Uplink
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INSIDE THIS ISSUE:

Report from the Chair

Welcome to Victorian and Tasmanian Members

Welcome to all IEEE members in Victoria and Tasmania. 2016 promises to be a memorable year.

A big thank you to Tony Gascoigne for putting together the bulk of the Victorian Section Annual report. We would appreciate some young blood to help Tony put the finishing touches on what is undoubtedly a very important task.

I attended the Region 10 IEEE meeting in Bangkok, 4-7 March 2016. The AC council meeting took place on the Friday.

I have been meeting and arranging meetings with the leadership of all chapters, affinity groups, students branches etc. The purpose of this is so that I can best serve the needs of all of you and help create succession planning. I will get around to meeting everyone in due course. However, if you would like to discuss anything with me urgently, then please contact me as soon as possible.

I have spoken with Kamran Ghorbani, Chair of MTT & APS about a succession plan. We have identified Stefan Burger as a very keen volunteer. The plan will be for Stefan to be appointed as Vice Chair and then Chair, when he has a full grasp of tasks involved.

Andre Oboler will take on the role of coordinator of IEEE Victorian Section Paper contests. He has vast experience in conducting this for the IEEE Computer Society. This will ensure that the paper contest is advertised and judged in a timely manner. Andre will continue his role as membership development officer.

IEEE Victorian Section is finally back on Facebook (www.facebook.com/ieeevic). Social media is a vital communication channel and needs to be utilised. We are looking for one or two volunteers who are willing to keep the page active and colourful.

We are also active on the IEEE Collabratec platform (https://ieee-collabratec.ieee.org/app/community/44/activites). The Melbourne Metropolitan group has almost 1000 members!

Matthew Felicetti (Past chair of IEEE Student Branch, La Trobe

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Chair's Report cont.

FROM PAGE 1

University) would be a great volunteer for the role of Section Student Representative. Matthew has demonstrated high capacity for leadership and outstanding performance. This essential role does not currently exist in the section.

Dinuka Kudavithana (Past chair of IEEE Student Branch, Uni of Melb) was, in 2015, assigned by Tony to revitalise some of the dormant student branches. I am proposing that Dinuka take the role of Student Activities Coordinator and that he, together with Matthew Felicetti, focus on driving success amongst all the student branches in Victoria.

Dilpreet Buxi (Former chair of Monash Student Branch), Matthew Felicetti and Dinuka will form part of a "Student Leadership and Mentoring Group" which will be responsible in assisting student branches with operations together with the SAC. This will include some face-to-face meetings. This group may expand at a later date.

There has been interest in the section in working more closely with industry for several years now. It is therefore essential we appoint a volunteer who has vast experience in this field as the section Industry Relations Officer. Dr. Peter Moar is a 20+ year member of IEEE and has global and local experience in dealing with top shelf organisations and governments. He has put his hand up to volunteer in this role and work with our committee. (https://au.linkedin.com/in/peter-moar-17a3712). With the committee's agreement I would like to put Peter forward as the candidate for this role.

The section has, in the past, attempted to coordinate conferences that were being run in Victoria or jointly with IEEE Vic. Greg Adamson has indicated that he would be keen to undertake the role of Conference Chair/Coordinator for the IEEE Victorian Section. With Greg's previous experiences and leadership, it is my belief he would do a great job in this role.

Golnar Khomami has undertaken a volunteer audit using our Vtools database. The purpose of this is two fold; firstly, to examine who is officially volunteering in a particular role and secondly, to determine how long volunteers have been in a particular role. The section wants to encourage leadership change in chapters/societies and affinity groups. Please examine the circulated list and provide comments.

Golnar and I have met with Golnoosh our webmaster and have put together a short term plan with action items in populating our webpage with relevant content.

Tony Gascoigne will continue to head up the role of chair of the Special Interest Group (SIG) and look for quality projects that the IEEE can help develop

On Friday I met with the entire Young Professionals team, including the chair, Leila. There will be some exciting developments on this front, which the Young Professionals will briefi the section on. We have also discussed the transition of leadership roles.

Marzieh Rahmani, a PhD student from La Trobe University, will become the assistant to Robert Slaviero in the TASU. This will ensure that we have additional training in place for redundancy and that we continue to support chapters in submitting their reports.

We are currently seeking someone to volunteer as the chair of "nominations and awards".

Chair's Report cont.

This is a very important role as we need to not only recognise the work of our volunteers and contributions in Victoria but our contributions in the Australian Council, Region 10 and global. Please contact me if you are interested in volunteering in this role.

At the section financial discussion meeting in January, it was noted that the section expenditure was increasing at a rate which cannot be sustained for an extended period of time. The section should therefore consider methods of generating some revenue so that we can continue to grow. This will also allow the section to be more robust with its operations. I have proposed that the section organise what will be called the "IEEE Victorian Section Signature Event Series". Initial planning is for 2 events in 2016 (May & October). The signature events should be developed as the premium products delivered by the IEEE Victorian Section. The purpose of the signature events is to establish a well known, high quality and valuable product, in the form of workshops, up skilling sessions, project management training (Prince, PMP, Agile etc) and industry training etc in the latest trends in industry. The workshops are to be delivered by experts within the IEEE Technical Societies. The workshops must be seen as highly valuable and relevant to participants' careers, such that they are prepared to pay to attend. I welcome suggestions from Victorian section members on potential workshops for 2016.

During 2016, the Section will work tirelessly with our membership to increase the IEEE Victorian Section representation, influence and visibility in Australia, and more importantly, in the whole Asia-Pacific region (IEEE Region 10).

For years, IEEE Victorian Section has been an outstanding performer through our technical societies/chapters, student branches and affinity groups. We will ensure that the work of our Section, and that of individual volunteers, is rightfully recognised through a strong advocacy of nominations for regional and global awards.

The recent launch of IEEE Collabratec as a powerful tool for collaboration and interaction will play a major role in increasing membership retention as well as enabling more effective engagement with industry. With the support of our membership, we will effectively utilise social media platforms, public forums and other publications to strengthen the image of IEEE in the professional and public eyes. The needs of our members in industry are equally as important as those of students and young professionals.

We will work to increase awareness of member benefits available, encouraging our members to take full advantage of these wherever possible.

