., and will be happy to share these." WR

Why radials?

Part II

DON NEWCOMB, WØDN

Radiation resistance

The first basic concept we have to deal with a radiation resistance. This term is a misnomer in that it doesn't denote a real resistance, but RF energy that is "lost" by radiation — just what we want. In fact, we can say that radiation resistance is "good" resistance as opposed to "bad" ground and conductor resistance which represent a total loss.

Let's assume that the antenna is a full quarter wave tall and resonant or nearly so (the usual case) so that we don't have to worry about any inductive or capacitive reactance components or losses in loading coils or matching networks. Of all the several "resistances" the radiation resistance is the easiest to estimate because that's largely a matter of radiator height (length) and to a lesser extent, diameter. Conductor resistance is usually negligible for radiators constructed of tubing, but loading losses can increase rapidly as the structure to bring the antenna to resonance, and the various trap circuits required for multiband operation add their own losses. Some of these are lossier than others, so one should refer to the ARRL *Handbook* or other publications for a more thorough understanding of such concepts as "Q" and "form factor".

But ground losses can easily exceed combined conductor, loading, and trap losses if no measures are taken to reduce them. Let's consider a 1/4-wave vertical at ground level with only a 6-ft. rod for a ground system (a fairly typical installation, regrettably). Because a quarter-wave is a resonant length we can forget about loading and trap losses, and the conductor losses will usually be low enough to ignore.

Therefore, we can assume that whatever feed point impedance we encounter will consist of the antenna radiation resistance plus the ground loss resistance and little else, so we attach our 50-ohm cable and measure the SWR. Hmmm. The lowest SWR in the center of the band is 2:1! What does that tell us? First, we know that a SWR of 2:1 on 50-ohm line means a feed point impedance of either 100 or 25 ohms. Which is it? Luckily, we also know that a 1/4-wave vertical has a radiation resistance of approximately 35 ohms, so there's no way our total feed point impedance can drop *below* that value. Our feed point impedance at resonance, then, is 100 ohms, and we now have enough information to say something about the efficiency of this antenna and its ground system. If our radiation resistance is 35 ohms we must also have some 65 ohms of pure ground loss resistance that's doing us no good at all.

In other words, the 10 meter trap "loads" 15 meters, the 10 and 15 traps load 20 meters, the 10, 15 and 20 meter traps load 40 meters, etc.

Efficiency (the ratio of power radiated by the antenna to the total power fed to it and expressed as a percentage) can be easily calculated by dividing the radiation resistance by the total impedance of the antenna circuit (i.e., radiation resistance + ground loss resistance + conductor, trap and loading losses of all kinds). In this little example we've assumed a resonant quarter-wave antenna to simplify matters, so we can now say that the efficiency is equal to the radiation resistance (35 ohms) divided by the same radiation resistance (35 ohms) and ground and other losses (65 ohms) of 35/100 = 35%, meaning that a little more that one watt out of every three applied to the antenna goes anywhere.

Suppose, however, that we put down a half dozen radials and find that our SWR drops to 1:1? (It may or may not!) That would mean that the feed point impedance has dropped to 50 ohms, and since our radiation resistance is still 35 ohms we can assume that the ground loss component is down to only 15 ohms. Our efficiency, however, is up to 35/50 or 70% — a notable improvement for a dollar or two worth of wire! Additional increases in efficiency will come more slowly and require much more wire, of course, but from zero radials to a half-dozen or so there's probably no easier or less expensive way to make your signal louder.

Just how much improvement you can expect from adding radials to a system that previously included none is hard to predict. Because we don't usually know what the local RF ground loss resistance is to start with, and the technique of working back from the SWR with no radials at all permits only a rough estimate if we have an approximate idea of the radiation resistance of the antenna. If the antenna is much shorter than 1/4 wave and has to be loaded to resonate on a given band (the usual case with multiband verticals) the radiation resistance will be lower still and the overall efficiency reduced, particularly if the loading or trap coils are lossy, as they usually are, though you're not going to find this mentioned in any of the ads of those concerns who sell them.

Most commercial multiband vertical antennas stand less than 30 ft. tall (a bit less than 1/4 wave at 7 MHz) and, worse, the use of traps to decouple sections of the radiator for resonance on the higher-frequency bands means that less than 1/4 wavelength of the available radiator will come into play on all but the highest-frequency band (usually 10 meters). This, in turn, means that the radiation resistance will reach 35 ohms only on that band because the first trap, inserted at the 1/4-wave point for the highest-frequency band, acts as a loading coil on each lower-frequency band and progressively reduces the length of the radiator required for resonance. In other words, the 10 meter trap "loads"

15 meters, the 10 and 15 traps load 20 meters, the 10, 15 and 20 meter traps load 40 meters, and so on, each trap adding its own little bundle of loss resistance and helping to reduce the radiation resistance at the lower frequencies where the antenna is already "short" and thus has relatively low values of radiation resistance to start with.

Consider a vertical antenna having the same physical height as a quarter wave but now loaded to resonate at half-frequency over our original no-radial ground system. If the antenna is 1/4 wavelength on, say, 40 meters, its physical height is about 33 ft. A 1/4-wave resonant vertical for 80 or 75 meters would have to be some 60 ft. tall, so what order of radiation resistance can we expect from something half as tall? Probably something in the range of 12 ohms, and we can assume that our ground loss resistance won't be any worse on 80/75 than it was on 40 meters because ground losses tend to increase with frequency. Anyway, if we apply a little power to it we'll probably read SWR = 3:1 or so at resonance.

Try to keep the radiation resistance as high as possible in relation to the circuit loss resistance for the sake of efficiency.

With 50-ohm line we know that the total feed point impedance at resonance must be either 3 x 50 ohms or 50 ohms/3, either 150 ohms or 16.6 ohms. Again, it's almost certainly the higher value because our 12 or so ohms of radiation resistance subtracted from the lower value would leave only 4.6 ohms for any ground and loading coil loss resistance. If we met with 60+ ohms of ground loss on another band we'll probably have nearly as much to contend with on 80 or even 160 meters. Further, we shouldn't completely ignore possible loss resistance in the loading coil, so figure maybe 5 ohms of our total feed point impedance for that.

