ROUNDTABLE

The Denver Radio Club Newsletter

July 2009 — Since 1917

PRESIDENT'S MESSAGE

By Gerry Villhauer-W0GV

Hello DRC Members,

What a Field Day we had! Actually, the field was on three sides and the fun was in the middle. How about a huge multi-band antenna tethered on one end 150 feet above the ground? How about a huge Salvation Army canteen truck serving meals day and evening? How about teams of operators and loggers making well over 700 contacts on voice, code and PSK digital? How about a 9-year old YL enjoying her first Field Day with 17 contacts on both 20 and 40 meters? How about even BIGGER plans for Field Day 2010? We can do that that...with your help. We're the DRC. (Official scoring and awards and bragging rights to follow.)

On June 6th, the Golden Gate Canyon "Dirty 30", a 30-mile run with an elevation change of plus and minus 12,000 feet, was held together with exceptional ham radio communications. This was the first year of the event in a very challenging canyon environment. There was no cell phone coverage, no roads along the trails, no telephones… just ham radio. It's commonly believed that the event would have not gone smoothly without the expert radio operators from the Denver Radio Club listed below. Dick Williams, K8ZTT; Robert White, K0RCW; John Moody, AC0LS; and Chris Huston, KD0HMT; Michael Hughey, KF4DUS and Jim Beall, K0TOR.

The newly installed Wheat Ridge emergency sirens were tested on June 24th after a short 5-day notice to the DRC. The six sirens provide initial coverage for a large part of the city. Using hams to check on coverage and correct operation of the sirens saves the city money and lost police crime-fighting coverage. Participating club members were : Perry, WB5VCC; Chris, KD0HMT; Cliff, KA0ECB; Mike, KB0PVD; Collin, KD0DQT; Dick, K0ZTT; Bob, KX0I; Jim, K0TOR; Chad, KC0WWW.

Remember, that the largest Denver Radio Club event of the year is coming next month on Sunday, August 16th. The DRC hamfest returns to the Jefferson County fairgrounds for one short day. Bring your junk, (Note: high quality recycled gear) rent a table and swap your stuff for more stuff. Remember that few can say they talk around the world on new old "stuff." Doors open at 8:30. Go to our website, w0tx.org for more information, table prices, and directions.

At this writing, the DRC's West Metro Fire station #4 site is without power. The amperage gods from Xcel Energy turned off the juice (and the gas) in preparation for the demolition of the old firehouse on upper Alameda Ave. on the east side of Green Mountain. Plans are to receive a tap from the new construction drop very soon. Until then, the 147.33 (PL 100 hz) repeater, the packet gateway, the 6 meter and 220 MHz repeaters are all off the air. This leaves us with only 4 systems left up and running perfectly. Redundancy seems to be the mother of successful communication!

We celebrate and welcome five new members this month. Did you ever notice there are many who bemoan the fact that many amateur radio clubs across the country are loosing members, hamfests, repeater stations, opportunities for public service and community support. Many large metropolitan areas don't even have a single ham radio club that presents training sessions, field day activities, or even monthly meetings. Take a minute to look at YOUR Denver Radio Club. Plenty of solid history going back almost 90 years, support from the community, involvement with law enforcement, and some of the finest monthly meeting feature presentations in the west. New members, we're glad you're here. We can't wait for your involvement in activities, and fun, and service to the community. You are part of our future, and we hope to be part of yours. YOUR radio club welcomes you.

Richard Blackmore, KB0ULB
Rachel Carroll, KC9CLX
Steve Hauser, N2SOH
Brad Nelson, KD0GBX
Matthew Todd, KB2PCN

See you all at the meeting July 15th at the St. Joseph's Episcopal Church, 11202 West Jewell Ave., Lakewood, CO. That is about two blocks West of Kipling on West Jewell. And remember to check our website, w0tx.org, for lots of important information about the DRC. The Elmer Session and Tech Meeting start at 6:30 pm. Followed by the Regular Meeting and Program at 7:30 pm.

