

March, 2011

Solid Copy de KC7Z

Newsletter of the North Kitsap Amateur Radio Club

PO BOX 2268 -- Silverdale, WA 98383-2268

Web page: <http://www.nkarc.org>

February, 2011

From the Editor's Machine:

This month "The Wayback Machine" describes the chaos in commercial radio broadcasting in the early years of the 1920s where technology was not sufficient enough to prevent stations from drifting and interfering with one another. The government tried to mandate some controls but was hampered by the fact that the laws were not adequately defined to allow them. Congress reacted by writing new laws governing radio broadcasting and established the Federal Radio Commission to enforce them. Through it all, amateur radio operators complied with the regulations and worked to improve their equipment and minimize frequency drifting.

The articles on meters and measurements authored by Kris, KF7GWG are completed with a very good article on electrical and electronic safety measures.

Field Day is not far off and Paul, K7PV, reminds us of the work and preparation required to have a successful event. He refers the members to some web-sites that help in the planning. Take a look, prepare and participate.

Like working the vhf frequency bands? Again, Paul comes through with a very good article describing a 440-Quad antenna he put together using "junk box" parts.

Take a look at the information on the upcoming Fox Hunt event at Fort Flagler State Park.

The Solid Copy is open to all who have an idea , a project to describe or suggestions on programs for the club to become involved We don't get the support of the public if they don't know we are here.

Comments and suggestions are gladly accepted – even criticisms. Send them to me at any time.

73, Bob, N7KTP

Scheduled Upcoming Events

Club General Meeting

Date: Mar 19th, 2011

Time: 10:00 AM

Located: Silverdale CK Fire Station #51

Project Night:

Date: Mar 25th, 2011

Time: 9:00 AM

Located: Silverdale CK Fire Station #51

NKARC Breakfast: Date: Mar 26th, 2011

Time: 9:00 AM

Located: Bowling Alley

Club Board of Directors Meeting

Location: Silverdale CK Fire Station #51

Date: Apr. 8th, 2011

Time: 6:30 PM

Everyone is welcome to attend and to express your views for your NKARC. Remember, it's your club.

Dave, N7ORM

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March VE Exam Session

Our next VE exam session will be at 9:00 a.m. Saturday, March 26, 2011, at the Poulsbo Library

Horace, K7ORY

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Buy---Trade---Sell----Need

**One man's discard is another man's treasure,
Let the club know of it by putting it here.**

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Field Day 2011

Field Day is one of Amateur Radio's most popular and anticipated events. Sponsored by the ARRL, they describe the objective of the event as follows:

To work as many stations as possible on any and all amateur bands (excluding the 60, 30, 17, and 12-meter bands) and to learn to operate in abnormal situations in less than optimal conditions.

Importantly, when the North Kitsap Amateur Radio Club's Field Day Committee first met, it decided the primary objective for the club would be to HAVE FUN! In practical terms this means we will try to make contacts and do other things the ARRL suggests such as have a public information table and explain ham radio to any members of the public that visit. We'll also be inviting area Boy Scouts to give them an opportunity to work on their radio and communication merit badges. However, we'll manage all this in such a way as to make sure all club members have a good time. Club members who want to operate and/or bring their own equipment and have great food won't be disappointed!

All participants are encouraged to review the official Field Day Rules, found at:

http://www.arrl.org/files/file/Field-Day/2011/2011_Rules.pdf

Many of us plan to arrive at the Green Mountain Horse Camp site on Friday afternoon, to get set up for Saturday morning. We will 'shoot' some antennas up into the trees (a dipole at 80 feet gets out very well!), set up the generators and get ready for 24 hours of operating on Saturday and Sunday. Like last year, we plan to have several HF and VHF/UHF stations, a supervised Get On The Air (GOTA) station for new or unlicensed operators, digital, satellite, and fox hunting (2 meter radio direction finding) ops. We'll have potluck dinners and breakfasts for those wishing to participate (and snacks for grazing at other times).

We do have to work around the DNR gate closure/opening times of 6pm/6am, but that did not create any problems last year. Green Mountain does have pit toilets, but no drinking water. A map of the area can be found at:

http://www.bikerag.com/images/MAPS/wa/green_08_full.pdf

We'll have signs out on Lake Tahuyeh Road at the GM-1 gate (see map), and at one other point where you turn on GM-3 into the Horse Camp.

More details, directions and other info to come!

