WEST SIDE SIGNAL

Official Bulletin of Toronto's Oldest Amateur Radio Club

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Meetings

Meetings held at 7:30pm on the third Tuesday of each month , Etobicoke. Municipal Offices (Burnhamthorpe & The West Mall) No meetings in July or August. Visitors always welcome.

Club Nets

FM Net
Wednesday 8:00pm
VE3SKY repeater 146.985 Mhz

CW Net
Sunday 10:00am 7.029.5 Mhz

SSB Net
Sunday 11:00am 7.075 Mhz

Next Meeting
Tuesday Dec 15th 2009
11:30 am
Imperial Buffet
Dundas and Dixie Rd
Mississauga

CLUB NEWS

The usual stalwarts showed up for the November meeting, Chris VE3EQF, Bert VE3OBU, Bill VE3PA, Dave VE3RER and Al VE3UT. With no business to conduct the meeting just developed into a ragchew which of course is always enjoyable. The December meeting is scheduled to be held at the Kings Buffet Dundas and Dixie Rd at 11:30 on the 15th. I hope to be able to attend but it will depend on how my gall bladder surgery goes on Dec 11lth. I am hoping they can remove it the easy way with lapiscopic surgery but the surgeon warned me that this might not be possible because of all the scar tissue present from previous surgery. If that is the case then it will have to be done the old way with a very large incision and subsequent recovery time of anywhere from 7 to 10 days. Seems that the Christmas season is when I get involved with surgery. Dec 1999 Hip replacement, Nov 2002 Bypass, Dec 2002 Aneurism repair, Nov 2007 Aneurism repair, Dec 2009 Gall Bladder removal, fortunately I`ve always been out of hospital for Christmas hopefully my luck will continue.

Our 40 meter Sunday morning CW net has improved for me these past two weeks, I was able to copy all the Toronto stations very easily all were around the 579 mark which is a dramatic improvement from previous weeks when I could barely hear them at all. Solar figures do not indicate any big changes, last week they hit over 80 for the first time in sges but soon dropped back down to the low 70's and have again started creeping up accompanied by sunspots for the past few days which is an encouraging sign for us HF'ers Hi. Last weekend there were some good openings on 10 and 15 perhaps we are on the way up now in cycle 24.

ANOTHER HAM GETS NOBEL

ARRL Letter

Around 5:30 on the morning of October 6, George E. Smith, AA2EJ, got a phone call that changed his life: He had just found out he had won the Nobel Prize in Physics for 2009 "for the invention of an imaging semiconductor circuit -- the CCD sensor." Smith will share the prize money with two other recipients: Charles K. Kao, of Standard Telecommunication Laboratories in the United Kingdom and Chinese University of Hong Kong in Hong Kong, China, and Willard S. Boyle, of Bell Laboratories. Each recipient will receive a diploma, a medal and a document confirming their share of SEK $10 million (about $1.4 million US dollars); Kao will receive 50 percent, while Smith and Boyle will each receive 25 percent of the monetary award.

Kao was recognized by the prize committee for his "groundbreaking achievements concerning the transmission of light in fibers for optical communication." His discoveries paved the way for optical fiber technology, used for almost all telephony and data communication today. Boyle and Smith invented a digital image sensor -- the CCD -- that has become an electronic eye in almost all areas of photography.

"Amateur Radio has always attracted individuals who want to understand and exploit nature's laws," fellow Nobel Laureate Joe Taylor, K1JT, told the ARRL. "These are essential characteristics for first-rate scientists, as well. The 2009 Nobel Prize in Physics honors the invention of an imaging semiconductor circuit -- the CCD sensor used in digital cameras, the Hubble Space Telescope and many other scientific and consumer devices. It was no great surprise to learn that one of the Laureates, George Smith, is also a radio amateur." Taylor was awarded the Nobel Prize in Physics in 1993 "for the discovery of a new type of pulsar, a discovery that has opened up new possibilities for the study of gravitation."