For Gerry, W0GV,

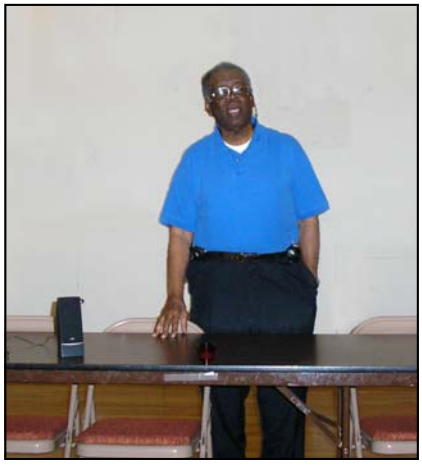
Dave Baysinger, WG0N
Vice President

INSIDE THE ROUND TABLE

JUNE MEETING - WHAT'D I MISS

By Bill, W6OAV

This month's meeting was well attended. WG0N began the meeting with introductions.



K0SSE then covered the activities that were to take place at the DRC Field Day site. Oscar went over the Field Day planning document which he developed over the past few months. This plan will result in a great Field Day. Thank you, Oacar, for all your work.

The meeting was then turned over to KB0A. He showed a video titled "The World's Toughest Fixes: 2000 Foot Tower". The video showed a crew removing and replacing a faulty digital antenna from telecommunications tower with the help of a gin pole in Sioux Falls, South Dakota. The video was extremely impressive, especially the views from the top! After the presentation, several attendee's won door prizes.

TECHNICAL COMMITTEE REPORT

By Bill – W6OAV

This report provides an overview of items discussed during the June Technical Committee meeting.

The meeting centered on the upcoming DRC Field Day event. Due to the lack of time, the other agenda items were shelved until next month's meeting.

K0SSE presented the Field Day planning document which he had developed over the past few months. The result of the presentation and subsequent discussions was a "finely tuned" planning document. Thanks Oscar for all your hard work. This one promises to be the best Field Day ever.

A GOOD STEALTH HF ANTENNA PART 2

By Bill – W6OAV

Last month, Part 1 of this article asked whether the reader could spot the stealth Inverted L antenna in Tom's (KC2CAG) back yard. The photo below shows the location of the stealth antenna in red.

The antenna element is made up of enameled 30 gauge magnetic wire. The vertical element is 20' long and the horizontal element is 30'long. The vertical element terminates on an SGC 237 autotuner located in a waterproof plastic container at the base of the tree on the left. Several radials are attached to the SGC237. The right end of the horizontal element terminates on a light lead weight.

(Continued on page 3)

(Continued from page 2)

HOW IT WAS BUILT

Tom used an innovative method to erect his stealth Inverted L. After picking two trees to support the antenna, Tom had a tree trimmer install a pulley on a high branch in each of the trees. (You may want to use an EZ-Hang wrist slingshot, a bow and arrow, a rock on a string, etc to get a cord thrown over a branch). Tom then ran a nylon cord through each pulley, connected the ends of each nylon cord to form a loop and attached a small metal ring to each cord. Tom, after terminating the end of an magnet wire into a light lead weight, threaded the wire through the loops. He then pulled up each loop much like raising a flag. Tom pulled down the vertical element until the lead weight at the far end was near its ring. Once there, Tom cut the excess wire from the vertical element and terminated it on the SGC tuner. The nylon cords were wound around cord anchors mounted

on the trees.

Tom laid out the radials in the grass and pinned them to the ground using the DX Engineering's 3" biodegradable radial wire staples. The staples are easily installed and will hold radial wires in place until lawn roots overtake them. The staples will disappear in about a year.

HOW IT WORKED

Once the antenna was installed, Tom fired up his Icom IC-7000. The SGC 237 was able to tune the antenna on 75 through 10 meters with an SWR close to 1:1. A test call on 20 meters produced a good signal report from a station in Toronto. A second test call on 40 meters produced a good signal report from a station in Indiana. The loss induced by the 30 gauge wire is negligible and will handle several hundred watts with no problems. Weather wise, Tom's wire has survived several snow storms where snow did collect on the wire. Also, the wire has survived several severe wind storms.