Feel free to contact any FD Committee members if you have questions: Paul W7PV, Ed AK7H, Al KE7RPR, Dave N7ORM, Dan KF7AHO, Heather KF7LTU, Jonathan KF7GEM, Don NS7Q, Kris KF7GWG, and Tom W7LUU.

CQ Magazine World Wide Fox Hunt

In part due to CQ's announcement, Neil WA7NBF and I are planning a fox hunt at Ft. Flagler State Park on Saturday, May 14th, and all are invited. We've already had some of the usual suspects from Tacoma and elsewhere say they're coming, so it should be a good event.

We'll start at noon, meeting at the Museum near the parade field, and should have 5 or so transmitters to find. Difficulty should be easy to moderate. We'll have extra equipment if anyone would like to come and try it out. Let me know if you think you'd like to participate, or just show up!

I'm planning on making a weekend out of it (Field Day warm-up?), so if anyone else wants to do that I'd welcome the company. I'll be at campsite 82 (you can reserve them on-line).

Paul
W7PV
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RACES/ACS Net Sessions:

The Kitsap RACES/ACS net is held on Sunday nights at 7:30 PM on the 145.43 repeater (-600 offset, 179.9 PL tone). Check in and be informed on emergency communications in Kitsap County.

The packet radio net in on 145.63 Mhz at 7:00 PM. Connect to K7EK-8. . If you cannot connect to K7EK-8 directly, connect to the ELYS-SA node on the same frequency and then connect to K7EK-5.

Other nets include 10-meter HF Net on 28.330 Mhz USB starting at 7:00 PM

6 meter FM net on 52.35 Mhz starting at 7:00 PM
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HAM Radio Operators for the MS Walk

The MS Walk will be next on April 2nd and they are asking for help. NKARC did it before and we can do it again. It's a great cause and a chance to contribute our services. Contact Russ and let him know you're available. I hope to be there.

Bob, N7KTP

From: [Molly Johnston](#)

I am running Walk MS this year and I'm hoping that you can help with our HAM Radio Operators at this years' Walk. In Kitsap it is on April 2nd and will be the same exact format as last year. Please let me know if you are available to help with this.

Thanks so much!

Hi, Molly... yes we are with you again this year... we Hams will be there.... hope the Klahowya route signage and such is planned out adequately, as in previous years, of course. It's a great cause, and one we are happy to support.

Cordially,
Russell E. Swank KI7PG :-)\n=====00000=====

2011 Dues Are Due

Time flies and it's time to remind club members to renew club memberships Put a check for your dues in the mail and address it to the club (Box 2268, Silverdale, WA 98383-2268) or better yet, bring it to the club meeting at Firehouse 51 in Silverdale. Dues are \$15/year (\$12 for seniors, \$6 for students and \$10 for additional family members). You can download an application for your renewal by going to the webpage at <http://nkarc.org> and clicking on "Join NKARC" followed by "Online".

Your pre-written check will facilitate matters at the meeting and help avoid interrupting the activities. Treasurer Warren will have the club roster handy and we can check you off once paid.

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Iraqi hams

For those still looking for that rare yi9 contact there is an active ham right now. Michael Latham, YI9YTS I will get his operating schedule if anyone is interested.

Chris
KF7ATX

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FOR SALE:

Tom, W7LBG (Bremerton) has a Heathkit SB-220 linear for sale priced at \$300. This is a great linear at a great price, ebay has 2 priced at over \$600. History and background information for the SB-220 can be read at www.eham.com He can be contacted at (360) 265-9047 or email to:W7LBG@tscnet.com

Tom Dickie, W7LBG, has a TS850 and a Heathkit SB2220 for sale. His phone number is 1-360-516-6064.

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Cleaning in the Shack:

While you are getting ready to set up for the annual Spring cleanup, you probably found some old gear you haven't used in a long time originally put away as a backup. Now, you realize, that you don't need that backup and it's time to "get rid of it." Set the items aside and let your editor know that they are up for sale. Or trade. An ad can be placed in Solid Copy for the right price – free.

Another option is to discuss the possibility of setting aside a meeting to let members sell or trade for available items. The meeting could be scheduled in late spring or early summer. It might even be a tailgate party/ meeting. Remember—one man's surplus ("garbage") is another man's treasure. That old TV antenna that you have been meaning to take to the dump can be easily converted to a six meter beam by somebody who needs one and is a little short of cash. The spool of wire will make a nice dipole antenna for the new kid on the block.