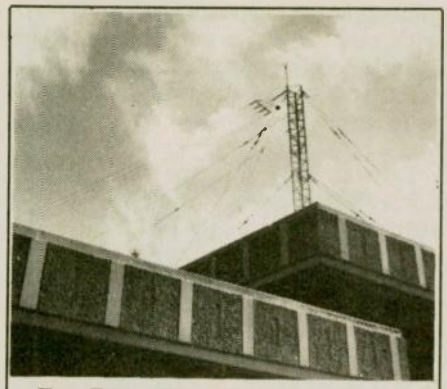
Efficiency, then, would be approximately 12/150 =8%! If we put back our six radials and observe that the SWR at resonance has dropped to 1.5 we can assume that the total feed point impedance has dropped to only 75 Ohms and that our efficiency has gone up to 16%. That may not sound like much compared to a full-size dipole operating at 90% efficiency or more, but don't be misled, for it still amounts to a signal gain of 3 dB!

Most low-band dipoles can't be put high enough above the earth to produce much low-angle radiation for DX operation, and even an "inefficient" vertical will often out-perform a low dipole on 80 or 40 meters when the path length exceeds a few thousand miles. Longer and more numerous radials would further reduce the ground loss resistance and increase efficiency, and if you managed to string out 100 + radials for zero ground loss resistance would you ever arrive at even 90% efficiency? Probably not, because of the loss resistance in the loading coil or in the traps that contribute to the loading. The total feed point impedance would consist of the antenna radiation resistance (12 ohms), loading coil loss resistance (5 ohms) and zero ground loss resistance, 17 ohms in all, so 12/17 = 70% efficiency at best. Your signal would be stronger by some 6 decibels, equivalent to quadrupling the transmitter power, and your SWR would be up to 3:1 again, but a simple matching device can take care of that.

Have we really gained anything? Yes, we certainly have. It's much easier and less expensive to match the feed line to the antenna than to use an amplifier!

Several important points emerge from this discussion. The first is that one should try to keep the radiation resistance as high as possible in relation to the circuit loss resistance for the sake of efficiency. Unfortunately, the radiation resistance largely depends on the height of the vertical structure, so as a practical matter all we can hope to do is to reduce the ground loss resistance through the use of radials and the loading losses through the use of high-Q loading inductors of large diameter. The slim loading coils and traps of light wire encased in metal that one sees in today's commercial designs are *not* what is needed! WR

(to be continued next issue)



AERIALS

KURT N. STERBA

It just gets weirder and weirder out there.

I'm reading in a hammy mag where someone actually admitted that he had a disastrous time in a contest on 80M. It was only after the competition had ended was it discovered that for the entire time the 80M energy had been sent into the station's 20M antenna.

Whewww! And the admission was not from some child but instead a long-time two-letter call.

Obviously, he had not followed my advice. Others paid attention and obtained the Rupp Electronics digital SWR and power meter (5403 Westbreeze Trail, Ft. Wayne, IN 46804; 219/432-3049). At anything over a certain SWR point (which you select) the meter BEEPS! And does it BEEP!

Another solution for the right band/wrong antenna crowd is the Palomar Engineers' dual-bar power and SWR meter. Wow! With excessive SWR you get these bright red lights going off in your face. You could set this unit across the room. Hey, you could set it across the street, and it would get your attention.

Maybe there are those who should get both. Palomar Engineers, Box 462222, Escondido, CA 92046; 619/747-3343, fax 619/747-3346. That way, if you are on the wrong band, lights go off and bells ring (OK, beeps).

I understand that the computer types are really keen on the Yagi program "Quickyagi" put out by RAI Enterprises 602/848-9755, in Phoenix AZ. I'll just stick with my slide rule, myself though.

Got a copy of the *ARRL Handbook*. Looked through the antenna chapters. Same old soggy stuff for decades now. Dipoles and verticals. Nothing about the HF wire discone or the low to the ground one-wavelength loop in the vertical mode. Both are excellent. That HF wire discone will beat the pants off a dipole at the same height. Feed the vertical triangle (apex at the top) one-quarter-wavelength from the top. Low angle and no tons of copper spokes needed.

Speaking of books. . . there is one particular writer that every single amateur owes a debt of gratitude. Yes, whether you actually did read his books or not, he was the inspiration for those writers whose books and articles you did read. His articles and columns in various magazines have been excellently crafted.

I'm obviously talking about Bill Orr, W6SAI.

As I peer into his (along with Stu Cowan, W2LX) *Beam Antenna Handbook*, I find this:

"P.T. BARNUM IS ALIVE AND WELL AND WRITING ANTENNA ADVERTISEMENTS"

I mention this just so you won't think I'm out here all by myself crying into the wind and that there is actually a problem. Again, I quote:

"Antenna gain, much like the speed of the aforementioned race horses, miles-per-gallon figures for an automobile, and the 'music power' of a stereo amplifier, is an elastic term that brings joy to the believer in the 'hard sell' technique. These terms are much abused — so much so that advertised antenna gain figures are not accepted for publication in some amateur magazines."

Now, you may remember me recounting getting hot letters from a manufacturer claiming Gulliver-type leaps in gain over other antennas. The explanation to this 6dB improvement (it actually pains me to write that) was that such was the real gain that the ground added. So that no one will think that I am some wild man out here, I will again quote from Orr.

But first let me point out that Orr and his buddy Stu Cowan put up some of the very first Yagis. In fact, they built those Yagis before the wackyduck claimmakers were even born. They could be the grandfathers of some of today's antenna peddlers. What does W6SAI say?

"The question, then, is how much of this 'free' 6dB is realizable in the average amateur installation? About half (3dB) is gained because the antenna 'illuminates' only a half-hemisphere in real life and a PORTION of the ground reflection gain is commonly achieved even though the reflecting surfaces may be rough and covered with objects such as buildings, power lines, cars, etc."

So the next time I get a letter from "Dyne Antennas" or "PDQ Antennas" I'll just forward their letters to Bill Orr and they can argue with him. I'm too old to have to listen to hooey. But, I am not too old to have, in 1993, received a contest award that says "First Place." Eat your heart out, Kurt critics!

I've heard that Goliath Antenna Co. is really worried about the new product about to be launched by Godzilla Electrodes of Kobe, JA land. Seems that Godzilla is claiming to have created a signal accelerator. You will work the DX first because with a Godzilla your radio wave travels through the ether faster and you get to the station on the other end sooner.

I would really like to thank *Spectrum*, (the monthly publication of the Institute of Electrical and Electronic Engineers for mentioning, in their February issue, our book *Aerials II*.

So far, The Newington News has not seen fit to do so. Now, don't interpret that statement of mine too harshly. I like that magazine. Honest!