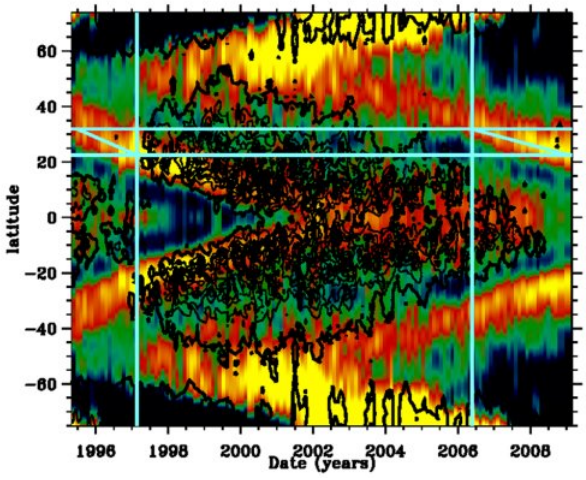
Part 3 of this article will discuss the various types of Inverted L antennas.

MYSTERY OF THE MISSING SUNSPOTS, SOLVED?

June 17, 2009: The sun is in the pits of a century-class solar minimum, and sunspots have been puzzlingly scarce for more than two years. Now, for the first time, solar physicists might understand why.

At an American Astronomical Society press conference today in Boulder, Colorado, researchers announced that a jet stream deep inside the sun is migrating slower than usual through the star's interior, giving rise to the current lack of sunspots.

Rachel Howe and Frank Hill of the National Solar Observatory (NSO) in Tucson, Arizona, used a technique called helioseismology to detect and track the jet stream down to depths of 7,000 km below the surface of the sun. The sun generates new jet streams near its poles every 11 years, they explained to a room full of reporters and fellow scientists. The streams migrate slowly from the poles to the equator and when a jet stream reaches the critical latitude of 22 degrees, new-cycle sunspots begin to appear.



Above: *A helioseismic map of the solar interior. Tilted red-yellow bands trace solar jet streams. Black contours denote sunspot activity. When the jet streams reach a critical latitude around 22 degrees, sunspot activity intensifies.*

(Continued on page 4)

(Continued from page 3)

Howe and Hill found that the stream associated with the next solar cycle has moved sluggishly, taking three years to cover a 10 degree range in latitude compared to only two years for the previous solar cycle.

The jet stream is now, finally, reaching the critical latitude, heralding a return of solar activity in the months and years ahead.

"It is exciting to see", says Hill, "that just as this sluggish stream reaches the usual active latitude of 22 degrees, a year late, we finally begin to see new groups of sunspots emerging."

The current solar minimum has been so long and deep, it prompted some scientists to speculate that the sun might enter a long period with no sunspot activity at all, akin to the Maunder Minimum of the 17th century. This new result dispells those concerns. The sun's internal magnetic dynamo is still operating, and the sunspot cycle is not "broken."

Because it flows beneath the surface of the sun, the jet stream is not directly visible. Hill and Howe tracked its hidden motions via helioseismology. Shifting masses inside the sun send pressure waves rippling through the stellar interior. So-called "p modes" (p for pressure) bounce around the interior and cause the sun to ring like an enormous bell. By studying the vibrations of the sun's surface, it is possible to figure out what is happening inside. Similar techniques are used by geologists to map the interior of our planet.

In this case, researchers combined data from GONG and SOHO. GONG, short for "Global Oscillation Network Group," is an NSO-led network of telescopes that measures solar vibrations from various locations around Earth. SOHO, the Solar and Heliospheric Observatory, makes similar measurements from space.

"This is an important discovery," says Dean Pesnell of NASA's Goddard Space Flight Center. "It shows how flows inside the sun are tied to the creation of sunspots and how jet streams can affect the timing of the solar cycle."

There is, however, much more to learn.

"We still don't understand exactly how jet streams trigger sunspot production," says Pesnell. "Nor do we fully understand how the jet streams themselves are generated."

To solve these mysteries, and others, NASA plans to launch the Solar Dynamics Observatory (SDO) later this year. SDO is equipped with sophisticated helioseismology sensors that will allow it to probe the solar interior better than ever before.

"The Helioseismic and Magnetic Imager (HMI) on SDO will improve our understanding of these jet streams and other internal flows by providing full disk images at ever-increasing depths in the sun," says Pesnell.