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440Mhz 4 element Quad

Since a few club members having difficulty reaching the clubs 440 repeater, I thought I'd experiment with a low-cost antenna that would be easy to make, and provide substantial gain over a vertical or rubber duck. I found several possibilities, but the one that caught my attention was a quad that I could build without buying anything..... strictly junk box parts.

I used 14 gauge house wire, 1/2 inch PVC, some plexiglass squares instead of the traditional spreaders, and some RG-58 coax. Thin plywood or even cardboard could be used instead of plexiglass, but since I had some I thought I might as well use it. The truth is, if I had it to do over I'd probably use cardboard because it's much easier to cut/shape, and I did not plan to mount the antenna outside. I used a glue gun to attach the elements to the plexiglass, but tape or any other nonconductive substance would work as well. Another ham suggested using junk arrow shafts for spreaders, saying they were available cheap on ebay.

Construction

First I stripped some bare wire out of some 14/2 house wiring. Size 12 wire would work just as well. You'll need 4 pieces, each about 30 inches long to start with. The dimensions needed are:

<u>Element</u>	<u>inches/side</u>	<u>circumference</u>
Reflector	6 15/16	27 11/16
Driver	6 12/16	27
Director 1	6 9/16	26 3/16
Director 2	6 3/16	24 12/16

(in)

Reflector to Driver	4 7/8
Driver to Director 1	4 1/4
Director 1 to Director 2	4

For the tuning stub on the driver, leave an extra inch or so hanging down so you can slide the feed line up or down. By moving the feedline as shown in the original article, you're not really changing the total length because moving the contacts along the quad element requires lengthening or shortening the feed-line stubs, so the element total doesn't really change.

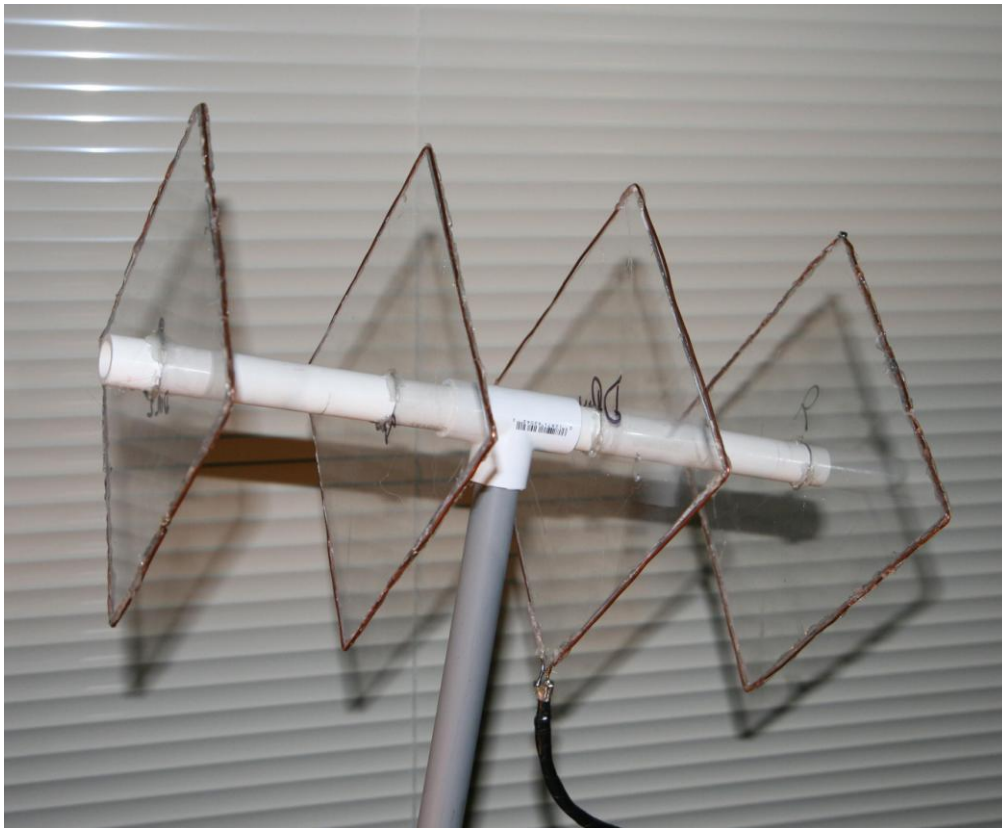
The 'sleeve balun' is made of coax shield. Cut a 6 inch length of RG-58, pull out the center conductor, then pull out the shield. Compress the shield length-wise so it fits over the antenna coax. I recommend you tin the antenna end of the sleeve balun (shield) so the loose ends don't contact the braid or center conductor going to the antenna. Carefully strip about 1/4 inch of coax casing off the antenna feedline at a point 4 and 3/8 inches from the antenna feed end to expose the coax shield. Weave a thin piece of wire through the exposed feedline shield, then wrap it around the other end of the sleeve balun and solder, taking care not to melt through the coax center insulation. To further ensure the antenna end of the sleeve balun doesn't contact the shield or center conductor going to the antenna, wrap some tape at the end of the coax where the shield/center conductor split off to go to the antenna. Then, wrap the entire