I'm reading an advertisement there about an antenna (let's call the company "Flights of Fantasy") that promises "incredible DX" (that's a real quote). This company gives you an antenna for 80, 40, 30, 20, 17, 15, 12, 10 Meters (choose one) that is nine feet

tall for $60 to $80 (depending on model). You are promised a "high efficiency antenna" (that's a quote, bub). There are, of course, some spoilsports among us who might question the idea of "high efficiency" on 80M coming from a nine foot vertical. (Lil, looking over my shoulder says "high efficiency on 80 Metres, nine foot vertical, is an oxymoron.") Where does she get those words?

Anyway, when some ham reads that ad I wonder, after asking Myrtle to spend $80 for "incredible DX," if he is later disappointed. I will probably be chastised for pointing out that nine feet on 80 Meters is but 3% of a wavelength or about one-seventh the size of a standard quarter-wavelength for the frequency.

Well, lets see. If (on 20M) $70 gets you "incredible DX performance" does a $700 antenna system give you "decincredible DXperformance." Does that stacked monobander monster tower $7,000 antenna farm give you "centincredible DX performance?"

Then, there is no reason for the financially challenged to despair when it comes to competitive ham radio. You can persevere. Just contact "Wireless Woicks" as per their advertisement in the hallowed Journal of New England Electromagnetic Communications.

For the paltry sum of $70 (on 80M) you can be "King of the Hill." You are assured that "users report unexpected results." That is, of course, due to the "unusually low take-off angle." I believe it all and don't doubt a word of it. It is a pity that ON4UN, however, spent all those heavy kilobucks on his monster systems when he could have been "King of the Hill" for a mere $80. Tragic indeed.

Wireless Woicks also has another antenna for which they guarantee (and I do quote) "LOW SWR with your transmatch."

Again, that is absolutely true. With their antenna and your tuner you will see "LOW SWR" in your shack. I suppose only cruel Kurt would point out that the actual SWR on the line will remain the same. The same loss will exist.

Now to something I really like. This is great! Antennaco, P.O. Box 218, Milford, NH 03055; phone/fax 603/673-4347 has antenna kits. The center connector is already part of the driven element so that problem is taken care of. You also get a boom, parasitic elements hardware and directions.

You can slide elements back and forth and do all manner of things to test your theories. A clever idea from the well known W1JR.

And I really like it that Gene Swiech, WB9COY, puts his name and call in great big letters in his advertisement. We could assume that he is proud of what he does, instead of being anonymous like so many other antenna companies. I gather that he concentrates on VHF/UHF It's a west coast number — 619/748-2286.

Here's an HF antenna that, depending on the situation, some may find useful. May be good for someone with a basement, or out of a second-floor window or whatever. Coming right out of the center of the coax is a wire 33 feet long. At the end of that wire is a wire 16 feet and six inches long. Actually it can be one wire 49 feet and six inches long.

The 33 ft. wire runs along until it comes to the 17 ft. pole. It attaches to the top of the pole and then runs down the pole. This should resonate right about 14.200 MHz. It would be most helpful, back where the coax met the wire to add a radial (16 ft. 6 in.) attached to the shield of the coax.

What this is, is an antenna of 3/4 wavelengths long. Stretched out it wouldn't be all that great, it is the last section being vertical that does the trick.

You don't have to waste a lot of time getting signal reports back and forth with this antenna comparing to another. Pretty much the difference in received signal strength is a real clue as to how well this (and other) antennas work.

I've decided not to answer any more letters with antenna questions. Here's why. By the time your letter is received at ***Worldradio***, forwarded to me , I get to answering it, send it back to California and it is sent to you, if you had diligently applied yourself, you would have solved the problem yourself.

I find it boggling but people are still resurrecting that infernal "coax antenna",

FORGET IT!

In mid-January on the 20M band I heard one ham tell another, "I can't go up that high in the band, my SWR goes up too far."

Hah, I can go anywhere, on any band, and never worry about SWR.

(Tune in again next month for another thrilling episode from the IoAARAoAA. That's The Institute of Advanced Amateur Radio Antenna Research of Adelaide, Australia.) WR

California

THE LIVERMORE ARK is sponsoring an Amateur Radio/Electronic/Computer Swap Meet on 3 April from 7 a.m. to 12 noon at Las Positas College. Features include refreshments, free parking and covered spaces in the event of rain. Admission is free. Sellers pay $10 space fee. Talk-in on 147.045(+) from the west and 145.350(-) PL 100Hz from the east. Contact Noel Anklam, KC6QAK, at 510/447-3857 eves. or leave message days at 510/783-2803.

Connecticut

The SOUTHEAST CONNECTICUT RADIO AMATEUR MOBILE SOCIETY (SCRAMS) will be held on 2 April, set-up at 9 a.m., auction at 10 a.m. until sold out. Features include free admission, wheelchair accessible, bring your equipment to be auctioned. Talk-in on 146.97(-). For information call KA1BB at 203/739-8016.

Delaware

The PENN-DEL AMATEUR RADIO CLUB will present its annual hamfest on 10 April from 8 a.m. to 2 p.m. at the Nur Temple on Route 13. Features include VE testing with registration at 9 a.m., indoor tables, refreshments, free parking, tailgating, packet and ATV demonstrations. Admission is $5, XYLs and kids are free. Tables are $10 with electricity, $8 without electricity, tailgating is $6 per space. Talk-in on 147.225(+) and 224.220. For more information, contact Penn-Del Hamfest, P.O. Box 1964, Boothwyn, PA19061; 302/798-7270.

Illinois

The ROCKFORD AMATEUR RADIO ASSOCIATION will sponsor a hamfest on 17 April beginning at 8 a.m. at the Rockford Metro Centre. Features include commercial booths, VE testing, food, refreshments, flea market and free parking. All indoor event with accessibility for the handicapped. Admission is $4.50 in advance or $5.50 at the door. Table prices are $10-$12.50. Vendor set-up time is 5 a.m. Talk-in on 146.61(-) and 223.88(-). For more information contact Denise Fell, N9LAM, P.O. Box 8465, Rockford, IL 61126-8465; 815/874-6361.

Indiana

The COLUMBUS AMATEUR RADIO CLUB will sponsor a hamfest on 2 April from 8 a.m. to 2 p.m. at the Bartholomew County 4-H Fair Grounds, Family Arts Building. 8 foot tables are $6. Vendor set-up is 1 April 6 p.m. and 2 April from 6 a.m. Admission is $3.50 in advance and $4 at the door. Talk-in is on 146.79(-). For more information, contact Marion Winter-berg, WD9HTN, 11941 W. Sawmill Road, Columbus, IN 47201; 812/342-4670.