Finally, as members of this great institution, we have a responsibility to educate the general public about advances in technology and how such trends are shaping our future. We will endeavour to "grow" the presence of IEEE in Victoria and Australia by establishing stronger links with the secondary education sector, also with regional communities in Victoria and Tasmania, with industrial enterprise (small and large), and with local and state governments.

Eddie Custovic
Chair, IEEE Victorian Section
E: E.Custovic@latrobe.edu.au

La Trobe Showcase— Alice Beckett wins the 2015 IEEE Prize for Technical Innovation and Engineering Achievement

Fire Curtain Maintenance Robots

ALICE BECKETT

Alice Beckett receives her IEEE Prize for Technical Innovation and Engineering Achievement from Robert Slaviero, TASU.

Alice Beckett, from the School of Engineering and Mathematical Sciences at La Trobe University, is the 2015 recipient of the IEEE prize for Technical Innovation and Engineering Achievement.

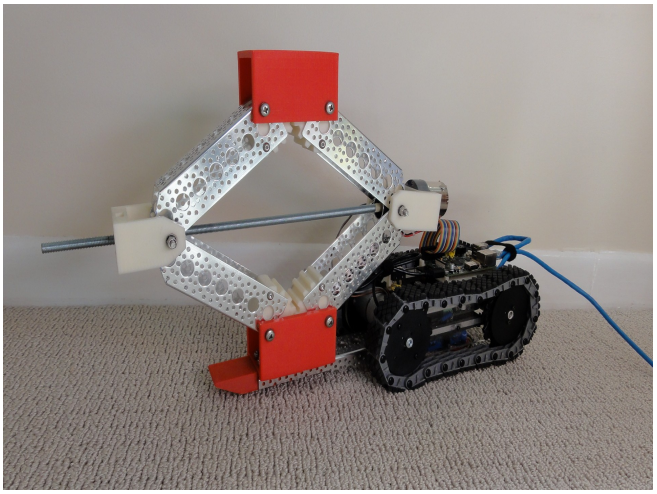
Alice's project involved the design and manufacture of robots to undertake essential fire curtain maintenance in heating, ventilation and air conditioning (HVAC) ducts.

Fire curtains are an important aid in reducing the spread of fire within a building. They are installed inside HVAC ducts and when activated, stop smoke and fire from travelling through the air ducts into other parts of the building.

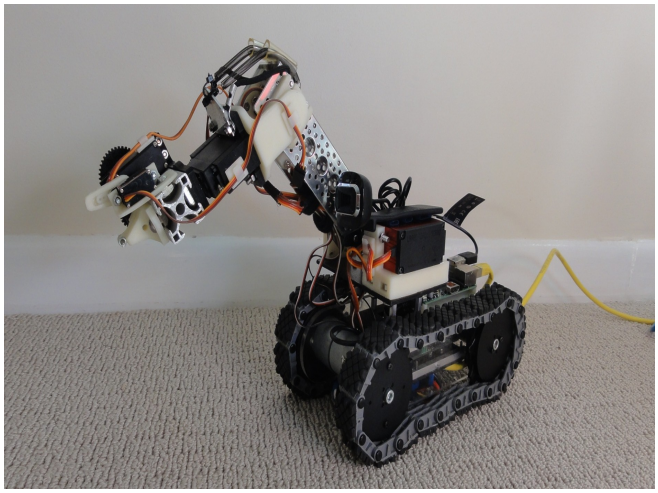
Fire curtains have two main components, a steel concertina curtain and a metal fuse. The fuse sits under the curtain supporting it and is designed to melt and break in two when it reaches 73°C.

When functioning correctly, fire curtains are fundamental in protecting property and saving human lives. Australian standard AS1851-2005 "Maintenance of Fire Protection Systems and Equipment" states

2015 IEEE Prize for Technical Innovation and Engineering Achievement



The lifting robot which lifts the fire curtain.



The manipulator robot which unhooks and re-hooks the fuse.

that all fire curtains must be tested every 5 years to maintain that they are working correctly.

The objective of this project was to design and build two robots that can fit inside an HVAC duct, travel towards the fire curtain and then test its functionality.

The level of testing required is as follows: the curtain's fuse must be unhooked, the curtain must then be seen to fall to prove that the curtain is still functional, before being lifted back into place and the fuse reset into position.

Two robots were built to perform this maintenance.

The lifting robot was designed to lift and lower the curtain to show that it has not become rusted or stuck .

The manipulator robot has an articulated arm that is used to unhook/rehook the fuse from its support so that the curtain is free to move. Both robots are controlled by the user via a laptop, an Xbox controller and video footage that is streamed back from inside the duct.

The benefit of this approach is demonstrated when the fire curtain cannot be reached for testing by hand other than by undertaking destructive changes to the building or the HVAC ducting which can be very costly and disruptive to perform.

Alice demonstrates her fire curtain maintenance robots in operation to her colleagues.

Electronica - IEEE Victorian Women in Engineering and Academy of Design Australia

Art and Design Intersect with Technology

MEHRNAZ SHOUSHTARIAN

Catwalk Display of during the Electronica Show **Photographer: Dr Fatemeh Jalali**