Smith earned his PhD from the University of Chicago in 1959 with a dissertation of only three pages, which he later described as "short, but pretty good." Like Boyle, Smith was a serious sailor and the two took many sailing trips together. After his retirement, Smith sailed around the world for 17 years, according to an interview he gave to the Adam Smith, Editor-in-Chief of the Nobel Foundation's official Web site; he only gave up sailing in 2001 to spare his "creaky bones" from further storms.

"As you know, we sailed around the world for 17 years," Smith told the ARRL. "While we were on our boat, we used Amateur Radio, especially in the South Pacific. My wife Janet, AA2EI, was the principal radio operator. With our radio, we could keep track of other boats in the area. Over in the Southwest Pacific, there are shore stations that provide weather forecasts every day on the ham radio. We would listen for these, as it was such a tremendous help for us as sailors. Janet and I haven't really been on the radio since we got back to the US in 2003. The boat's out stuck behind our house; we have a dock back there."

The CCD -- invented in about an hour over lunch when Smith and Boyle worked together at New Jersey's Bell Labs -- was, according to Wired Magazine, the first practical way to let a light-sensitive silicon chip store an image and then digitize it. In short, it is the basis of today's digital camera.

According to Wired, the "most amazing thing about the invention" is that Boyle and Smith came up with the design so quickly. With Bell Labs threatening to take the funds from their department and transfer the money to other research, Boyle had to come up with a competing semiconductor design. He got together with Smith, and within an hour, they came up with the idea and sketched it all out on a blackboard.

"One morning in October, 1969," Boyle wrote on his Web site, "I was challenged to create a new kind of computer memory. That afternoon, I got together with George Smith and brainstormed for an hour or so on a new kind of semiconductor device, drawing a few sketches and equations on a blackboard. We called it a charge-coupled device: A 'CCD.' When we had the shops at Bell Labs make up the device, it worked exactly

as expected, much to the surprise of our colleagues."

For their invention of the CCD, Smith and Boyle have also jointly received the Franklin Institute's Stuart Ballantine Medal in 1973, the 1974 IEEE Morris N. Liebmann Memorial Award and the 2006 Charles Stark Draper Prize.

When asked by the ARRL how he felt about winning the Nobel Prize, he exclaimed, "I feel great! Even though there's a lot of nonsense to go through with it, it's worth it and winning it does wonders for your ego. Aside from the initial shock and having to go through piles of mail, e-mail and returning telephone calls, I know that will calm down. As for the long-range future, I'm getting many invitations to give talks. Next year, I've been invited to speak at a major conference in Seoul, South Korea, another in Portland, Oregon and another in Switzerland. I've been invited to France to give a talk, China, too. We need to sit down with a calendar and figure it all out. Having a Nobel makes a big dent in your lifestyle."

Smith told the ARRL that he knew the CCD was under consideration for the Nobel Prize, "but we didn't know exactly if, or when, it would happen. Research that wins the Nobel is often done many years beforehand. In my case, this was 40 year old research. The Prize Committee wants to make sure the research has stood the test of time.

Next month, Smith will travel to Stockholm, Sweden for the award ceremony on December 10. It is certain that his picture will be taken scores of times by the international media, made possible through the technology that he and Boyle pioneered.

What Is a CCD?

In most solid-state applications, a CCD translates light into an electronic signal. The sensor is made up of pixels, each of which is a metal-oxide semiconductor (MOS) capacitor. As the light falls on each pixel, the photons become electrons due to the photoelectric effect, the same thing that produces solar power. The photoelectric effect happens when photons of light hit the silicon of the pixel and knock electrons out of place. On a CCD, these electrons are stored in a "bucket": the pixel's capacitor.

At this stage, the "image" is still in analog form, with the charge -- or amount of electron in the bucket -- on each pixel directly corresponding to the amount of light that has hit it. The genius of Boyle and Smith's CCD was the reading of the information stored. Essentially, the charge in each row is moved from one site to the next, a step at a time. This has been likened to a "bucket row" or human chain, passing buckets of water down a line. As these buckets of electrons reach the end of the line they are dumped out and measured. This analog measurement is then turned into a digital value. Thus, a digital grid is made that describes the image. That signal can be digitized and transformed by the dull magic of high-performance computing into images from the Hubble Space Telescope (HST).

