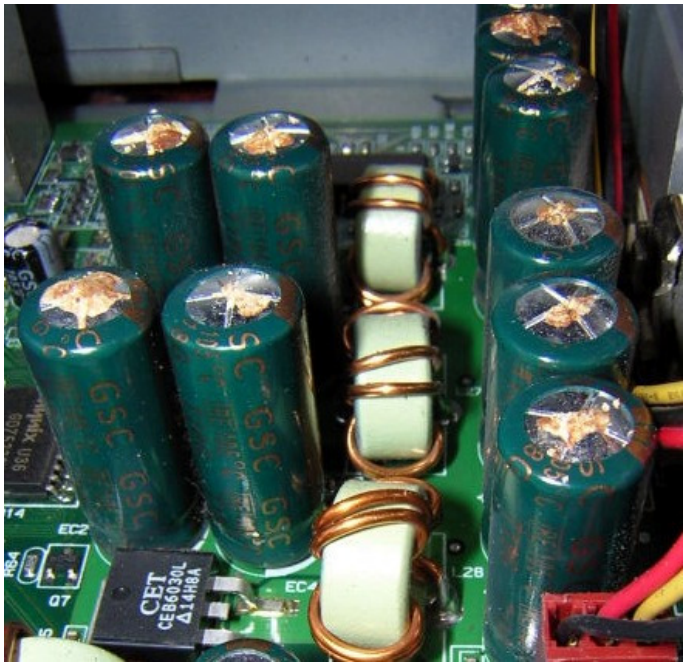
Ham Hum

June 2014

The official newsletter of
The Hamilton Amateur Radio Club (Inc.)
Branch 12 of NZART - ZL1UX
Active in Hamilton since 1923

Hamilton Amateur Radio Club Inc.
Serving the Hamilton Community for over 90 Years
ZL1UX



Next Meeting :

18th June—Conference report (ZL1PK) and DVD (ZL1GWP)

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From the Editor

Recently I've been reacquainted with electrolytic capacitors that have started bulging, or leaking out the top. Most recently with LCD computer monitors that have a 240VAC IEC cord plugged in the back. Inside these monitors is a simple power supply that converts the 240VAC to something suitable to power the LED strip lighting around the sides of the display so you can see what is being displayed. Normally there is also a section to provide a different voltage to the control circuitry. When things fail, most of the time it's the capacitors for the LED lighting strips. A relatively easy thing to repair.

Laptops, while not having leaded electrolytic capacitors, do suffer from failure of power to LED lighting strips. I tend to avoid repairing SMD boards.

This "bulging" problem also affects computer motherboards, with the capacitors near the CPU (Central Processing Unit) being the point of failure. Being a multi-layer board it can be tricky to repair. But I intend to try as I have a couple of boards to test with.

Next Committee Meetings - 4th June & 2nd July

SB PROP ARL ARLP021
ARLP021 Propagation de K7RA

Over the past week we saw a decline in solar activity, and the 45-day outlook showed progressively weaker numbers as well.

Average daily sunspot numbers for May 15 to 21 were 129.4, while the previous average was 142.4, a 13 point decline. Average daily solar flux drifted from 157.5 to 128.5. The daily sunspot number on Wednesday dropped down to 100 and on Thursday it was only 70, a level unseen seen since January 28.

Last week the solar flux prediction for Friday through Sunday on Field Day (June 28 and 29) was 125 on Friday and 135 on Saturday and Sunday. But the daily forecast on May 19 changed, with predicted solar flux at 120 on all three days, where it still remains. Prior to May 19 solar flux was predicted to peak at 165 on June 10 and 11, but that has now been revised downward to 135 and 130.

The latest prediction has solar flux at 105 on May 23 to 26, 100 on May 27 to 29, 110 on May 30, 120 on May 31 through June 3, 125 on June 4 and 5, 130 on June 6 and 7, 135 on June 8 to 10, 130 on June 11 and 12 and 125 on June 13 to 15. Flux values then drop down to 105 on June 22 to 24.