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sleeve balun with tape to keep it from moving.

The lengths prescribed here resonate on 444Mhz, but keep the antenna away from other metal as much as possible, and use at least 10 feet or so of coax feedline.

Element		Each element	
		inches/side	circumference
Reflector	444.075	6 15/16	27 11/16
Driver	444.075	6 12/16	27
Director 1	444.075	6 9/16	26 3/16
Director x	444.075	6 3/16	24 12/16



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Meters and Measurements **Kristofer Stafford Kf7GWG**

“In the performance of his normal duties, the technician is exposed to many potentially dangerous conditions and situations. No training manual, no set of rules or regulations, no listing of hazards can make working conditions completely safe. However, it is possible for the technician to complete a full career without serious accident or injury. Attainment of this goal requires that he remain constantly alert to those dangers. He must take the proper precautions and practice the basic rules of safety. He must be safety conscious at all times, and this safety consciousness must become second nature to him.” - Paragraph 1, Chapter 1, Page 1 of *Basic Electricity, Reprint of the Bureau of Naval Personnel Training Manual*, Fall River Press, 2004 Ed.

Guys, I owe you an apology. It has taken me the better part of six months to realize that I have been rather short-sighted in this series on meters. I have failed to mention safety. I am not trying to condescend, nor am I trying to be your Father. I just think that since everything that we do in life has a risk, then the least I can do is to help each of you to understand and mitigate those risks so that you may make an informed decision. You have been warned.

KF7GWG's Universal Electrical Safety Rules

After working around electricity and electronics for the last twelve years, the last of which I have been a Ham, I have experienced many different rules and regulations regarding electrical safety. When I combine all of the incident report lessons learned, rules, regulations, and my own operating experiences I have been able to discern the spirit and intent of electrical safety. For your scrutiny, I present my four Universal Electrical Safety Rules:

1. Treat every circuit as if it is energized
2. Never touch a circuit unless it has been verified de-energized **BY YOU**
3. Keep all circuits undergoing energized testing or troubleshooting covered
4. Keep your fingers and all uninsulated items and tools away from energized circuits

Now I know I can hear some of your scoffs and screams already. But in the spirit of Col. Hunter S. Thompson (may he rest in the gonzo peace he lived in): I cannot advocate the use of these rules, but they've worked for me.

I hear some of you out there questioning my rationale for these rules (not to mention my sanity). I will try to explain; no guarantees.

According to the National Institute of Standards and Technology (NIST), The lowest potential that can kill you is 30 Volts. To understand why this is we must look at the 1-10-100 rule. The 1-10-100 rule states that 1mA can be felt (think static charge). At 10mA, you lose control of your muscles (some sources break this down a bit further and have a range of about +/-3mA to his number). With 100mA flowing across your heart, you will be soon pushing up daisies.

Now, NIST has said that under the worst possible conditions, your body's internal resistance (impedance for you fancy types) can be as low as 300Ω.

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Proof?! You want proof!! You can't handle the proof!! Ok, maybe you can handle the proof: $100\text{mA}=30\text{V}/300\Omega$. Everybody with me so far? Those who aren't can stay after class and get some extra help.

Edison versus Tesla

Each of these great men made significant contributions to electricity. I mention these two men here because each of their preferred types of electricity can cause a different type of electrical burn.

WARNING: I AM NOT AN EXPERT. DO NOT TAKE MY WORDS HERE AS GOSPEL.

Electrical burns caused by Edison's DC have a tendency to cause significant entry and exit wounds, as well as significant internal damage along the path of current flow (the path of least resistance). This is due to DC's nature to go through the center of the conductor (in this case, your bones).

Tesla's AC travels more towards the surface (think skin effect). Burns caused by AC are more superficial and widespread. The higher the frequency, the closer the current flows towards the surface.