The image from a CCD, such as the ones on the HST, is black and white. For television and photographic media, placing a red, green or blue colored filter over the top of each pixel allows color information to be read directly from each pixel -- but only for one primary color per pixel. Subsequently, software can also extrapolate the color of adjacent pixels based on their brightness so that each pixel winds up with its own red, green and blue values.

CCDs: Not Just for Your Digital Camera

The advantages of the electronic image sensor quickly became evident. In 1970, just about a year after the invention, Smith and Boyle could demonstrate a CCD in their video camera for the first time. In 1972, an American company constructed the first image sensor with 100×100 pixels and entered production a few years later. In 1975, Boyle and Smith themselves constructed a digital video camera of a sufficiently high resolution to manage television broadcasts. It would not be until 1981 before the first camera with built-in

CCD appeared on the market. Its bulky and primitive characteristics when compared to contemporary cameras initiated a more commercially oriented digitalization in the field of photography. Five years later in 1986, the first 1.4 megapixel image sensor (1.4 million pixels) arrived. Nine years later in 1995, the world's first fully digital photographic camera appeared. Camera manufacturers around the world quickly caught on, and soon the market was flooded with ever smaller and cheaper produts.

No one initially predicted that the CCD would become indispensable to the field of astronomy. But it is precisely thanks to digital technology that the wide-angle camera on the HST can send the most astonishing images back to Earth. The camera's sensor initially consisted of only 0.64 megapixels 800×800 pixels); however, as four sensors were interconnected, they provided a total of 2.56 megapixels. This was a big thing in the 1980s when the Hubble was designed. Today, the Kepler satellite has been equipped with a mosaic sensor of 95 megapixels, and the hope is that it will discover Earth-like planets around stars other than the Sun.

Early on, astronomers realized the advantages of the digital image sensor. It spans the entire light spectrum, from X-ray to infrared. It is a thousand times more sensitive than photographic film. Out of 100 incoming light particles, a CCD catches up to 90, whereas a photographic plate or the human eye will only catch one. In a few seconds, light from distant objects is gathered -- a process that previously would have taken several hours. The effect is also directly proportional to the intensity of the light -- the larger the amount of light, the higher the number of electrons.

For the really dim things astronomers look at, the number of photons of light coming from a source is so small that each one counts. Out of every 100 photons, a CCD can record more than 90 of them. Photographic plates can barely reach 10 percent. And your eyes? Their quantum efficiency is in the 1-4 percent range.

In 1974 the first image sensor had already been used to take photographs of the moon -- the first astronomical images ever to be taken with a digital camera. With lightning speed, astronomers adopted this new technology; in 1979 a digital camera with a resolution of 320×512 pixels was mounted on 2.1 meter telescope at Kitt Peak National Observatory (KPNO), just outside Tucson, Arizona.

Today, whenever photo, video or television is used, digital image sensors are usually involved in the process. They are useful for surveillance purposes both on Earth and in space. CCD technology is also used in a host of medical applications, such as imaging the inside of the human body -- both for diagnostics and for surgical operations. The digital image sensor has become a widely used instrument at the service of science both at the bottom of the oceans and in space. It can reveal fine details in very distant and in extremely small objects. In this way, technological and scientific breakthroughs intertwine.

Smith and Taylor are not the only radio amateurs to receive the Nobel Prize in Physics. Sir Martin Ryle, FRS, G3CY (SK) shared the 1974 Nobel in Physics with Anthony Hewish "for their pioneering research in radio astrophysics." Ryle received his for inventing the aperture-synthesis technique for radio astronomy (interferometry); Hewish received his for his decisive role in the discovery of pulsars. Guglielmo Marconi -- who always considered himself an "amateur" -- shared the 1909 Physics prize with Karl Ferdinand Braun "in recognition of their contributions to the development of wireless telegraphy." This, at a time when there were no licenses and only amateurs.