Minnesota

The LAKE REGION AMATEUR CLUB is sponsoring their 7th annual hamfest on 9 April from 8 a.m. to 3 p.m. at the Hockey Arena, Otter Tail County Fairgrounds. Features include VE testing (registration at 9 a.m., testing at 10 a.m.), forums, Packet meeting, Army MARS meeting, camping areas and concessions stand. Admission is $5. Table cost is $5. Vendor set-up time is 4 p.m. on 8 April, security will be provided. Talk-in on 146.64(-). For more information, contact Keith McKay, NØFKF, Rt. 1 Box 46, Battle Lake, MN 56515; 218/826-6274.

The ROCHESTER AMATEUR RADIO CLUB, INC. will sponsor the 17th annual hamfest on 9 April, beginning at 8 a.m. at John Adams Junior High School. Features include indoor flea market, speakers, programs, refreshments and free parking. Talk-in on 146.82(-) MHz and 224.32(-) MHz. For further information contact Rochester ARC, Colleen Vaneps, NØZDY, 707 11 1/2 Street S.W., Rochester, MN 55902; 507/280-9102.

Mississippi

The OLD NATCHEZ AMATEUR RADIO CLUB will hold their annual hamfest on 16 April from 8 a.m. to 5 p.m. at the Natchez Convention Center. Features include VE exams, concessions available, and RV spaces available for $7 per night. Admission is $3. Dealer tables and swap tables are $10. Talk-in on 14691(-). Contact K5SVC, 601/442-0973 or N5YCZ, P.O. Box 604, Natchez, MS 39121.

Missouri

The JOPLIN AMATEUR RADIO CLUB will sponsor a hamfest on 16 April from 8 a.m. to 3 p.m. at the John Q. Hammons Trade Center. Features include commercial vendors, VE exams, flea market and contests. Admission is $6 at the door, children under 12 free. Tables are $10 for the first table (includes admission), additional tables are $5. Talk-in on 147.210(+). For more information, contact J.A.R.C., P.O. Box 2983, Joplin, MO 64803; 417/623-3610 days, 417/782-5848 evenings.

New Jersey

The DELAWARE VALLEY RADIO ASSOCIATION will sponsor Hamcomp '94 on 10 April from 8 a.m. to 1 p.m. at

Trenton State College. Features include free parking, indoor and outdoor selling spaces and refreshments will be available. The facility has handicap parking and is wheelchair accessible. Talk-in is on 146.67(-). For more information contact HAMCOMP '94, P.O. Box 7024, West Trenton, New Jersey 08628; 609/882-2240.

New York

The RADIO CENTRAL AMATEUR RADIO CLUB will their annual auction on 10 April beginning at 10 a.m. (doors open at 8:30 a.m.) at Suffolk Community College. Features include free parking, free tables, cafeteria on premises. Sellers pay 2% of sale price. Talk-in on 145.15/4Z and 449.525/2A. For more information contact John Mark, KB2QQ, 516/689-6343 or Emil Tillona, KD1F, 516/696-0610.

North Carolina

The RALEIGH AMATEUR RADIO SOCIETY presents RARSfest '94 on 17 April from 8 a.m. to 4 p.m. at the Jim Graham Building, NC State Fairgrounds. Features include a welcoming reception on 16 April from 7-9 p.m., ARRL, QCWA, Army MARS, NTS, ARES, ATV, Packet and DX forums, VE testing (must pre-register by 9 April) starting promptly at 11 a.m., homebrew contest, indoor fleamarket and commercial dealers. Admission is $5 in advance or $6 at the door. Tables are $10 each. Vendor set-up time is noon to 10 p.m. on 16 April and 6 a.m. to 7:30 a.m. on 17 April. Talk-in on 146.64(-) and 146.88(-). For further information, contact Rollin Ransom, NF4P, 1421 Parks Village Road, Zebulon, NC 27597; 919/269-4406.

Oklahoma

The LAWTON FT. SILL AMATEUR RADIO CLUB will hold the 48th annual LFSARC Hamfest on 9 April from 8 a.m. to 5 p.m. at the Comanche County Fairgrounds in Lawton. Features include VE testing, forums and DXCC field checking. Admission is $4 in advance or $5 at the door. Tables are $8 in advance or $10 at the door (this includes admission). Contact Bob Morford, KA5YED, 1415 N.W. 33rd St., Lawton, OK 73505; 405/355-6120.

Texas

The KEY CITY AMATEUR RADIO CLUB will sponsor the ARRL West Texas Section Convention and Hamfest at the Abilene Civic Center from 8 a.m. to 5 p.m. on 23 April and from 9 a.m. to 2 p.m. on 24 April. Features include free parking, VE Exams, wheelchair accessible. Tables are $5 each. Pre-registration is $6 (must be received by 19 April), $7 at the door. Talk-in on 146.160/760. For reservations and information contact Peg Richard, KA4UPA, 1442 Lakeside Dr., Abilene, TX 79602; 915/672-8889. **WR**

CONTESTS

DX YL to North America YL Contest

CW: Wed. 13 April, 1994 at 1400 UTC to Fri. 15 April,1994 at 0200 UTC

SSB: Wed. 27 April, 1994 at 1400 UTC to Fri. 29 April,1994 at 0200 UTC

You may operate only 24 hours of the 36 hours contest period. Operating breaks must be indicated in the log.

Eligibility: All licensed women operators worldwide are invited to participate.

Procedure: DX YLs call "CQ North America YL" and NA YLs call "CQ DX YL."

Operation: All bands may be used. Contacts with OMs do not count. No crossband operating. No net contacts or repeater contacts, Only 24 consecutive hours of operation during each contest.

Exchange: Station worked. QSO number. RS(T). ARRL Section/VE Province/Country Entries in log must also show time, band, date and transmitter power.

Scoring: (A) Phone and CW will be scored as separate contests. Submit separate logs for each contest. (B) DX YLs, including Alaska and Hawaii, may contact all the North American continent which includes the 48 contiguous states and all Canadian Provinces. (C) Contestants on the North American continent (includes all the 48 contiguous states and all Canadian Provinces) may contact DXYL stations including Alaska and Hawaii. (D) A station may be counted once on each band for credit, and one (1) point is earned for each station worked on each band. (E) Multiply the number of QSOs by the number of different ARRL Sections/VE Provinces/Countries worked. A multiplier is counted only once in the contest. (F) Contestants running 150 watts or less on CW and 300 watts PEP or less on SSB AT ALL TIMES may multiply the results of (E) by 1.5 (low power multiplier.)