Continued tracking and study of solar jet streams could help researchers do something unprecedented--accurately predict the unfolding of future solar cycles. Stay tuned for that!

By Dr. Tony Phillips at Science@NASA

LIGHTNING HITS SQUAW MOUNTAIN

By Bill – W6OAV

On Sunday afternoon May 31st, four repeaters on Squaw Mountain disappeared from the airwaves. 449.35 was one of those repeaters. Since severe lightning storms were in progress at the time, lightning damage was suspected.

On Wednesday, June 03, Dave, WA1JHK went up to Squaw Mountain to investigate. He found that Squaw had indeed taken one or more lightning strikes. The 449.05 repeater had a blown fuse in the Master II power supply which took the repeater off the air and also disabled the receiver preamplifiers for both the 449.05 and 449.35 repeaters. The 449.35 repeater was ok, but couldn't hear with the disabled receiver preamplifier. A new fuse corrected the problems for both repeaters.

The members of the 449.05 group and the members of the Denver Radio Club, say THANK YOU to both Dave for fixing the problem and Nate, WY0X, for coordinating the work party on Squaw. We appreciate it very much and owe you for the generous service you provided to the ham radio community on that day. We hope to return the favor during a future work party at Squaw.

DR. KNOW-IT-ALL

Excerpted from Foothills Amateur Radio Society Newletter "Relay" September 2003

This month we get historical and examine a question that's puzzled many Amateurs - an enigma of the ages. No it's not the perennial question of why the direction of current flow in metals is opposite to the direction of electron flow or even why electrons are negative. Instead it's…

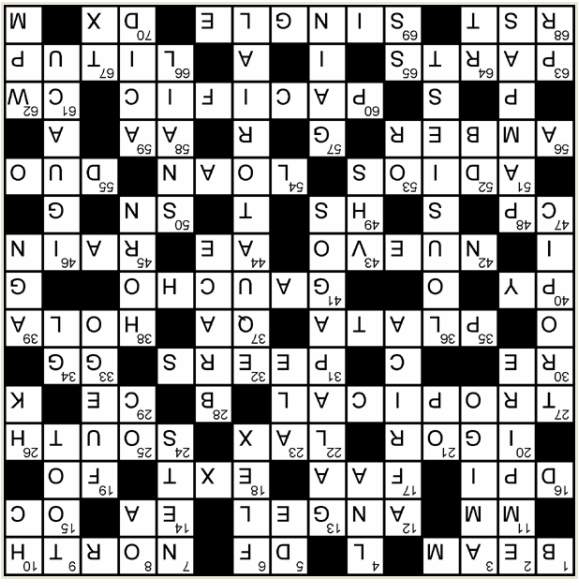
Question: Why is the letter "i" used for current? From Ruth Lacey, KG6RZG.

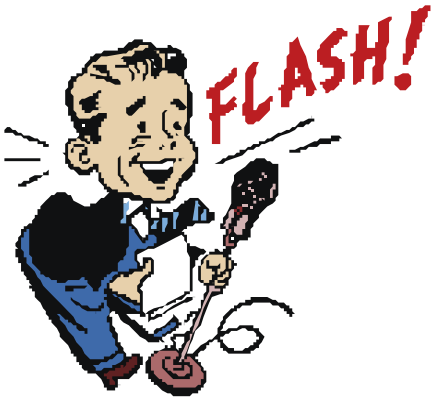
Answer: The lower case "i" for current was introduced by Frenchman André-Marie Ampère (1775-1836) in his 1826 treatise on electrodynamics, *Mémoire sur la théorie mathématique de phénomènes électrodynamiques uniquement déduite de l'expérience*. The "i" stands for "intensité de current." The "i" notation was apparently adopted soon afterwards by George Simon Ohm in Germany. However, it took many years for the usage to become standard. In England, James Clerk Maxwell, Oliver Heaviside, and others used an upper case "C" to denote current during the period from 1870 to the beginning of the 20th century. Nevertheless, the letter "i" was so firmly entrenched in popular usage among electrical engineers by 1905 that when Charles Proteus Steinmetz introduced complex numbers for a-c circuit analysis, it was not possible to follow the mathematician's convention of letting $i=\sqrt{-1}$ because the letter "i" was already taken. Ever since then, electrical engineers have used "j" for $\sqrt{-1}$.