Electronica

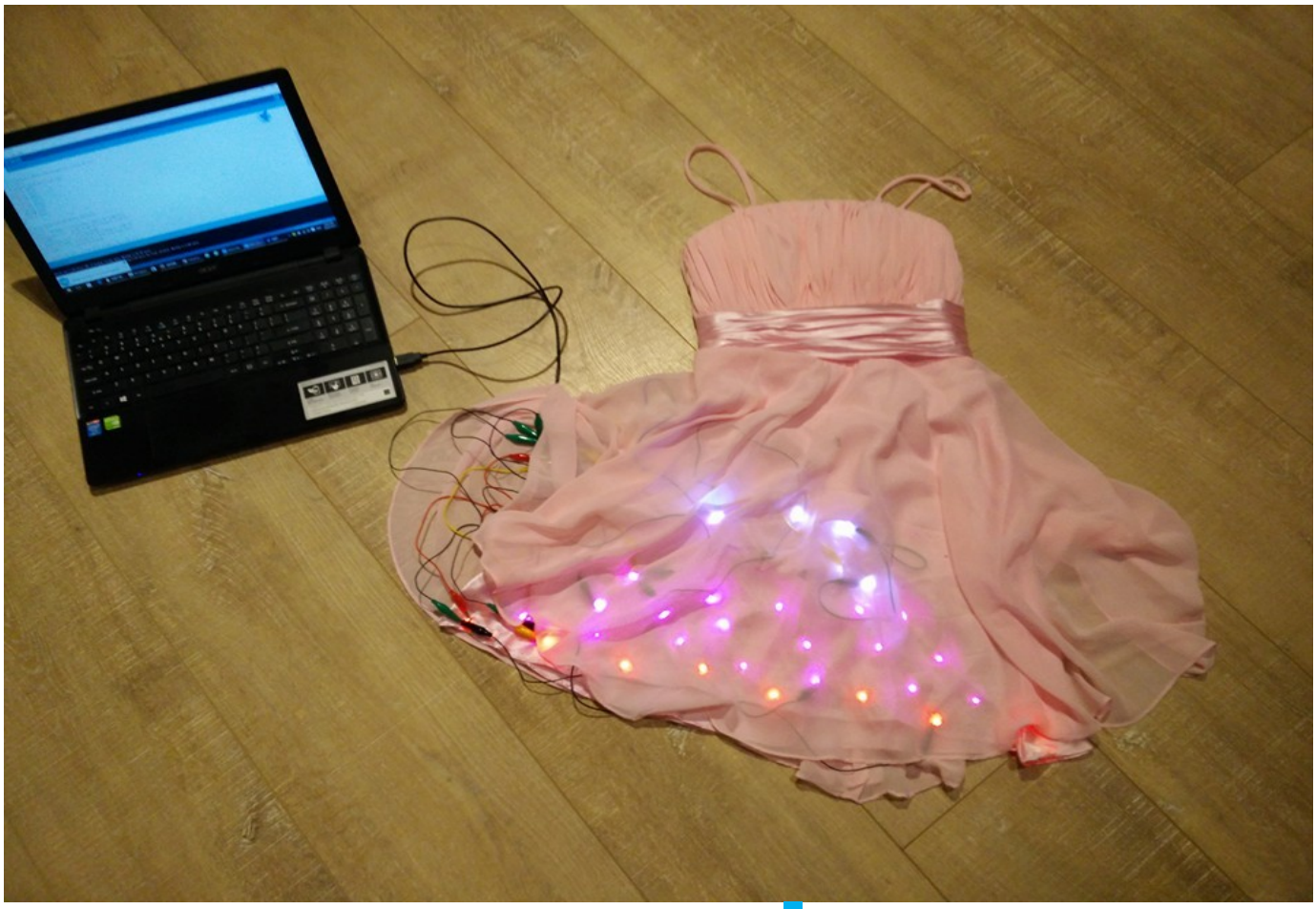
In March this year, IEEE Victorian Women in Engineering (WIE) members and students from the Academy of Design Australia teamed up to take part in the 2016 Virgin Australia Melbourne Fashion Festival's Cultural Program.

The creative collaboration, **Electronica**, was an exploration of how art and design can intersect with technology. Such collaborations could ensure that the rapidly growing wearable technology designs include the elegance and ease of use that would drive their acceptance. The designs showcased a range of lighting effects that transformed the look of the garments as well as the event space.

Leading up to the event, the teams of engineers and designers got together a number of times to discuss how to best implement the technology into the garments. The Academy of Design's Director, Amber Treseder Fitts, mentioned that a great feature of this event was the continued collaboration between the Academy fashion students and the Women in Engineering, which began in 2015.

WIE was excited to have the sponsorship of IBM and Pakronics for this event. Sensor data received from one of the dresses was processed by the IBM Watson Internet of Things (IoT) platform and displayed on IBM Bluemix, a cloud based application development platform. Pakronics is an online electronics store which offers a range of components and microcontroller platforms to makers and inventors.

Programming the Dresses for the Electronica Catwalk Show **Photographer Dr Ee Hui Lim**



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Electronica

FROM PAGE 7

The Electronica Design Team

Back row from left: Shamim Hossain, Nishad Mendis, Stefan Burger, Ee Hui Lim, Fatemeh Jalali, Rebecca Thorburn, Udesh Egodage, Harmony Yu, Bonnie Vong.

Front row from left: Marcela Vecino, Mehrnaz Shoushtarian, Akiko Ho and Nalika Dona

Photographers Laura Cousens and Ayden Aramze

The teams of talented engineers and designers were:

Designer & Engineer: Dr Ee Hui Lim and Akiko Ho Engineer: IBM

Designers: Mark Blake Engineer: Stefan Burger (Delta Gamma Consultant), Dr Mehrnaz Shoushtarian

Designer: Chloe Ritchie Engineer: Dr Ee Hui Lim and Akiko Ho

Designer: Bridgette Knights Engineer: Dr Ee Hui Lim

Designer: Helena Stephan Engineer: Stefan Burger (Delta Gamma Consultant), Dr Mehrnaz Shoushtarian

Designer: Mie Mie Lee Engineer: Tom Ung

Designer: Jane Pridmore Engineer: Hongmei Yu

Designer: Jennifer Georges Engineer: Hongmei Yu

Designer: Emily Wilson Engineer: Udesh Egodage

Designer: Josephine Esposito Engineer: Nalika Don

Designers, Paisley Wight, Mel Bardwell and Josephine Esposito

The event was also featured on the blog of the Council of Textile & Fashion Industries of Australia: https://tfiablog.wordpress.com/2016/04/04/tfia-member-spotlight-the-academy-of-design-australia/

Electronica

Illumination on the Catwalk at Electronica **Photographer Dr Fatemeh Jalali**

Malaysia Circuits and Systems Society Chapter Visit

ALAN HARVEY

CAS High Tea Attendees. CAS Chair, Dr. Nurul Yunus and Colleagues. The Author is on the extreme right at the bottom.

IEEE Region 10 asked for submissions regarding visits to other CASS chapters in R10. I made a submission and was successful in obtaining support up to $1000US. After many emails and phone calls to Malaysia, dates and times were agreed on. In the final week of October 2015, I visited members of the Malaysia Circuits and Systems chapter.

Visit to CASS Chair at UPM

On the Tuesday the 27th, I visited University Putra Malaysia, (UPM) at the Invitation of the Chair of the CAS chapter, Dr Nurul Yunus. I was first greeted by the head of the Electrical and Electronic Engineering Department Professor Wan Zuha Wan Hasan who was a past chair of CAS MY. Following a discussion with him, I then met Dr Nurul Yunus, the present CAS chair and the secretary of the CAS chapter, Dr Noor Ain Kamsani who was very helpful and who also works in the same dept. I discussed CASS Victoria chapter activities.