Predicted planetary A index is 8 on May 23, 5 on May 24 and 25, 8 on May 26, 5 on May 27 through June 3, 12 on June 4, 8 on June 5 to 8, and 5 on June 9 to 16.

F.K. Janda, OK1HH sends us his weekly geomagnetic outlook. He expects quiet to unsettled activity May 23, mostly quiet May 24, quiet May 25, quiet to active May 26, quiet to unsettled May 27, quiet May 28 and 29, quiet to active May 30 and 31, mostly quiet June 1, quiet June 2, quiet to active June 3, active to disturbed June 4, quiet to active June 5, active to disturbed June 6, quiet to unsettled June 7, quiet June 8 and 9, mostly quiet June 10, quiet to unsettled June 11, quiet June 12, mostly quiet June 13, quiet June 14 to 16, and quiet to active June 17 and 18.

Lawrence, GJ3RAX of Jersey (not New Jersey, but the old Jersey, the Isle of Jersey in the United Kingdom) says "Not much to report from here this time. There have been several more Es openings on 6 meters during the last week but mostly to places within Europe that are already on my list for this year although I have added a few new grid squares to my annual table in the VHF group. Most QSOs have been with Italy and Spain."

"Now hoping to be on at the right time to catch openings again on 4 meters and eventually on 2 meters."

Lawrence (who doesn't seem to use a last name) mentioned the 4-meter band, which many may be unfamiliar with. Four meters is used in only a few countries,

and the common allocation is 70-70.5 MHz. Apparently Great Britain at one time also had a 5 meter amateur band at 56 MHz. Perhaps 70 MHz will be allocated for radio amateurs in the United States some day. For more information see http://en.wikipedia.org/wiki/4-meter_band , http://www.70mhz.org/ and http://g1efu.webs.com/4meters.htm .

Pete, K2ARM of Fort Edward, New York (about 50 miles north of Albany) reported on May 20, "We have had a few openings on 6 meters in May but not for long. Even though the big guns have been working into Europe and South America, I haven't heard much on my dipole. But on May 11 I worked PV8ADI, LU4FPZ, LW3EX, and CX7CO on 6 meter CW plus a few states. I only run 40 watts to a dipole and only use CW."

"On May 18 the band opened up around 1300 UTC and stayed open until 0000 UTC. Signals were 30 to 50 over S9 from the Midwest at times and around 2210 UTC I worked WN6K and AI6O in California. Soon after, XE2CQ came pounding in but I could not get through. It looks like even though 6 meter sporadic E started out late, it may be better than last year."

On May 22 Pete wrote, "6 meters was open again last night until late in the evening. There were beacons from everywhere but not many stations on. My dipole is only up 20 feet and I am in a valley, great for DX!!!"

Thanks, Pete.

For anyone considering six meters, remember that a half-wave dipole is only about 9 feet plus 3 inches long for the low end of that band.

Scott Bidstrup, TI3/W7RI wrote on May 21:

"Those were interesting responses you posted last week to my inquiry about the possibility of VHF propagation as a result of lightning sprites. They seem to confirm what I conjectured. I think investigation of this could be a good subject for someone's Ph.D. thesis."

"The declining solar activity has taken its toll down here on 6 meter propagation. There have been almost no openings the last couple of weeks, and what there have been, were short and rather sparse. I logged the YV4AB beacon about a week ago, as did YS1AG yesterday, the east-west path in both cases demonstrating that sporadic E does exist at these latitudes, though it is much rarer and sparser than in the United States or Europe."

"Meanwhile, the afternoon transequatorial openings from the States into South America have been continuing almost daily, and even though the paths go right over our heads here in Central America, we're still hearing nothing at all here on the ground. TI5XP has built a high gain beam for six, on a 42 foot boom, and even with it, he's been hearing nothing. I am starting to see some evening TEP in Europe on the maps in the last few days; since that is a different mode, perhaps it

will yield us some propagation. We can only hope."