— Thanks to Wired Magazine and the Nobel Foundation for information —

VK9 C, L, M, N, W & X
DELETED FROM DX EQUATION

The Australian Communications and Media Authority (ACMA) has decided to discontinue the use of a VK9 callsign suffix letter to denote each of the six Australian external territories, each a DX entity.

The long-standing prefixes included VK9C for Cocos (Keeling) Island, VK9L Lord Howe Island, VK9M Mellish Reef, VK9N Norfolk Island, VK9W Willis Island and VK9X Christmas Island.

The Wireless Institute of Australia (WIA), under its role of providing ham licence examinations and issuing amateur certificates of proficiency, also recommends each and every amateur callsign issued by the ACMA.

On taking on new roles earlier this year it began to query the practices in relation to VK9 callsigns, then consulted the amateur radio community and came to the view that it could not support having a suffix letter as a geographic identifier in VK9 callsigns.

The ACMA itself has not stuck with the VK9 callsign tradition over the years when issuing licences and some DXers requested a callsign contrary to the historic or DXCC list suffix block.

VK9Y has also been used for Cocos and VK9Z for Mellish, and often, particularly recently, if a VK9 callsign was requested it would be issued.

The ACMA having not rigidly applied its own VK9 callsign policy, and wanting to eliminate where-ever possible administrative tasks related to the amateur radio service, decided that the historic VK9 callsigns are a thing of the past.

From 1 November, callsigns for the VK9 DX entities will fall in line with the practice for issuing callsigns for all other VK call areas, with the suffix only to denoting the class of licence issued – Advanced, Standard or Foundation.

Licences with a VK9 callsign issued to visiting overseas radio amateurs will only be for a short-term if requested or for a maximum 12 months period, and not be automatically renewed.

A VK ham or visiting radio amateur does not necessarily require a VK9 callsign, although most do for DXing, contesting or QSLing purposes.

Under the provisions of the Amateur Licence Conditions Determination, portable operation is permitted with a radio amateur using their home callsign /VK9 and stating their location.

161 km VOICE-POWERED QSO

QRZ.COM

Radio Amateurs have been experimenting with 'Voice Powered' transmitters, the power comes from rectifying the audio signal from the microphone.

Mike, AA1TJ, has now acheived the remarkable distance of 161 km using his 2.5 mW transmitter.

Mike, AA1TJ, posted this email, reproduced here with his permission, to the reflector shortly after completing this remarkable contact:

I'm trying to regain my composure here. I just finished a QSO with W1VZR on 75m at ~0500z. Peter is in Limerick, Maine (101 miles/161 km) .

It was a cross-mode contact (he was on SSB), although "crossed-up" might be a better description. He sent me a 549 report and I replied with a 57. Once I figured out how to get across my message we both had a

100% copy.

The transmitter here is a voice-powered, one-transistor (2N1309, germanium PNP) crystal-controlled oscillator on 3686.4kHz. The "power-supply" /modulator/ keyer amounts to a permanent magnet loud-speaker mounted on the end of an olive can. I've got my nose shoved in this tin-can (smelling olives all the while) and yelling for all I'm worth.

The output power is in the vicinity of 2.5mW with peaks as high as 12mW. It was supposed to be AM; only, Pete remarked right away that it sounded more like a dog barking (I'm wiping away my tears as I write this :o)

He had plenty of signal but my intelligibility was very poor. I started swapping in a modification that I'd found in an early 1960's Italian radio magazine. Please see "IL Baby Signal" starting on page 40. The mod consists of transistor TR1, R1 and R2 shown in the schematic of page 41. http://www.intronі.it/pdf/Radiotelefoni_a_transistor_1.pdf

So, I'd put the mod in and yell, "I'VE MADE THE ITALIAN CONNECTION!" (followed by a laughing spell). Pete thought it helped...sez I went from sounding like a dog to sounding like a seal.

That's when I started yelling "DIT DAH DAH...DIT DAH DAH DAH DAH," etc., and Peter came back saying he had a perfect copy and gave me a report (notice, he gave me a "CW" report). I came back with his report. He returned saying that he copied it all and relayed it back, word for word, "R R FB PETE FB 57 57 57." Exactly!