Logs: All logs must show your ARRL Section/VE Province/Country to qualify for awards. For each QSO, logs must show: the station worked; QSO number sent and received; RS(T) sent and received; ARRL Section/VE Province/Country of station worked, time, band and date. Logs must also state the power output used. If you have 200 or more QSOs, submit a separate log for each band and submit a dupe sheet. Photo copies are OK, but no CARBON COPIES. Please type or print logs. Logs must be signed. No logs will be returned. Logs must show claimed score.

Mail all logs to Carla Watson, WO6X, 473 Palo Verde Dr, Sunnyvale, CA 94086.

All logs must be postmarked no later than 30 days after each contest ends.

Awards: Cup to first place DX-phone. Cup to first place NA — phone. Cup to first place DX-CW. Cup to first place NA — CW. Plaque to highest combined CW and phone NA score. Plaque to highest combined CW and phone DX score. The second and third place DX and NA winners in each contest will receive certificates.

Suggested frequencies: CW 80 meters 3.540 to 3.570; 40 meters 7.040 to 7.070; 20 meters 14.040 to 14.070;15 meters 21.120 to 21.150;10 meters 28.180 to 28.210 — SSB: 80 meters 3.940 to 3.970; 40 meters 7.240 to 7.290; 20 meters 14.250 to 14.280;15 meters 21.380 to 21.410;10 meters 28.280 to 28.410. NOTE: Country band allocations differ. YLs should select appropriate frequencies for transmitting and receiving. Especially on 40 and 80 meters.

Marconi's birthday celebration

The Cornish Radio Amateur Club will sponsor 30 stations in celebration of Marconi's birthday, 23 April. Certificate available. Contact G4USB, c/o CRAC, Box 100, Truro, TR1-1RX, Cornwall, England.

Award information: The C.R.A.C offer a Special Award Certificate for working International Marconi Day Stations. The required standard for the April 23rd 1994 event is to work 12 (twelve) of the participating stations either as a full transmitting station or alternatively we offer the Short Wave Listener an award for logging 12 of the I.M.D stations.

Operation: will take part for the 24 Hour period from 0000/2359 UTC on Saturday, 23 April 1994. The main mode of operation will be SSB on all HF bands with periods of CW or digital modes of communication being actively encouraged.

All award claims should be made in writing giving a full extract of your log entries to: Cornish Radio Amateur Club, M.D. Awards manager, P.O.Box 100, Truro, Cornwall, TR1 1 RX.

Details for the transmitting station claimant: Cost is US$10.00, or £3.50, or 12 IRCs

You are required contacts with a minimum of 12 (twelve) of the participating stations working two way on any mode employed. Be warned that only one contact with each participant will count towards the award, so a contact on two bands or on two different modes will count only as one contact for the SWL award: Cost: US$5.00, or £3.00, or 8 IRCs.

You are required to have logged 12 two way QSOs and provide us with a full extract from your listeners log. As with the transmitting station claims we will allow mixed modes and bands but be warned each callsign will be counted just once towards the minimum of 12 required.

Stations to listen for on 23 April are as follows:

CT1TGM	Coimbra, Portugal
EI2IMD	Crookhaven, Eire
GBØIMD	Isle of Wight
GB2GM	Poldhu Cove
G82MDI	Salisbury Plain
GB25FL	South Foreland Lighthouse
GB4MD	Old Carnarfon Stn, Waunfawr
IYØGA	Sardinia Island
IYØORP	Rocca Di Pappa, Rome
IYLTTM	Sestri Levante, Genova
KLVV/IMD	Cape Cod, Mass'
OE*	Radio Austria Int', Vienna
VELIMD	Glace Bay, Nova Scotia
VOLIMD	St Johns, Newfoundland
DAØMO	Borkum Island
EI4IMD	Galway,Eire
GBlIMD	Leicester (Satellites)
GB2IMD	Rathlin Island N.Ireland
GB2MID	Sandbanks,Poole,Dorset
GB4IMD	Truro (The C.R.A.C.Station)
GB4MDI	Flatholm Island
I*	Caselecchio Di Reno
IYØTCI	Civitavecchia
IY4FGM	Villa Grifone,Pontecchio
KK6H/IMD	Marshall, California
PY1*	Rio De Janeiro, Brazil
VK2*	Wahroonga,New S.Wales
Z56IMD	Johannesburg, South Africa

At present there are a potential total of 28 participating groups for 1994.

*The station at Caselecchio is confirmed but callsign is awaited. The newcomers in OE,PY,VK are subject to confirmation at this time and callsigns to be advised at a later date.

If you have followed IMD on a regular basis you will notice that this year we are sorry to report that N2FCZ/IMD at Babylon, New York, will not be taking part.

In 1992 we issued 134 awards and we hope to receive even more claims in 1994. As ever we look forward to your company on the bands on Saturday 23 April and wish each and every one of you the very best of luck. — Norman Pascoe, G4USB, Chairman of the Cornish Radio Amateur Club, Co-Founder of The International Marconi Day.

For contact by packet, G4USB @GB7AKE. #44.GBR.EU. WR

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

DAVIS RF Co. club discount catalog

This new catalog features "FLEXWEAVE" ™ hybrid aerial wire, DSP audio and noise filters, high quality coax and wire antenna parts, vertical phasing, baluns, Vibroplex, Bencher, B & W and sundry accessories.

The unique aspect of this club catalog is that it provides Amateur Radio club members with an easy way to obtain discounts. No longer is it necessary to "round up" many members to total a $500 or $1,000 minimum order so as to obtain wholesale pricing. All the club member needs to do is have ONE other member order with him/her, a minimum of $150, or three members on an order need only to purchase $100. Hams do not need to go through the logistics of who is ordering what, where are the payments, etc., etc. Also, the order does not have to originate from the club, its administrator, or on its letterhead. In fact, two individual members of two different clubs can order together. All an order has to indicate is the name of the bonafide club and the members names/call signs who are ordering. We trust our fellow hams and will accept a personal check without waiting for it to clear. We only sell ham products at a discount to club members (other than DSP filters, dacron rope, Vibroplex, Bencher and B&W products to individuals). Davis RF Co. also supplies many other products to its prime retail supplier, RadioWare, 800/950-9273.

Davis RF Co. has been selling accessories to hams for ten years. Please note the accolades which we have received from customers as noted on page 17 in our catalog. It is our desire to furnish a quality item at a very attractive price, while also providing personal customer satisfaction and respect. Davis RF Co. also designs specialty/custom cable for various commercial industries as well as distributing standard coax and wire to businesses under Davis Associates, Inc. and Davis/Orion Marine Cable Co.