Scott sent along this interesting article, another one mentioning that huge July 2012 solar flare:

http://news.discovery.com/space/huge-solar-flare-reveals-explosive-magnetic-trigger-140521.htm

This weekend is the CQ World Wide WPX CW Contest. The SSB weekend was in March. See http://www.cqwpx.com/ for further information.

Summer solstice is only four weeks away, at 1051 UTC on Saturday, June 21.

To illustrate what summer propagation may be like compared to Spring, I ran some arbitrary numbers on W6ELprop for a path from Cleveland, Ohio to Germany with a sunspot number of 130, on the twenty-third of March (near the equinox), April, May (today) and June (near the solstice, all on the twenty-third of each month.

Examining 15 meters, in March we see the path begin to heat up around 1200 UTC, becoming quite promising at 1400 UTC with a relative signal level of 47, changing to 48 at 1700 UTC, 50 at 1900 UTC, 51 at 2000 UTC, 52 at 2100 UTC and 53 at 2200 UTC. Then prospects begin to fade until the path is unlikely to support propagation by 0100 UTC.

For the same path on April 23 we see 15 meters begin to open at 1230 UTC, with a relative signal level rating of 45 but with chances of an opening increasing at 1830 UTC with a signal rating of 47. The signal increases to 50 at 2030 UTC, but the path begins to fade between 2200-0030 UTC.

For today (although recent sunspot numbers are not as high) we don't see much chance of propagation until 1430 UTC with signal ratings gradually increasing from 43 to 45 at 1800, 47 at 1930, 50 at 2130, 52 at 2300, then fading after 0000 UTC.

A month from now we see poor prospects around the clock, with a D-rating (less than 25 percent chance) from 0430-0800 UTC, and C-rating (25-50 percent chance of opening) 0830-0400 UTC. So the summertime propagation on 15 meters is much poorer than at the spring equinox.

If we look at much higher numbers, such as a sunspot number of 250 instead of 130, we do see improvement, with several periods of B (50-75 percent) ratings.

K9LA has the W6ELprop software (for Windows) as well as tutorials available at his site, http://k9la.us/. If you want to guess what propagation might be like next month from your Field Day QTH to various targets around the United States, you could download the program and perhaps make an average of predicted solar flux over the weekend and several days prior, and plug that number into the program instead of sunspot number. See a daily update of predicted solar flux and planetary A index for the next 45 days at http://www.swpc.noaa.gov/ftpmenu/forecasts/45DF.html .

Let's hope for the best, an extension of this current solar cycle peak, rather than weakening and decline in solar activity.

For more information concerning radio propagation, see the ARRL Technical Information Service web page at, http://arrl.org/propagation-of-rf-signals. For an explanation of the numbers used in this bulletin, see http://arrl.org/the-sun-the-earth-the-ionosphere. An archive of past propagation bulletins is at http://arrl.org/w1aw-bulletins-archive-propagation. More good information and tutorials on propagation are at http://k9la.us/.

Monthly propagation charts between four USA regions and twelve overseas locations are at http://arrl.org/propagation.

Sunspot numbers for May 15 through 21 were 130, 136, 146, 138, 130, 126, and 100, with a mean of 129.4. 10.7 cm flux was 152.1, 138.7, 133.5, 127.5, 116.9, 117.2, and 113.9, with a mean of 128.5. Estimated planetary A indices were 5, 5, 4, 5, 4, 4, and 3, with a mean of 4.3. Estimated mid-latitude A indices were 5, 6, 4, 5, 4, 4, and 3, with a mean of 4.4.

AWA business sold to Cabrini Health

The ICT business and assets of Australian technology service company, AWA (Amalgamated Wireless Australasia), has been sold to Cabrini Health Limited, following the administration of the iconic 105-year-old technology company on 26 February.