Because I was not following the rules above once, I did the 60Hz Shuffle once. I realized that I wasn't very good at it and I haven't tried to do it again since then. Now my old boss on the Triple Nickel, Jerry, he once got zapped by 400Hz. It left a fairly gnarly Scar on his hand, and he said that it was one of the most painful things that he had ever felt. After a while, I realized why. Your nerve endings are closer to the surface of the skin. Insert shudder here.

Meter Safety

Meter safety is how I got on to this topic to begin with. You can follow the rules mentioned above until you are blue in the face (well you might just be if you don't follow them), but if you don't use good meter safety practices, then they will do you no good.

Meter Integrity: If your meter is not in good physical condition, don't use it. Trying to take a voltage on a klystron with a meter that has a crack in the case next to where the lead plugs into is not a good idea (especially if you are holding the meter in your hand).

Side note: 10,000V will arc across a distance of 1cm of dry air. We live in Washington, and I know that we have a much higher relative humidity than 0%. Mull that over for a while.

Test Lead Integrity: Same as meter integrity. If your test leads are not in good condition, replace them, or get creative and make a 2m 1λ dipole.

Battery Check: Just when is the last time you put new batteries in your meter? if your batteries are old, then the internal circuitry may not function quite right. I know that none of you want to check a portion of your radio dead only to find a sudden inspiration running up your hand and then doing the Owie Jig.

Calibration Check: Does your meter have an internal calibration check? Did it pass? Was it calibrated at the factory? If it is an analog meter, did you drop it? Good engineering practices should dictate what do in each of these situations. When in doubt, read your owner's manual. There is usually a section on

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the meter's calibration and accuracy (they kind of go hand-in-hand). On that note, make certain that you understand the limitations of the meter's accuracy. Using the low voltage setting to check main line power coming into your house may result in damage to your meter, blowing an internal fuse in the meter, or worse (just ask the Master Chief Electrician's Mate from the USS Nimitz about that one; what a tragedy).

Think about these questions the next time you go to use a meter:

- Is this the right meter for this job?
- Is this the right meter setting for this job?
- Is this the right time for the job?
- Is this the right place for the job?
- Am I the right person for this job?

If you would like more information on this topic, or any other topic that I have discussed in the past please e-mail me at pcs1ldv@gmail.com.

Try not to let the magic smoke out!

73, Kris, KF7GWG

The Wayback Machine –Chapter 6
A History of Amateur Radio
by Bill Continelli, W2XOY

These articles first appeared in the Schenectady Museum Amateur Radio Association's Newsletter, "RF Musings". They are reprinted here with the author's generous permission.

The Radio Act of 1912 was hopelessly obsolete by the early 1920's. Conceived in an era of long and medium wave spark telegraphy, the Act was totally inadequate when it came to broadcasting and the shortwaves. The Department of Commerce gamely tried to stretch the Act to meet new requirements; the 1922 and 1924 "regulations" that banned broadcasting by amateurs, set up the broadcast band, and carved out the 160, 80, 40, 20, and 5 meter bands, were really nothing more than "gentlemen's agreements", valid as long as they weren't challenged.

For a time, they worked. Amateurs enthusiastically settled in on their new bands and began working the world, while the number of broadcasters in the new 550 to 1500 kc region jumped from 30 to almost 600 in just 3 years. Technical advances had not kept up with this growth, however, and there were problems. Crystal control of transmitters was still a couple of years away, and the unstable broadcasting stations drifted from their assigned frequencies, sometimes to the point of interfering with adjacent channels. Even stations off frequency by 400-600 cycles could cause ear splitting heterodynes. Most receivers of the 1920's were either regenerative or TRF (Tuned Radio Frequency), good on sensitivity, poor on selectivity. As a result, the 1920's broadcast band was saturated with only 600 stations. (Compare that to today's medium wave where tight frequency control of 20 Hz, coupled with directional antennas and selective superheterodyne receivers, allows over 4000 stations to occupy the AM broadcast band without undue interference).

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The Department of Commerce, therefore, issued regulations mandating such solutions as time sharing (where two or more stations occupied the same frequency at different times of the day), and daytime on-only operations. Stations were constantly moved to another frequency, or told to decrease power, in order to minimize interference. The Department also went after stations whose transmitters drifted onto adjacent channels. An interesting example of this was the Los Angeles station of "Sister" Aimee Semple McPherson, an evangelist who was the leader of the International Church of the Foursquare Gospel. Her station was notorious for drifting up and down the broadcast band. When the Federal Radio Inspectors tried to keep her on frequency, she imperiously wrote to Secretary Hoover, demanding that his "Minions of Satan" stay away from her transmitter. The Almighty would choose her Wavelength, she wrote, not the Department of Commerce.