The Club Catalog can be obtained by sending three 29 cent stamps, deductible with order, to our address and specifying "Club Catalog". Orders can be placed and set up for shipping, subject to receipt of payment, 24 hours a day, 800/328-4773, specifying "CLUB Order."

Tool Resource's soldering station

The Hexacon HTR 3320 soldering station is now available from The Tool Resource. This station is designed to give temperature regulation from 350°F to 850°F. The thermal compensating element increases the iron's output as the work rate increases. The station solders a wide range of electronic connections and multi-layer boards, making this your most economical and practical choice. There are no movable parts or elaborate circuitry for simple maintenance and

dependability. The station also adapts to a wide range of surface mounted tips.The price is $74.99.

For more information contact: The Tool Resource, P.O. Box 1106, W. Dundee, IL 60118; 708/468-0849.

AEA's keyboard keyer

Lynnwood, WA — Now AEA puts the world at your fingertips, literally, with our new KK-1 Keyboard Keyer. The KK-1 turns any standard PC-compatible 101-key keyboard into an easy-to-use, feature-packed Morse machine. Using the provided cable, the KK-1 will even share a keyboard with your

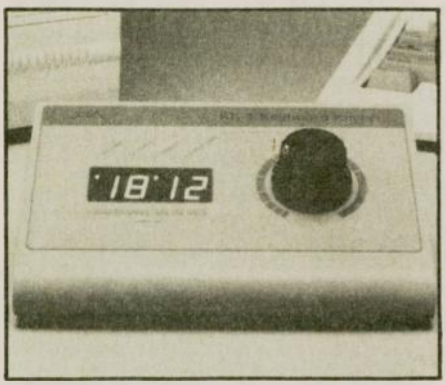
computer. A simple key combination switches the keyboard between the keyer and your computer.

The KK-1's extensive features take full advantage of the keyboard's layout. For example, the separate numeric and cursor control keypads are used for accessing the majority of functions. The function keys let you select the twelve nestable message buffers with a single keystroke.

Unique features, such as short-term memory and message repeat, make the KK-1 versatile and easy to use. Hone your skills with an extensive code practice mode that allows you to choose between commonly heard words and random character groups. A built-in iambic keyer allows you to choose paddles for a change of pace.

Other unique features include:

- A four-digit LED display with mode indicators.
- Adjust character formation speed and average sending speed together or independently.
- Nineteen weight setting to compensate for transmitter keying characteristics, or to give yourself a distinctive fist.



With more usable features for your money than any other Morse keyboard, the KK-1 continues AEA's tradition of top-notch keyers.

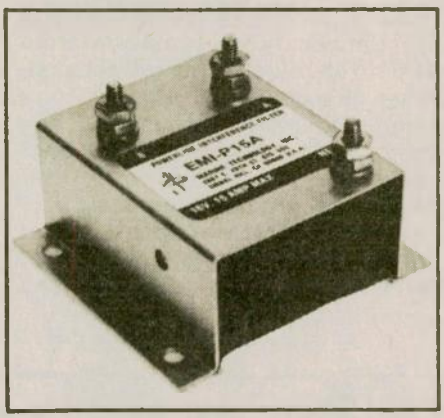
Suggested retail price for the KK-1 is $199.00. The KK-1, as well as the rest of AEA's high quality product line, are available from your favorite amateur radio dealer.

For more information, please contact: Advanced Electronic Applications, Inc., P.O. Box C2160, Lynnwood, WA 98036; 206/774-5554, fax 206/775-2340.

Communications noise filter

More and more people are experiencing electrical interference problems in public safety, commercial and recreational vehicles when installing electronic communications equipment. Such interference can raise havoc with transmission, bury reception, greatly reduce range, and obliterate subcarrier-controlled squelch used in transmitter identification.

Marine Technology, Inc., with over 25 years of experience in the control of interference in vehicular and marine installations, has developed the EMI-P15A noise filter which protects communications equipment from power-line interference and isolates noise producing accessories.



The EMI-P15A 12 volt, 20 amp electrical interference power-line filter is designed to eliminate alternator whine and other interference to communications equipment such as:

- commercial AM/FM/SSB/VHF radiotelephone equipment
- ham radio transmitters
- auto sound equipment
- public address systems

The EMI-P15A will also prevent interference developed in noisy accessories from entering the vehicles' electrical system. Such devices include:

- 12 VDC to 120 VAC inverters
- large 12 volt motors in fans, pumps and blowers
- strobe lights and signals

The EMI-P15A is only 2-3/4 inches long by 3 inches wide and 1-3/4 inches high and can be easily attached to any clean surface with its pressure-sensitive mounting strips. The suggested retail price is $34.95. Marine Technology also manufactures companion filters with higher current ratings of 35, 70, 120 and 250 amps.

For additional information, contact Marine Technology, Inc., 2667 E. 28th St. #505, Signal Hill, CA 90806; 800/772-0796.

CopyCode 2.0 for the Amiga computer

CopyCode 2.0 is a Morse code trainer for the Commodore Amiga computer. Audio frequency, volume, weight, character formation and transmission speeds, lesson length, and hide/show text are adjustable by the user. CopyCode 2.0 contains all the characters on the FCC exam and more. Practice with our 14 predefined character groups or create your own groups using our unique on-screen keyboard. CopyCode contains thousands of random but repeatable sequences of characters, words, QSOs, and new material not found in CopyCode 1.x. Lessons may be recorded and printed so you can improve your Morse code skills anywhere, anytime. Run multiple copies of CopyCode to practice receiving CW through QRM. Registered owners of CopyCode 1.x may upgrade to version 2.0 for $4.00 plus $3.00 S&H. The price for new users is $25.00 plus $3.00 S&H. California residents must include sales tax. For more information write Sensible Software Solutions, 4951-D Clairemont Square, Ste. 262, San Diego, CA 92117-2798; 619/453-9446. WR

When will AMSAT-OSCAR-13 be in range?

ROSS FORBES, WB6GFJ

Those just starting out in the world of OSCAR communications would like to know when they can hear a satellite. The following charts are produced to give you a rough idea as to when OSCAR-13 will be within range of your location. The three charts as printed are centered on the following geographic locations East = New York City; Mid = St. Louis, MO; West = Reno, NV.