Cabrini, a not-for-profit Catholic healthcare provider, has been involved in technology services since the late 1990s with the acquisition of Chemtronics Biomedical Engineering and now provides technology services for a host of big name customers.

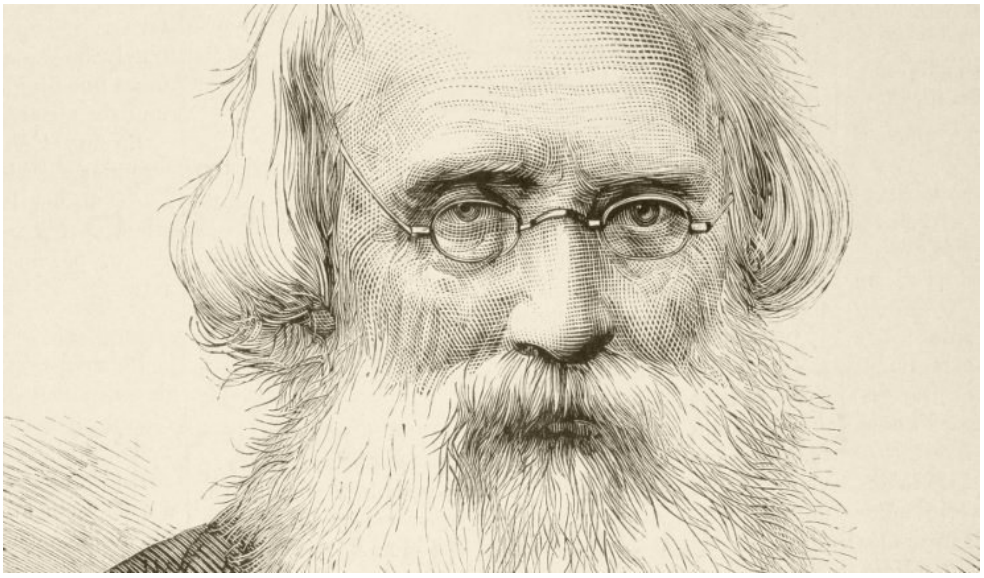
AWA started off as a radio manufacturer and radio broadcaster, but has more recently been delivering technology services to major enterprises and governments including, Flight Centre, Hewlett Packard, Dimension Data, and the Department of Defence.

Cabrini also said it would preserve and continue to trade under the AWA name and brand.

"We are committed to continuing to maintain the AWA brand and reputation as a specialist in information technology services," said Dr Michael Walsh, chief executive of Cabrini.

170 years since Morse sent the message: “What hath God wrought?”

On May 24, 1844, Samuel Morse sent the message *"What hath God wrought?"* from the Old Supreme Court Chamber in the United States Capitol to his assistant, Alfred Vail, in Baltimore, Maryland, to inaugurate the first telegraph line. VoR's Jim Ensom looks at the history and legacy of his invention.



He may well have asked what God had wrought, since it was that telegraph system that set in train some of the most disruptive technologies that man has ever seen.

Essentially, it meant that communicating at distance was possible and it led to data transmission throughout the globe. It gave us the internet generation.

But rather like the Sorcerer's Apprentice, it set in train a series of inventions and technologies that today, many are questioning, not least after the revelations by ex-CIA contractor Edward Snowden of mass surveillance by the security services.

The Telegraph

Back then, 170 years ago, Morse was not the only inventor playing with the telegraph system.

In Britain, William Cooke and Professor Charles Wheatstone had heard about Morse's attempt at electronic communication at distance. Cooke built a small electrical telegraph and Wheatstone found a way of sending signals over larger distance. They shared notes and built a multi-wire installation that connected Paddington and West Drayton, on the Great Western railway line.

This was their first commercial success, although they had played with similar systems on other railway lines.

Morse, meanwhile, got together with Professor Leonard Gale from New York University and transmitted a signal over a single-wire telegraph over a distance of ten miles.

