

# ReSound

For people with Cochlear Implants

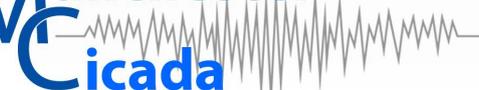
Autumn 2017

Issue 56

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*“Bramall Hall CICADA guided tour”*

**Manchester**  
**Cicada**  a charity supporting implant patients

This newsletter has been produced on behalf of the Manchester CICADA Charity

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## Editorial

Welcome to the Autumn edition of Resound.

As we come towards the end of the calendar year we can look back on some memorable events where we have enjoyed the company of others as well as the venue. We now have a redesigned web site which includes an ever growing gallery of photographs many of which have not been published in the Resound magazines.

If you have a photograph of a past meeting you would like to share with us please send it to me and we can add it to the gallery.

In this issue we have updates on developments taking place in the world as usual and also contributions from members.

We have an interview with our resident film star as part of the 'ten minute interview' series which was a pleasure to do, more will follow in subsequent issues.

We welcome all the new members who have joined this year and who will

hopefully feature in interviews in subsequent issues of the magazine.

CICADA is continuing to work closely with the Implant team at the MRI and also other hospitals such as Tameside General to help both new and existing CI users. If you think that you could help your local hospital in any way do get in touch with anyone from the EC and we will do all we can to help.

Once again, if you have a story to tell about your journey with the Implant program or an everyday occurrence we would love to hear from you, this magazine after all is about you.

All of us on the EC thank you all for your continued support throughout the year and look forward to seeing you at an event or meeting soon maybe at the Xmas dinner which is at the Liner Hotel in Liverpool

Kevin Williams - Editor

# Gallery Oldham visit

by Kevin Williams



Gallery Oldham provides a wide range of exhibitions and activities targeted at different audiences of all ages within Oldham and the surrounding area.

Current and forthcoming exhibitions feature artworks and items from Oldham's diverse collections alongside newly commissioned art, international work, touring exhibitions and work produced with local communities.

Talks and tours, art and craft workshops, work with schools and artist residencies are all part of the gallery's regular activities programme.

The staff at the Gallery Oldham have been trying to organise tours for deaf people recently including BSL signers and also people with Cochlear and other hearing devices but the issue has always been how people with hearing aids, cochlear implants and others could participate fully.

CICADA has been helping by advising and testing suitable communication systems for the Gallery, so they could improve the inclusion of deaf and hearing impaired people.

On the 12th October a team from CICADA travelled to Oldham intending to join such

a group attending an event titled "River of Tea exhibition"

Our job was to test the neck loop systems that the Gallery had purchased and report on how effective they were in helping people understand the tour.

After lunching in Oldham we met up with the others, and suitably equipped with our neck loop systems in place we joined the tour.

The exhibition tells the untold story of how our love for a cup of tea has helped shape our towns and cities today.

"River Of Tea – From Bengal To Britain" is an exhibition of photographs by Tim Smith.

Tea enjoys a special place in British culture and the industry has played a key role in our history. Behind Britain's cup of choice is a fascinating story that is rarely told; how the early tea trade sparked a migration that has helped to shape our towns and cities.

Tim Smith is a photographer based in Bradford and for over 35 years he has worked with a range of communities to explore issues of migration and identity. For this new exhibition he has worked with the Bangladeshi community in Oldham and other British towns to explore the story of how the tea trade built early links between Britain, India and Bangladesh.

Over 500,000 British-Bangladeshis now live in Britain.

Over 90 per cent are of Sylheti origin, from a region in Bengal that was once part of Assam Province in British India. Sylhet now lies in northern Bangladesh, just south of India's Assam State.

The connections between Sylhet and Britain were forged when the British established tea plantations in Assam in the 1830s. They relied on river transport to get the tea from plantations to the port of Calcutta for export.

It was the Sylhetis, master sailors and boat builders, who first provided this transport. Sylheti sailors then joined ships bringing the tea to Britain, and some of these sailors then found work ashore in Britain. It was these pioneers who laid the foundations of the communities of today.

This exhibition explores the history of Sylhet and Bangladesh, focusing on the region's links with Britain and the impact

these have had on people and places in Bangladesh.

Tim said: "Drinking tea is such an important part of British, Indian and Bangladeshi culture, yet the story of how tea arrived in Britain and the people it brought with it is rarely told".

"It was a real privilege for me to be able to retrace this journey. I photographed life along the rivers and in the tea estates of India and Bangladesh, in the bustling cities of Dhaka and Calcutta, and in Sylhet itself where I met

loads of people from all over Britain."

"Although it was a personal journey it was one guided by many British Bangladeshis, who suggested where to go and who to meet. Everywhere I went I encountered extraordinary help and hospitality from local people."

Cllr Barbara Brownridge, Oldham Council Cabinet Member for Neighbourhoods and Co-operatives, said: "We all love a cup of tea but most of us probably never stop to think about where it comes from and what impact it has had on our country. This really is a fascinating story about how our love of tea helped shape the communities we have today."