There is only one CAS chapter for Malaysia and the Malaysia-wide set of technical interest chapters constitute the Malaysian IEEE body. I was shown over the UPM EEE dept which has strong interests in microelectronics, integrated circuit design and general electrical engineering.

CASS Malaysia Activities

CASS Malaysia hosts technical seminars and usually two conferences related to Circuits and Systems. They also encourage Women in Engineering, with two awards

Malaysia Circuits and Systems Society Visit

for female post graduate students for distinguished work in the CAS area. Also from 2013 onwards, they have run the annual CASS High tea at a university or suitable hotel in KL.

After the above discussion, I then gave a seminar on Aspects of Electronic Magnetic Bearings to interested staff and students of the EEE Dept. I was asked to give a second seminar but time was not sufficient. I gave a short talk on RMIT University including its technical interests in the EE area. Plans were made for picking me up for the CAS High tea event being held the next day at University Technology Petronas. I returned to KL by train having been given a lift to the station, some distance away.

CASS High Tea -Ipoh

The next day, a large number of UPM people, approximately 30, went by bus to the CASS High Tea at University Technology Petronas which is at Ipoh, about 220 Km away. The trip took about 3 hrs starting at 9 am. There I was greeted by Prof. Fawnizu Azmadi Hussin, the originator of the CAS High Tea and CAS chair 2013/14.

The High Tea consists of two seminars followed by a comprehensive afternoon tea and informal discussions with CAS members and student researchers. Presentations were made to visiting CAS officials including myself. The first seminar topic was on transmission of electrical power through non-contact methods and the second was on the Internet of Things and its applications, particularly to medical problems. At the High tea I met the CAS co-chair Asral Bahari Jambek, a senior lecturer at the School of Microelectronic Engineering, Universiti Malaysia Perlis (UniMAP).

High Tea meeting with CAS member, myself and CAS Chair, Dr Nurul Yunus .

I spoke with Nurul, the CAS chair, at the High Tea and also by email. Topics for discussion centered around conferences to be held in Malaysia during 2016 and 2017. I was asked if I was interested in looking after a technical track and giving a keynote address which I was. I returned to KL by car and train with Prof. Fawnizu Azmadi Hussin with whom I discussed the history of CAS Malaysia. The foundation chair was Dr Sudanshu Jamuar. He delivered seminars under the DL program whom I had hosted in Australia and subsequently in Malaysia at a CAS conference he chaired.

Summary

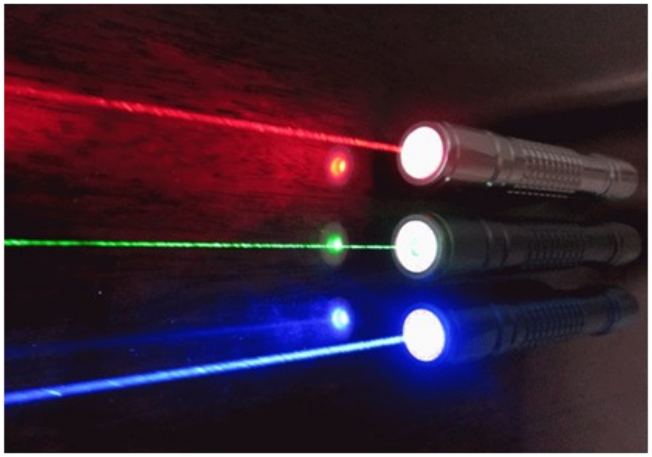
In summary I found the IEEE members and University staff members keen to work with IEEE members or University staff and visit RMIT on work experience leave or shorter visits. Also they were very interested to work with me on CAS conference organization and presentations.

Lasers in Medicine

Low Power Laser Therapy

ALAN HARVEY

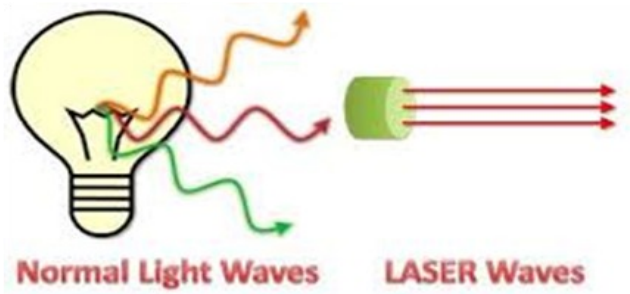
Lasers or Light Amplified Stimulated Emission of Radiation have been used in the medical field shortly after the invention of the laser in the 70's.



Ophthalmology or eye surgery was probably the first application. Laser surgery, enabling precise cutting or burning of tissues is now an established technique. Laser applications followed a similar path to electronics, with gas lasers early on followed by semiconductor lasers in the 90's. Very high power lasers still use gas laser techniques.

Laser printers, barcode scanners and aiming devices are laser applications with which we are all familiar in everyday life.

Lasers differ from conventional light beams in that all the laser radiation is in phase, unlike light sources which are incoherent or random in phase.



Multiple Wavelengths
Diverged (not parallel),
Dispersed (Multidirectional)

Monochromatic
Collimated (parallel &non-diverging)
Coherent (Unidirectional)

Cosmetic lasers are used to remove tattoos, spots and wrinkles. A port wine mark removal is shown in the third picture.

Port Wine Stain Removed with Pulsed Dye Laser

Another application of lasers, which I have been working with for many years, is the field of Low Power Laser Therapy (LLT). Powers range from a few milliwatts to several hundred milliwatts. There are two major applications of LLT; laser acupuncture, where a laser is used as an alternative to needle stimulation for the acupuncture points, and laser therapy. In laser therapy, larger areas of several square centimetres are treated by scanning the wound or skin condition to be treated with laser light or by raising the laser in the

Lasers in Medicine

case of divergent or triangular laser beam devices.

Wavelengths used are, firstly, in the range 650- 680 nm. This radiation is visible and is orange-red in colour. It has the advantage that both the patient and the doctor can see the beam and have confidence in its application. The second class of lasers used are infrared lasers which are invisible. They range principally from 770 to 850 nm. They are often of higher power than visible beam lasers, usually in the range 30-300 milliwatts.