Samuel Morse struggled with his designs of the telegraph. His problem was generating signals that could travel distances. Help came in the form of Professor Leonard Gale from New York University. With his help Morse was able to send information over the distance of 10 miles.

Later, with the financial help of the machinist and inventor Alfred Vail, he demonstrated his system in public, in 1838 at the Speedwell Ironworks factory. His first public message was: *"A patient waiter is no loser".*

Morse Code

The point about the telegraph is that it consisted of simple electrical bursts, so Morse quickly set about devising a system of clicks that could represent the alphabet.

Together with American physicist Joseph Henry and Alfred Vail, Morse devised what we now know as the Morse Code.

In consisted of a series of short and long tones created at one end which sent pulses of electric current along wires which controlled an electromagnet that was

located at the receiving end of the telegraph system.

This system caught on around the globe and quickly overtook Cooke and Wheatstone's system, although Morse struggled with the patent. Cooke and Wheatstone had already patented their system in Britain, but gradually, Morse secured patents in the US and, eventually, globally.

In use today

Morse code was used extensively in the railway industry in the 19th and 20th centuries. Then it was adopted by shipping in order to communicate between ports and telegraphy became wireless, thanks to Marconi.

Wireless telegraphy led to the arrest of Dr Crippen mid-Atlantic. Hawley Harvey Crippen was an American doctor wanted for the murder of his wife, Cora Henrietta Crippen. He escaped the US on the *Montrose*, but he was recognised by the captain of crew who alerted the British police, via the wireless telegraphy system

As the ship entered the St Lawrence River, Canada, a police officer, pretending to be a pilot, came on board, identified Crippen and arrested him.

Morse Code is still used by amateur radio users, as well as the airline industry. Waypoints and locator beacons used by aircraft emit Morse code signals to identify themselves.

The non-directional beacon nearest to Heathrow is LON, or .-.. --- -. In Morse Code.

But, more importantly, the telegraph paved the way for what we all take for granted today, the connected world.

(VoR)

Ham radio SSTV satellite launches Saturday

The amateur radio Slow Scan TV satellite **SPROUT** (Space Research On Unique Technology), built by students from Nihon University, launches on May 24 at 0305 UT

SPROUT, a 20 x 20 x 22 cm amateur radio nano-satellite with a mass of 7.1 kg, will launch from the Tanegashima Space Center with ALOS-2 a L-band (1236.5 MHz/1257.5 MHz/1278.5 MHz) Synthetic Aperture Radar (SAR) satellite into a 654 km orbit.

The amateur radio objectives of the mission are:

- FM Digitalker that will enable the satellite to speak to amateurs around the world.

- Voice Message Box that will record transmissions from radio amateurs and play them back.

- AX.25 1200 bps Packet radio Digipeater with Text Message Box function.

- Pre-loaded images from the Message Gallery can be transmitted using FM Slow Scan TV (SSTV).

- Pictures of the Earth can be transmitted by SSTV and radio amateurs can receive them using free software such as MMSSTV. As part of the Earth mapping project the team ask radio amateurs to contribute pictures they have received from the satellite for display on the SPROUT website.

Callsign: JQ1ZJQ
Size: 214x210x220 mm
Weight: 7.1 kg
Mode: 1200bps AFSK, 9600bps GMSK
CW downlink 437.525 MHz
Packet FM downlink 437.525 MHz
Digi-peater uplink 437.600 MHz
Digi-talker downlink 437.600 MHz
SSTV FM downlink 437.600 MHz

SPROUT English website
http://sat.aero.cst.nihon-u.ac.jp/sprout-e/

Nihon-Univ. Miyazaki Laboratory on Facebook
https://www.facebook.com/pages/
Nihon-Univ-Miyazaki-Laboratory/406566642818860

Free Slow Scan TV software MMSSTV
http://hamsoft.ca/pages/mmsstv.php

Further information on SPROUT is available on the AMSAT-UK website at
http://amsat-uk.org/2014/05/21/
sprout-amateur-radio-slow-scan-tv-satellite/