Many of the stations that had been moved, told to reduce power, or share their frequency, did what any patriotic American would do--hire a lawyer. Once the legal bloodhounds began digging, certain things came to light.

Article I, Section 8, of the Constitution allows the Federal Government to regulate INTERSTATE commerce. Furthermore, it is an accepted fact that a Federal Agency cannot issue any regulations, unless it was given the power to do so by Congress. Thus, the lawyers for the disgruntled stations challenged the Secretary's "regulations" on two fronts, first, that the Radio Act of 1912 gave the Department no authority to regulate broadcasting stations, and second, that since many stations could not be heard across state lines, there was no "interstate commerce" and therefore no Federal jurisdiction. (This is the argument used by "Radio Free Berkley" and other low power pirate stations).

The Day of Reckoning arrived in 1926 when an Illinois District Court held that there was no Federal Law to permit the Secretary of Commerce to assign broadcasting licenses or frequencies. The Attorney-General admitted that the Federal Government had no control over radio, except what was specifically authorized in the 1912 Act.

Pandemonium broke out. Stations, liberated from all Federal control, upped their power, jumped frequency, and/or began full time operations on daytime or time shared frequencies. Smaller stations were jammed off the air. Unlicensed transmitters appeared out of nowhere, dropped down on any convenient (or inconvenient) frequency, and began broadcasting. Anarchy was King.

Amateurs, of course, could have legally joined in this RF orgy. There was nothing preventing them from going back to broadcasting, moving to new frequencies, exceeding the one kW limit, or anything else they desired. To their credit, they did nothing of the sort. One reason was the immense respect they felt for Secretary Hoover, a man who over and over publicly supported amateur radio in any way possible. They would abide by their "gentleman's agreement" with him. The other reason was common sense. They knew that Congress would soon rectify the problem by passing appropriate legislation. The broadcasters were "big boys" with a lot of money, powerful corporate backers, and 6 million listeners; they could afford to violate the spirit of the law and get away with it. Amateurs did not have this luxury. They realized that any violations of the 1922 and 1924 agreements, even if they were legally unenforceable, would cost them dearly in political support. So, while the 550 to 1500 kc segment was a free for all, the amateur bands were disciplined and orderly, as hams mastered the art of crystal control, and improved their operating skills.

Incidentally, one area in which those skills were honed was expeditions. From the Arctic to the Antarc-

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tic, from MacMillan to Byrd, amateurs provided the necessary communications of almost every major explorer. Also, in the area of emergencies, amateurs provided communications during snow and ice storms, hurricanes, earthquakes, and floods.

The Federal Government quickly moved to end the chaotic mess on the broadcast band. The Radio Act of 1927 was approved on February 23. This law defined "amateur radio" for the first time in a Federal statute, and created the Federal Radio Commission, which was given the power to classify and regulate all aspects of all radio stations for "the public interest, convenience or necessity". Criminal penalties were written into the 1927 Act for violations of the Act, or any regulation thereunder.

The Commission immediately went to work. "Minions of Satan" got Sister Aimee's station back on frequency, and shut down the transmitter of KFKB, the station of "Dr." John Brinkley, graduate of the Eclectic Medical School and proponent of prostate operations and (get this) goat gland transplants to cure all medical ills. Patients by the thousands listened to KFKB's broadcasts, and flocked to Kansas to have the operations, picking out their goat from the pens next to the hospital as they went in. (Do you think I could make this up?) Unfortunately, after the Commission shut him down, "Dr." Brinkley went to Mexico by the Texas border, set up a 150,000 watt station, and continued his fraudulent operations.

In regards to amateur radio, the Commission, in effect, kept the status quo for the 15,000 hams. All agreements and regulations enacted by the Department of Commerce were maintained and incorporated into current regulations. The only change that hams noticed was the addition of a prefix on their calls, thus 1AW became W1AW, 1JS became W1JS, etc.

However, the existence of a sympathetic Commission and friendly regulations wasn't enough. Radio was truly international, and, as a result, an International Radiotelegraph Conference was scheduled in Washington, D.C., for October 4, 1927. Word was filtering out of Europe and the Far East that many governments were anti-amateur radio.

How would our hobby fare at this conference? Join us next time as "The Wayback Machine" shows us the answers.