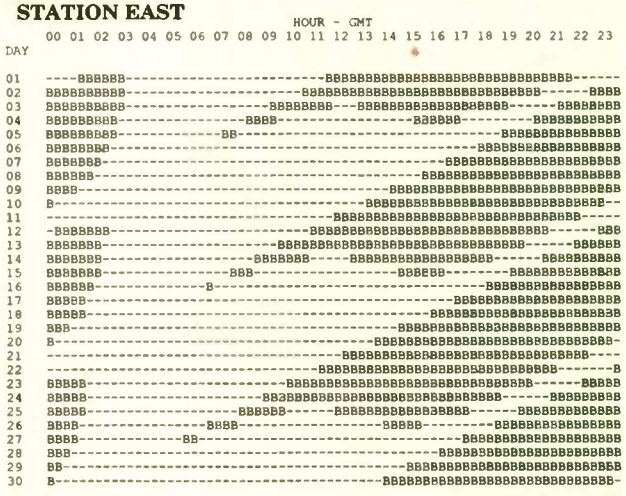
As you read the chart nearest your location, keep in mind the following details — all dates and times are given in UTC. The date is printed on the left hand column and the UTC hour along the top.

A dash mark indicates the satellite is out of range and therefore not able to be heard. The letter "B" indicates OSCAR-13 is audible at that location and signals should be heard between 145.810 and 145.880 MHz (SSB and CW). A letter "O" indicates the satellite is audible, but the only signal you will hear is the telemetry beacon on 145.810 MHz. the letter "L" indicates the satellite is audible but will hear signals between 435.650 and 436.000 MHz (SSB and CW).

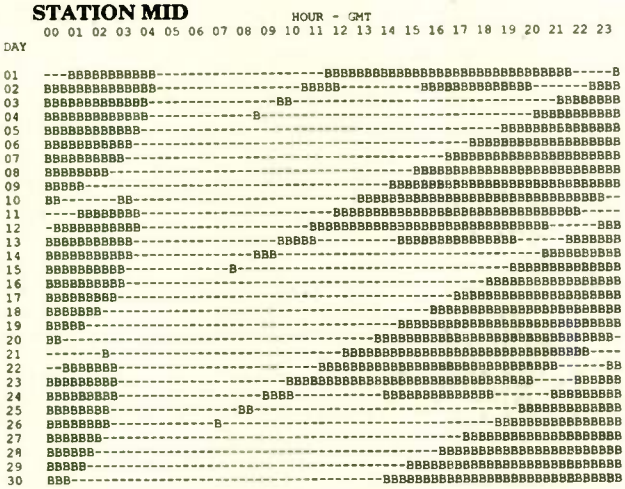
Remember, if a letter is printed on the chart, you should be able to hear OSCAR-13.

For more information about OSCAR, please send an SASE to either of the following: Project OSCAR, P.O. Box 1136, Los Altos, CA 94023-1136; AMSAT-NA, P.O. Box 27, Washington, D.C. 20044. **WR**