Upcoming Happenings & Events

Date	*Happenings & Events*
1st June	**NZART Conference Broadcast**
2nd June	HF Net, 3.575 MHz, 19:30
3rd June	VHF Net, 146.525 MHz, 20:00
6th June	**NZART HQ-Infoline**
7-8 June	**NZART Hibernation Contest**
9th June	HF Net, 3.575 MHz, 19:30
10th June	VHF Net, 146.525 MHz, 20:00
6th June	HF Net, 3.575 MHz, 19:30
17th June	VHF Net, 146.525 MHz, 20:00
18th June	**Club General Meeting**
20th June	**NZART HQ-Infoline**
23rd June	HF Net, 3.575 MHz, 19:30
24th June	VHF Net, 146.525 MHz, 20:00
29th June	**NZART Official Broadcast**
30th June	HF Net, 3.575 MHz, 19:30

4th July—NZART HQ-Infoline

5-6 July—NZART Memorial Contest

16th July—Club Annual Dinner

18th July—NZART HQ-Infoline

27th July—NZART Official Broadcast

2-3 August—NZART Brass Monkey Contest

8th August—NZART HQ-Infoline

9th August—Annual Hamilton Market Day

22nd August—NZART HQ-Infoline

31st August—NZART Official Broadcast

4-5 October—NZART Microwave Contest

2nd November—NZART Straight Key Night

6-7 December—NZART Field Day Contest

28 Feb/1 Mar 2015—NZART Jock White Memorial Field Days

30-31 May 2015—NZART AGM & Conference

For more information on any of the above please contact myself or any committee member.

AREC Event Operators Page

WRC Rally NZ/ Possum Bourne Rally	June 2014	Organiser : ZL1BNQ
Please contact the Section Leader with your team information and he will pass it on to Auckland.		

NZW SRA Bridge to Bridge Water-Ski Race	Nov 30—Dec 1 2014	Organiser : ZL2MGS

Position		Saturday Operator	Sunday Operator
Base			
Start Boat			
Rescue Boat			
X-Band			
A.	Ngaruawahia/Taupiri		
	Start/Finish at Point		
B.	Ngaruawahia Ramp		
C.	Ngaruawahia W/S		
D.	Horotiu		
E.	Pukete Ramp		
F.	Days Park		
G.	Fairfield Bridge		
H.	Malcolm St		
I.	Narows		
J.	Field Days		
K.	Between Pipe and F/Days		
L.	High Level Bridge		

Kairangi Hill Climb	September 2014	Organiser : ZL1IC

Position	Operator
Start	
1. First bend	
2. Intermediate bend	
3. Top of hill	
4. Paddock	
5. Hall corner	
6. Above hairpin	
Finish	

Colville Connection	February 2015	Organiser : ZL1PK

Position	Primary Operator	Secondary Operator	Other Operator
Base			
Stony Bay			
Fletcher Bay			
Hill 1			
Hill 2			
Fantail Bay			
Ridge/Waikawau			

For Details about and to help with these events, contact the person indicated as the organiser for the event. See Page 1 for their contact information.

Club Information

Contacts :-

Business Meeting:	1930 First Wednesday of each month except January 88 Seddon Road, Hamilton
General Meeting:	1930 Third Wednesday of each month (except Jan) 88 Seddon Road, Hamilton
Homepage:	http://www.zl1ux.org.nz
eMail:	branch.12@nzart.org.nz
HF Net:	3.575MHz LSB 1930 Mondays
VHF Net:	146.525MHz simplex 2000 Tuesdays
2m Repeater:	145.325MHz -600kHz split
STSP Repeaters:	146.675MHz -600kHz split 438.725MHz -5 MHz split
ATV Repeater:	Off air pending channel changes

Cover Photo: Bad capacitors as seen in computers, LCD monitors, power supplies, etc, etc. See Editor Comment on Page 2.

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