Recently, I attended an AMAC or Australian Medical Acupuncture College conference in Geelong. At this conference, many applications of low power lasers were discussed. The conference was held at a waterfront hotel looking over the very scenic Geelong waterfront, complete with bollards, which are statues of Geelong historical figures.

Medical acupuncture is an active field in all states, although Victoria can strongly claim that the development of medical acupuncture started in Victoria with a group of doctors visiting China and starting the field of medical acupuncture.

Geelong bollard representing James Harrison, one of the inventors of commercial refrigeration

Laser Acupuncture and laser therapy are now a well established method of treating many conditions and add a practical alternative to other forms of treatment.

Victorian Section News

Congratulations to Grace Teng Zhang who was awarded the Best Oral Presentation prize at the 2015 Australian Biomedical Engineering Conference held in Melbourne. This award is sponsored by the EMB Victorian Section.

Her paper was titled: The pharyngoesophageal segment during phonation in patients following total laryngectomy surgery.

Grace is a research scientist at St. George Hospital in Kogarah NSW.

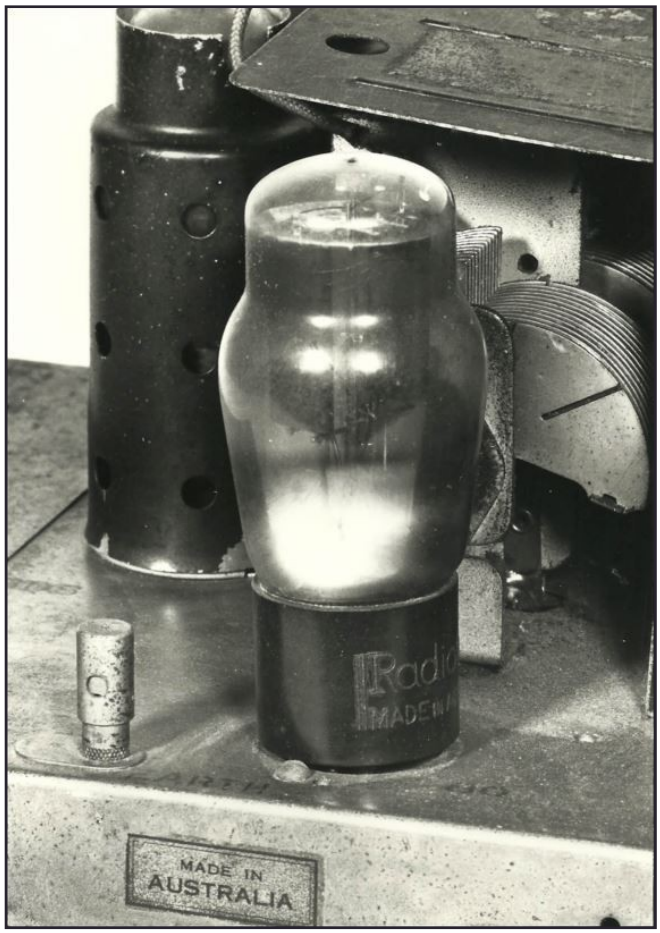
The IEEE is very proud of its members, student and GSM volunteers and if you know of people that have completed their PhD or have had other significant events in their lives, then please let us know so that we can congratulate them too.

Blast From The Past

An Interesting Reprint from Uplink December 1986

POLYPHEMUS (TONY GASCOIGNE)

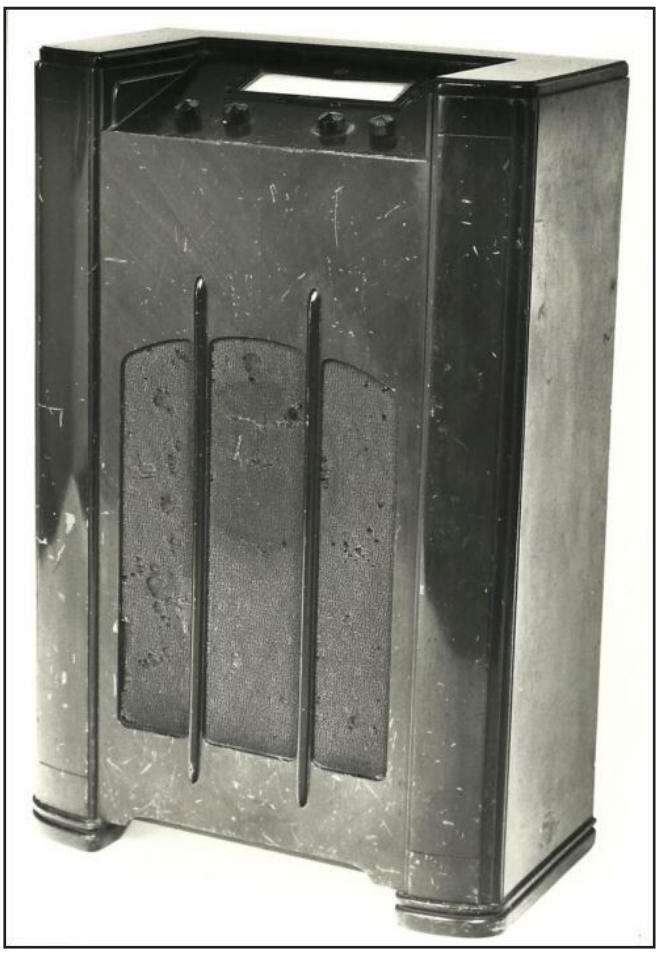
"Oh for the good old days", they say. Well perhaps: sometimes they were good. Certainly it is fascinating to look back a few decades at past electrical engineering endeavours, and to note the techniques and concerns and design constraints of the period. And at times a very sobering experience; the prominent label MADE IN AUSTRALIA shown on our first photo seems to have gone missing from the corresponding products of today.



And so, in this irregular series, we will step back to the various days of DC power distribution and hand-cranked telephones and marble switchboards and E-Class electric locomotives and four-wheel electric trams and (yes — of course) steam radios! We start the series with a product that is not quite in the latter category, but was once a household name in Australia — a 1936 AWA Radiola receiver. The series is presented by our ungainly nostalgia-nut Polyphemus, whose occasional lapses into flowery prose and even worse poetry are guaranteed to get on everybody's quince. However, readers are advised not to worry — the pictures will generally be worth looking at. Ed. (1986)

A worthy beast

There it was, in the corner of the garage, covered by an old service blanket. Varnish chipped and scratched. Grille cloth moth-



Blast From The Past

eaten. Mute for 25 or was it 30 years? Dare we turn it on?