An interesting side note is that using "i" for current and "j" for -1 avoided one confusion but created another because, in electromagnetics, antenna engineers and physicists use "J" for current density. There aren't enough letters in the Latin and Greek alphabets to assign each letter a single meaning in scientific writing!

Further Reading:

1. http://www.ece.rice.edu/~dhj/History/. Click on Electrical Science and Signal Theory.
2. http://cnx.rice.edu/content/m0004/latest/?format=pdf. See page 1, last paragraph.
3. http://www.ieee.org/organizations/history_center/board/messages/28.html.
4. http://www.ieee.org/organizations/history_center/faqs.html.
5. L. Pearce Williams, "André-Marie Ampère," *Scientific American*, pp. 90-97, Jan. 1989.





The BIG one is coming!

The Denver Radio Club Hamfest

Jefferson County Fair Grounds

When: Sunday August 16 - 8:30am to 2pm

For more information!
contact Bryan-KBOA
Or visit www.w0tx.org
Volunteers Needed
drcfest@w0tx.org

Food Fun

Lots of vendors with everything you need

Computers ~ Radios ~ Antennas

Parts + Pieces

You name it and you'll see it here!!!

JULY 2009

DRC Net Sunday 8:30pm Local

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1 ***Learning Net*** 7pm	2	3	4 
5	6	7 Full Moon	8 ***Learning Net*** 7pm	9	10	11 ***IARU*** HF World Champ. Starts 1200U
12 ***IARU*** HF World Champ. Ends 1200U	13	14	*15* ***DRC Meeting*** Elmer 6:30pm General 7:30pm Last Quarter	16	17	18
19	20	21 New Moon	22 ***Learning Net*** 7pm	23	24	25
26  Parent's Day	27	28 First Quarter	29 ***Learning Net*** 7pm	30	31	

Check www.ARRL.org for Contests and Rules!

DRC Board of Directors

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Education	AJ0C	Robert Rude	303-841-6443	AJ0C@comcast.net

DRC Repeaters

BAND	Freq / Shift / PL Tone	Additional Information
10m	29.620mHz (-100kHz) FM	Not In Service
6m	53.090mHz (-1mHz)	
Packet	145.05mHz<>14.105mHz	
2m	145.490mHz (-) 100Hz PL	**Linked to the 70cm - 448.625mHz machine.**
2m	147.330mHz (-) 100Hz PL	**Local Area, Members Auto-Patch Does Not TX a PL!**
2m	147.330mHz (-) 131.8Hz PL	**NE Area Remote Does Not TX a PL!**
1.25m	224.380mHz (-) 100Hz PL	
70cm	448.625mHz (-) 100Hz PL	**Linked to the 2m - 145.490mHz machine.**
70cm	449.350mHz (-) 100Hz PL	**Wide area coverage with Echolink Node # 4140.**

Editor's Note

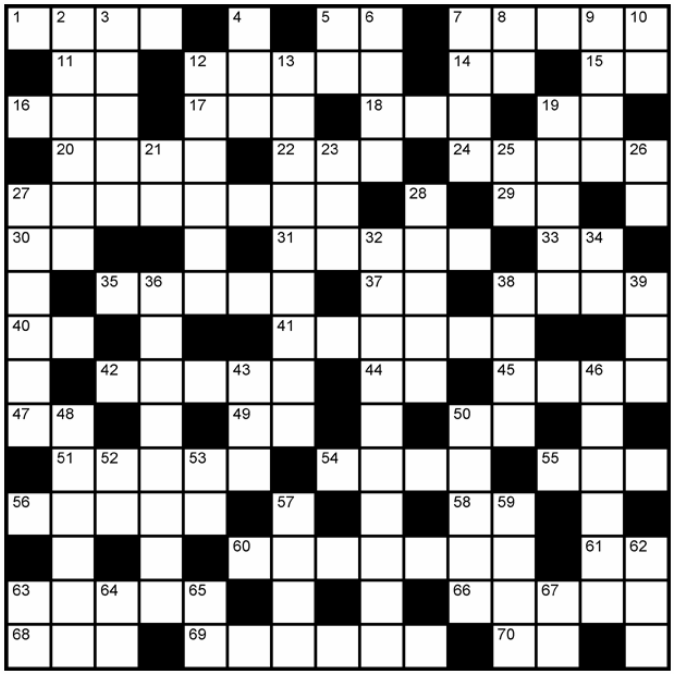
DRC members - this is your newsletter. If there is something which is club or amateur radio related that you'd like to see as a regular feature, email suggestions to the editor. Members are the heart and sole of The Denver Radio Club, if you have an expertise or an interest in a particular segment of ham radio that you'd like to write about, you may email your submissions to DRC_RT@comcast.net. Submission deadline is the 25th of the Month. **Editor**