So that's it...an honest-to-goodness, voice-powered, QSO at a distance of 161km! Aside from the modulation, my biggest problem was that I couldn't stop from laughing. And it got worse every time Pete came back on account of he's such a joker. He heard my final transmission just as clearly, including the last "Dit Dit Dit Dah Dit Dah.....Dit Dit." He came back to that just about in hysterics.

Hmm...did I just break the rules? A2A, or tone modulated CW (MCW), is verboten; whereas, I was speaking the words "DIT" and "DAH." On the other hand, I don't think I was AMing well enough to call it A3. Pete copied me with his BFO on, so it was probably more like voice-keyed CW (I remember seeing something in an old "Hints and Kinks" about a breath-operated keyer).

The difference here is the vibrations set up in my vocal cords not only keyed the CW transmitter it provided all of the energy to run it as well. Truthfully speaking, it was modulating to some degree. On the other hand, it was so much fun that I'd do it again, even if I had to swing for it. :o)

I just got off the phone with Pete, only, I don't think we actually said much of anything. He played a recording that he made of my signal back to me over the phone, and then we just spent the rest of the time laughing. Pete says it was his first ever QSO with a seal. Oh man...I'm still wiping my eyes here.

I'm starting to get a reputation. When I make a CW transmitter it sounds like a bird. I try to make a phone rig and it sounds like a dog, unless you think it's a seal. Right, so I've got to do work on that modulator.

Oh yes, I'm going to call my new lung-powered transmitter "El Silbo." Some of you may recognize Silbo as the whistled language (of sorts) that's used on the isle of La Gomera (Canary Islands) to communicate across wide mountain valleys. The best DX is apparently around 2km (or is it 2 miles?). At any rate, you can see some examples on these links.

http://news.bbc.co.uk/1/hi/world/europe/3241128.stm
http://boingboing.net/2009/06/19/the-whistling-island.html
http://silbo-gomero.com/silbohome.html

One more thing. The receiver I'm using is a one-stage regenerative detector built around a second 2N1309

germanium transistor. The collector supply voltage is 250mVDC. That's right...a quarter of a Volta (look how I'm talking Italian now). The eventual goal is to power this receiver from a distant commercial broadcast radio station by rectifying the RF present at the receiver antenna input terminals.

In other words, "RF energy harvesting." The detector will oscillate down to 180mVDC, only, I haven't gotten around to hooking it up to an off-air detector. I just used my bench power supply for my contact with W1VCR. Again, I had a perfect copy of his 20w SSB signal.

ANNOUNCED DX OPERATIONS

VIRGIN ISLANDS
K2V
Dec 2 - 14
All bands and modes
QSL K9WZB Direct

CAMBODIA
XU7UFT
Dec 3 - 8
CW only all bands
QSL F6AXX direct or bureau

SOUTH COOK ISLANDS
E51PMR
Dec 6 - 13
Focus on low bands and WARC
All modes
QSL unknown at present

OGASAWARA
JI5PTW as JD1BLY
JG7ST as JD1BMH
Dec 27 - Jan 1
All bands and modes
QSL home calls direct or bureau

GAMBIA
C5
Dec 10 - 31
by SM1TDE
All bands and modes
QSL NA

To all our members I would like to say it has been a pleasure to produce this monthly news letter during 2009 and look forward to continuing in 2010. From time to time I would appreciate some assistance from members in the form of articles etc., because it is sometimes difficult to come up with interesting material month after month.

POLICAL CORRECTNESS

The following is the winning entry in an annual contest at Texas A&M University calling for the most appropriate definition of a contemporary term: . This year's term was - 'political correctness'.

The winner wrote: 'political correctness' is...

"... a doctrine, fostered by a delusional, illogical minority, and rabidly promoted by an unscrupulous mainstream media, which holds forth the proposition that it is entirely possible to pick up a turd by the clean end."

and a Happy New Year