What a question! Of course we turned it on and its five vacuum tubes all duly powered up, their filaments glowing like little red eyes, and a soft 100Hz hum obligingly emerged from the loudspeaker; but nary another sound. Ah, the penny dropped: 1936 model radios could not operate without an *external aerial*, and after contact was made via a wet finger to the aerial terminal, we had no trouble in receiving all local stations, loud, clear and sonorously.

O picoamps flowing
In human skin
You gave us a chance
To listen in.

And listen we did, for a while, to that long-forgotten sound coming from the mighty AWA electromagnetic loudspeaker mounted in the well-finished open-backed cabinet.

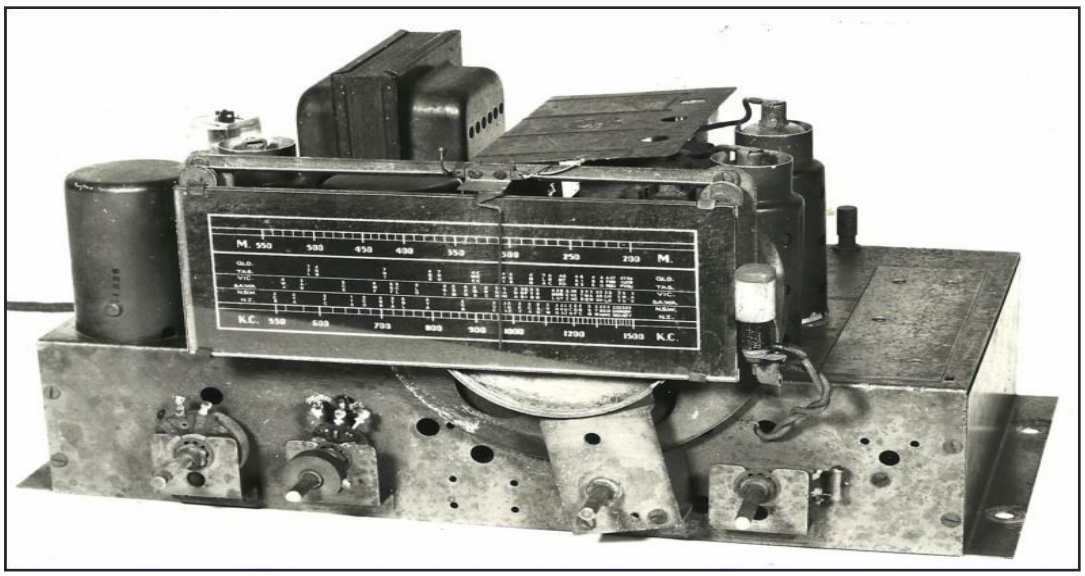
What did it matter if Bing Crosby excited a few BLOOMFS in the bass…

A rounded, resonant sound. Somewhat more resonant in fact, than the sound which left the broadcast studio, but what did it matter in those days? Who cared if Bing Crosby excited a few BLOOMFS in the bass or Joan Hammond a few CHIRIRPS in the treble as long as the set "had a good tone" and you could hear it in the kitchen?

And then we had the temerity to take the worthy beast to pieces and look inside, summarily evicting in the process all those spiders with long-term tenancies. So come with us on a journey of inspection and reflection!

…evicting all those spiders with long-term tenancies

Front view Now there's a sight—a genuine dial glass engraved with all the local stations—complete with KC's and M's, if you were into that sort of thing. From the single dial–lamp at the right hand end we deduce that the designer was only interested in finding stations at the top end of the dial. Certainly, finding



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Blast From The Past

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3AR in poor lighting conditions presented quite a challenge!

The control line-up is (L-R) tone, volume, tuning and band-change. We found that the tone control had been disconnected at some stage and a fixed treble-cut network inserted in its place. This may have been during a period of component shortages, during or immediately after WW2.

The steel chassis was in surprisingly good condition, considering that it had only a thin (rapidly deteriorating) layer of lacquer for protection. The chassis is assembled with self-tapping screws, which suggests that spot welders may not have been completely trustworthy in 1936!

Connoisseurs of tuning mechanism design will note the quadrant friction-drive for the tuning capacitor, which was quite popular at this time. A separate cord/pulley arrangement drives the dial pointer.

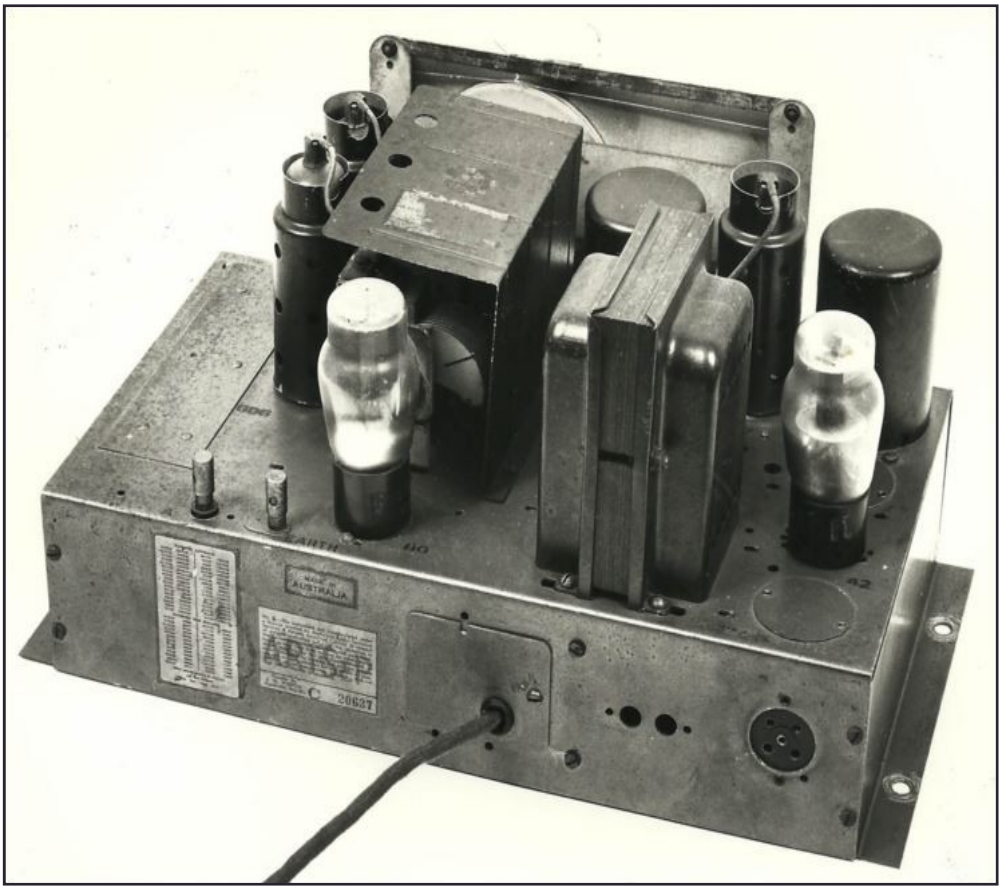
Rear view Ah, what a handsome array of period electronics hardware! Those curvaceous 'bottles', that elegant power transformer, looking half its years; those tankard-size IF transformers; those valve shields strong enough to ward off hammer blows; that daintily-shaped Z-bracket over the tuning capacitor, whose function is unclear and whose mechanical resonant frequency is about 2Hz.