CQ from South America!

This crossword honors the hospitality and friendship of our South American friends for their superb execution of the just-completed World Radiosport Team Championship. Held on the island of Florianopolis, south of Sao Paolo, WRTC brought together hundreds of hams from around the world to compete and enjoy each other's company. It was an honor to be included and our hats are off to the hard-working hams of Liga de Amadores Brasileiros de Radio Emissão (LABRE) and the Araucaria DX Group. Obrigado!

By H. Ward Silver, N0AX

NOTE: Puzzle solution is on page 5.



Across

1. Directive antenna
5. Determining a signal's origin
7. Where compasses point in the Southern Hemisphere
11. 25.4 of these in an inch
12. World's tallest waterfall
14. Country from which the language of most South Americans came (prefix)
15. Continent west of South America (abbr)
16. Print resolution (abbr)
17. Agency that worries about tower height
18. Prefix meaning outside
19. Center frequency (abbr)
20. Frankenstein's assistant
22. The laziest California section
24. Shadows point this way at noon in Buenos Aires
27. The climate along the Amazon
29. Long country on South America's western coast (prefix)
30. Abbreviation for regarding
31. Acquaintances
33. Going (CW abbr)
35. The river that separates Argentina and Uruguay
37. The department that ensures quality products are made
38. Spanish for hello
40. Largest South American country (prefix)
41. Argentinean cowboy
42. To give a strong signal report, you would say "Cinco ....."
44. Suffix denoting an amateur that has upgraded to Amateur Extra
45. A very wet forest
47. South American country with two capitals (prefix)
49. Another abbreviation for QRQ CW
50. Part of solder (chemical symbol)
51. Goodbye in Spanish
54. Temporary gift
55. The WRTC teams each formed one
56. Yellow material that when rubbed, takes on a static charge
58. Suffix denoting an amateur that has upgraded to Amateur Advanced
60. Ocean to the west of South American
61. The first digital mode
63. Components or pieces
66. The look of an energized tube (two words)
68. Morse code signal report
69. Solo
70. Distant stations

Down

2. Many South American countries were a part of one of these colonial collections
3. Spanish for friend
4. Sensitive amplifier that adds little noise
5. From (CW abbr)
6. To bend
7. On-air meetings
8. Country containing the headwaters of the Amazon (prefix)
9. Do it to your own horn
10. Country where the quad was invented (prefix)
12. Continent to which South America was once attached
13. Equatorial islands owned by Ecuador
19. Land of fire is Tierra del .....
21. Operator (abbr)
23. Type of digital signal that establishes contact automatically
25. Not centered (abbr)
26. Prefix of hams in Bogota
27. There are two - Cancer and Capricorn
28. Strengthen or support
32. Geographical features near the equator
34. Good luck (CW abbr)
36. The worst
38. The cape at the bottom of South America
39. Again (CW abbr)
43. Video tape standard
46. South America's largest waterfall
48. Grasslands of Argentina
50. Opposite of email
52. Logarithmic ratio (abbr)
53. Complement to AND
57. Increase signal strength
59. Wrong type of solder flux for electronics
62. Morse code speed
63. Publicity (abbr)
64. Right (abbr)
65. Non-corroding metal (abbr)
67. Transmit (abbr)