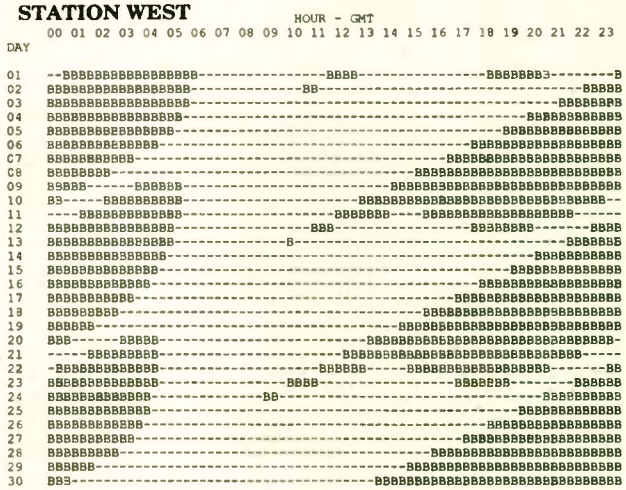
STATION EAST



STATION MID



STATION WEST



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
Alaska			
5/14/94	Anchorage	Jim, KL7CC 907/338-0662	p/r; w/i
Arizona			
5/1/94	Tucson	Micki, AA7RR 602/883-8305, call for info, testing done as requested	p/r
5/14/94	Tucson	Joe, K7OPX 602/886-7217	w/i
California			
5/3/94	Fremont	KJ6EP 510/791-6818	w/i only
5/4/94	Sacramento	Jim, AB6OP 393-8839 or Earl, AB6CN 331-1115	p/r pref.; w/i OK
5/14/94	Adelanto	619/244-1396 or 619/247-5433	w/i only
5/14/94	Petaluma	Dale, 707/762-9414	w/i OK
5/14/94	San Pedro	N6DYZ 310/325-2965	p/r pref.; w/i ltd.
5/14/94	Sunnyvale	408/255-9000 24-hr.	
5/14/94	Santa Barbara	Darryl, KF6DI 805/969-2326	w/i
5/14/94	Turlock	W6XK 209/883-2968	w/i OK
5/19/94	Fountain Valley	Tom, N6XKY 714/778-1542	p/r
5/21/94	Porterville	Phil, WA6WRS 209/535-4288	w/i
5/21/94	Redwood City	Joe, KB6OWG	w/i
5/21/94	Sacramento	Lyle, AA6DJ 916/483-3293	
5/21/94	Stockton	Mark, W6DKI 209/465-7496	w/i
5/26/94	Long Beach	W6LRF 714/847-6370; N6LUH 310/592-1713	w/i OK
5/28/94	Fairfield	Jerry, AA6NO 916/662-0801	w/i OK
5/28/94	Vacaville/Elmira	Barbara, KM6AC 707/429-4878	w/i only
5/29/94	Sunnyvale	408/255-9000 24-hr.	w/i only
Colorado			
5/14/94	Denver	Glenn,WØIJR 303/360-7293, 24-hr. message	w/i OK
5/21/94	Westminster	Phil, NP2X 303/421-2795	p/r or w/i
Connecticut			
5/1/94	Milford	NB1M 203/933-5125; WA1YQE 203/874-1014	w/i
5/14/94	Hampton	Dick, WE1Y 203/423-6420	p/r pref.
5/25/94	Shelton	WJ1T 203/283-1044	w/i pref.
Florida			
5/21/94	Melbourne	WB9IVR 407/724-6183	w/i OK
Idaho			
5/14/94	Boise	W7JMH 208/343-9153	w/i
Illinois			
5/1/94	Paris	WO8X 217/463-2213	p/r; w/i
5/14/94	Oak Forest	David, NF9N 708/448-9432	w/i
5/21/94	Loves Park	Dennis, W9SS 815/877-6768	p/r; w/i
Maryland			
5/21/94	Laurel	WB3GXW 301/572-5124 after 6 p.m.	p/r pref. w/i OK
5/25/94	Glen Burnie	Jerry, NU3D 410/761-1423	p/r pref; w/i ltd.
Massachusetts			
5/14/94	Braintree	Phil, K1UPY 617/326-6446	
Michigan			
5/7/94	Iron Mt.	F.D. Lequia, WD9HDP 906/246-3641	
New Jersey			
5/11/94	Fort Monmouth	MARS 908/532-5354	w/i
5/14/94	Cranford	24-hr. hotline: 201/377-4790	
5/14/94	Pennington	AA2F 609/737-1723	p/r pref; w/i OK
5/19/94	Bellmawr	WA2VQG 609/933-1500	w/i
5/21/94	Bayonne	Bob, N2IYY 201/435-5953	w/i OK
New York			
5/1/94	Yonkers	AC2V 914/237-5589	w/i OK
5/7/94	North Tonawanda	Vern, AA2AC 716/634-5276	p/r only
5/10/94	Hicksville	Bob, W2ILP 516/499-2214	w/i
5/18/94	Lancaster	Chuck, WD2AIK 716/937-3592	p/r only
North Carolina			
5/21/94	Morehead City	Art, KC4QD	p/r pref; w/i ltd.
5/31/94	Jacksonville	Dick, KD4YOT 910/455-8834	w/i
Ohio			
5/7/94	Cincinnati	Herb, WA8PBW 513/ 891-7556	w/i OK
5/1/94	Bellevue	John, N8RFK 419/684-7822	w/i OK
5/19/94	Youngstown	James, N8IRL 216/534-1394	p/r only
Oregon			
5/11/94	Roseburg	KB7CMB 503/672-5997 or AA7GD 503/672-7564	w/i OK
5/18/94	Florence	Hal, N7NNA 503/997-2323	p/r pref.
Pennsylvania			
5/7/94	Erie	W3CG 814/665-9124	w/i OK
Rhode Island			
5/12/94	Providence	Judy, KC1RI 401/231-9156 or Al, NN1W 401/454-6848	w/i OK
5/28/94	Slatersville	Bob, W1YRC 401/333-2129	w/i OK
South Carolina			
5/21/94	N. Charleston	Ed, KC4OOZ 803/871-4368	
Texas			
5/10/94	Houston	Harold, ND5F 713/464-9044	p/r pref.; w/i OK
5/14/94	Houston	Jim, KB5AWM 713/488-4426	w/i only
5/21/94	Austin	Jim, AB5EK, 512/327-6184	w/i
Vermont			
5/21/94	Montpelier	WB1AJG 802/433-6172	w/i OK
5/28/94	Gloucester	Fran, KD4UEY 804/693-2117	w/i OK

THE MART

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• Sell • Inform

MART deadline 20th of the month two months prior to issue date. Please include an address on all ads so prospective clients can contact you by mail, if they prefer.

Commercial rate: 35¢/word, prepaid.
Private rate: 20¢/word, prepaid.

THE MART *Worldradio*
2120 28th St., Sacramento, CA 95818

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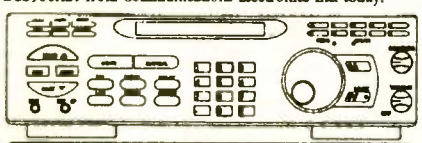

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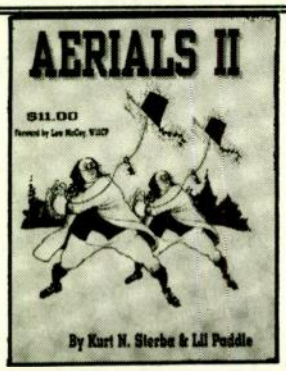

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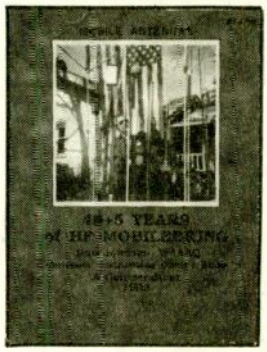

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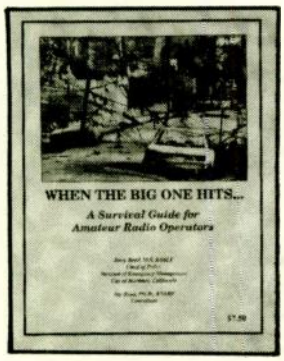

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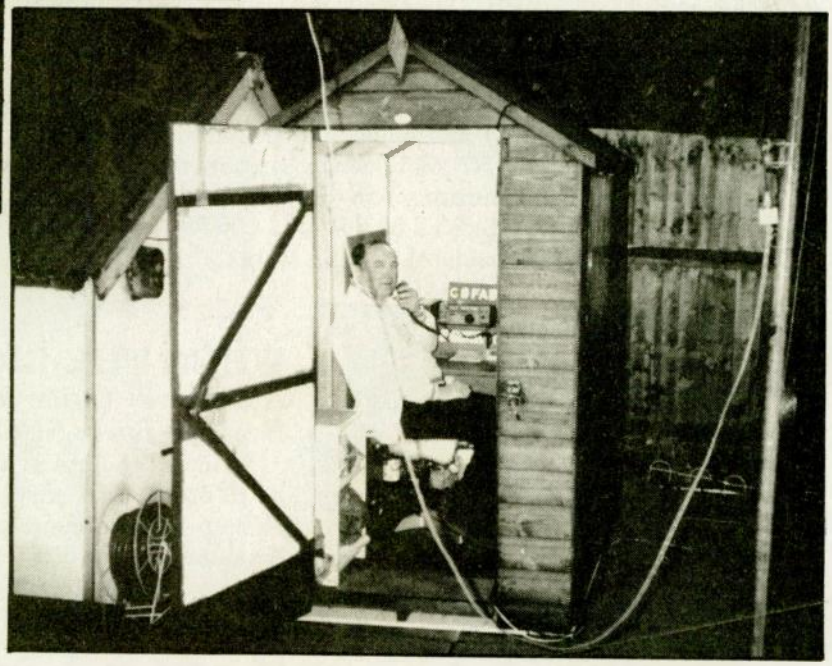

One of George and Barbara's genial hosts in London, Harvey "Hank" Kay, GØFAB, poses in his shack.

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