The vacuum tube line-up is (clockwise from left) 6A7 (converter) 6D6 (IF) 6B7 (detector/audio) and 42 (power output). The 80 rectifier is at the rear, next to the earth terminal.

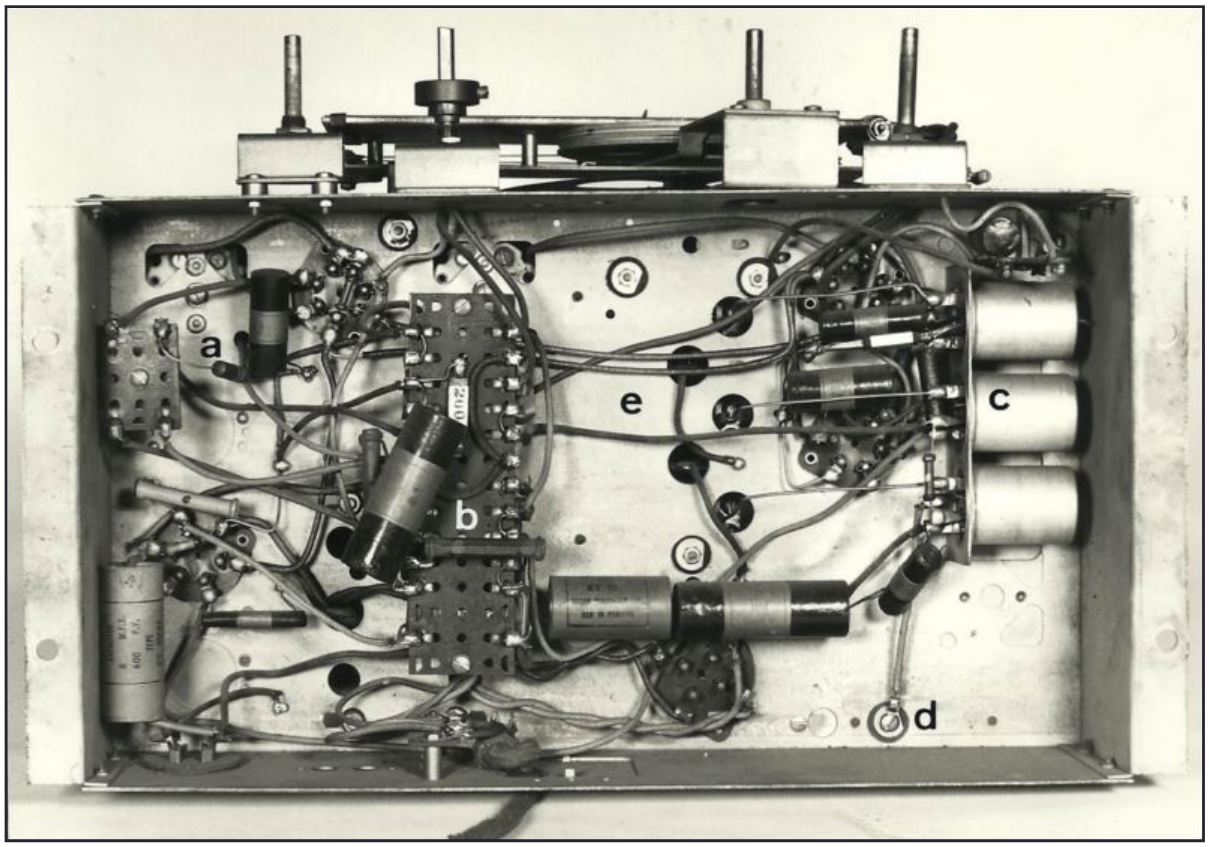
The four-way speaker terminal is at the lower right. For the uninitiated, electromagnetic loudspeakers had a series exciting coil, which also served as the power supply filter choke. In the unplugged condition shown the set is completely inoperable — there is no HT!

Underview And here we have it — the predictable array of tube sockets, small components, cotton-covered hookup wire and chassis earth connections.

In the language of the used-car salesman, the set is in 'very original condition'.



Blast From The Past



Eagle-eyed readers may have spotted the moulded-body resistor with banded markings **(a)**, which was evidently a replacement — probably from the 1940's or 1950's. The original resistor styles with their 'dot and spot' markings are seen on the 42 socket directly below and elsewhere around the chassis.

But why so few components overall, surely not enough for a 5-tube radio? Ha – you may well ask! There happens to be a large number of resistors and capacitors **under** the tag strip **(b)**, and to make the serviceman's life doubly miserable, these components are **completely inaccessible** without unsoldering many of the connecting leads!

Just picture our intrepid hero — at the end of a hard day's work, hoping to effect a quick 'fix' on this Radiola thing, wanting only to check out a lousy couple of cathode-bypass capacitors, and to be confronted by **this**! Great smoking soldering irons (he may well say) — it's enough to make you heterodyne!

Notice the unsupported tinned copper wire connecting to the aerial, oscillator and coupling coils **(c)**: such sculpting was highly fashionable at the time. We presume that the open space adjacent to the aerial terminal **(d)** accommodated an RF stage when fitted. The other unused area **(e)** is directly under the tuning capacitor.

Great smoking soldering irons ...it's enough to make you heterodyne!

Waveforms

High fidelity 1930's style! The 1 kHz square-wave response of the audio and output stages. Naturally, we used an ageing vacuum tube oscillator and a like-

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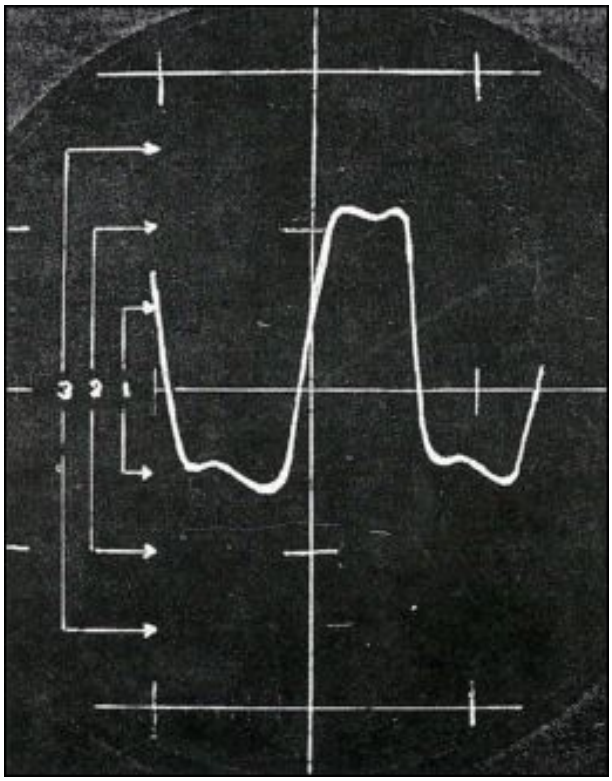
Blast From The Past

FROM PAGE 17

equipped oscilloscope to make this measurement!

Actually, the waveform when first displayed was much worse than that shown. The subsequent improvement was possibly due to 'conditioning' of a screen bypass capacitor or other component(s) after the long period of disuse.

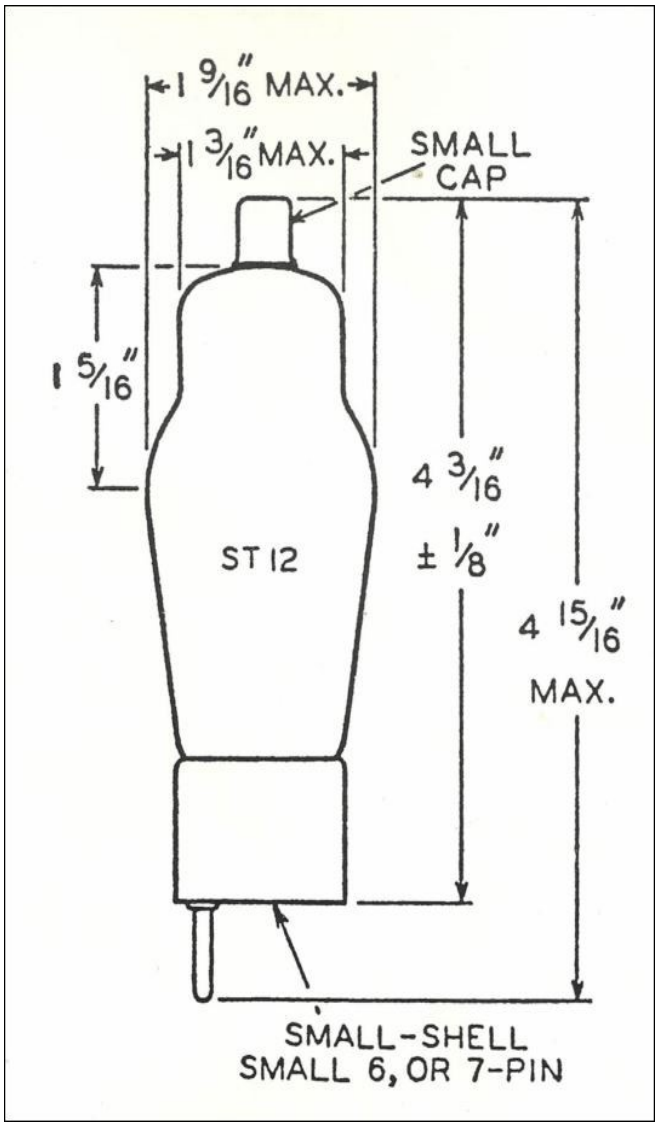


The main speaker transformer resonance appears to be at about 3 kHz, and the low frequency response at the transformer primary terminals extends down to about 200Hz.

Tube Outline

And now, dear reader, we know you want to be shown just how big those 'bottles' really were in 1936. Anticipating such desire for pure historical fact, we have included a tube outline for your contemplation (and amusement). Please excuse the Imperial dimensions — we left them in to add to the period authenticity.

Also, the descriptors 'small' applied to the moulded base and the top cap are not ours but the tube manufacturer's. And this outline was taken from a receiving-tube manual dated **1956**, 20 years *after* the Radiola left the factory! But they did label these particular types "obsolescent-use for replacement purposes only"!



Postscript Well, we did warn you about this bloke Polyphemus! We're thinking of sending him for a mu-test — we think one of his tubes may have gone 'gassy' - Ed (1986)

Editorial

Greetings IEEE Victorian members!

A new year starts with new challenges and new media communication techniques.

Last year the large number of technical meetings and activities made it a memorable year.

This year with all members contributing we hope an even more eventful year will ensue.

A very significant activity in 2015 was the regular workshop on e- textiles including the Energised Fashion Runway event at RMIT.

These entities combine clothing, microcontrollers, input devices and output devices to produce a wearable item of clothing with added electronic devices.

Those who took part in e-textiles may well continue their efforts and bring these products into the public eye.

A workshop on Rapid Prototype Development will be run in mid May. Location RMIT. Do come along.

Our Uplink Compiler Marie van der Klooster continues to put together our Uplink issues.

Send Uplink articles to me or Marie. Technical, historical and future event details are welcome.

Marie's email is marieks3219@gmail.com

Photographs are always a welcome addition to any article.

Every success in 2016 from the Uplink team!

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