Following the successful debut of our own neck loop systems at Port Sunlight and Bramall Hall this tour proved that the investment was well worth doing and the staff at Gallery Oldham now have the confidence to use the equipment in future tours for Deaf and hard of hearing groups.



Our esteemed tasters at work!



# Movie Glasses

by Kevin Williams

Back in 2013, I did a presentation at the NADP AGM of a newly released piece of technology from the electronics company SONY. This was their solution to the problem of providing subtitle services for the deaf when in a hearing audience at the cinema, without the need to display subtitles on the main screen. As ever with technology, it was a good idea but the support equipment and services needed to make it work were expensive and technically difficult to install in the cinema.

Since then, Google Glass (a set of spectacles with a built in camera and other facilities) have come and gone, and various other solutions to being able to help deaf people have come to market.

As the power of SmartPhones has increased considerably since 2013, it has now become almost commonplace to be able to use speech recognition to control the operation of SmartPhones, on Apple Devices for example, this is called Siri (no idea why) but you can use voice commands to control a variety of actions like calling a named person etc.

The availability of voice recognition / dictation systems, and the fact that most films now have a subtitle track added to the film which can be downloaded separately, led an Italian company to develop an App for SmartPhones which would display the subtitles of a film as it played in the cinema.

The subtitle track for the film you wanted to watch would be downloaded to the SmartPhone first and then when at the cinema, it would synchronise with the film

by recognising where the script was by translating the sound and then display the text on the phone as the film played. Whilst this is technically an excellent step forward, it was difficult to use in practice as it meant switching attention away from the screen to the phone to read the subtitles, not to mention getting a tired arm holding up the phone for an hour or two!

As so often happens with technology something invented to solve one problem can end up providing solutions for others. The recent explosion of use of Drones used to take aerial photographs and films without the need for real aircraft, and the increase in Virtual Reality devices used with computer games and Simulators, led the Epson company to bring out an intelligent free standing set of glasses that amongst other things would allow operators of drones to 'look down' from drone mounted cameras as if they were flying and thereby make better use of the drone itself.



One of the keys to being able to do this was the use of an intelligent control box which was attached to the glasses and was in fact a SmartPhone without the screen and other accessories, it was in fact an Android device such as is used in a wide range of SmartPhones. As such it was

capable of running Apps designed for SmartPhones ... so loading the Italian Subtitle App onto the device allows the subtitles to be displayed on the glasses without the need for any supporting equipment in the cinema!

As an example of where this device is being used in similar circumstances see this article about its use at the National Theatre.

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## The National Theatre's smart glasses are a dramatic revolution



by Oliver Smith - 4th October 2017

### SUMMARY

Who knew subtitles could be so powerful?

Going to the theatre isn't easy if you're deaf or hard of hearing. First you have to make sure the performance you're seeing is captioned, of which only a few shows of each run typically are. Then you'll spend most of the performance glancing away from the action to read these subtitles on a screen off the edge of the stage.

It's a bit like watching a foreign language film, following the subtitles from a book on your lap. That's the reality for the 9 million Brits who are deaf or suffer from poor hearing.

Now the National Theatre has built a better way, working with Accenture and using the latest augmented reality headset from Epson. The Epson glasses in action, which can be worn over the top of glasses, albeit awkwardly.

### SPLENDID SUBTITLES

Yesterday I watched Olivia Colman's devastatingly good performance in *Mosquitoes*, acting alongside the also

impressive Olivia Williams, to get a sense of how good the National Theatre's awkwardly named 'Open Access Smart Capture' is.

In a word, it's excellent.

As the actors moved around stage, recounting the stories of their character's pregnancies, words appeared almost magically overlaid beneath them, popping up just in time with their lines.

The system isn't just a script rolling across your vision either, the software they've created detects and follows the actual play, the lighting cues, actors words and music, to pausing or speeding up the overlaid captions should an actor tweak their performance on the night.

It's so powerful that the National Theatre's technical director Jonathan Suffolk told *The Memo* that the entire system is designed to work unsupervised, regardless of what happens on the night.

And none of this was distracting either because, using a small remote in my hand, I could tweak the colour (red), font size (medium-small), and position (bottom-left) of the text to be as discreet or bold as I desired.

In fact, in the way that many people watch TV with subtitles, I actually found them helpful – in the hustle and bustle of the scene it was actually quite enjoyable to be able to glance back and re-read what had been said.

The National Theatre's technical director Jonathan Suffolk.

### THEATRE FOR EVERYONE

"Our ambition is to perfect it for use in the National Theatre, so by October 2018 we're providing an always-on closed caption service across all our performances," Suffolk told *The Memo*.

But in fact, this service they've created is potentially even more powerful than just opening up theatre for the hard of hearing.

Making performances multilingual with captions in different languages could open performances to any nationality.

The ability of the software to judge timing on-stage could also revolutionise audio description for visually impaired audiences.

It also means that every single performance can be captioned, no need for screens or special 'captioned' shows.

And while this system is currently only being trialled at the National Theatre, the goal is to make this tech universal.

"Our ambition is, at the end of this project, to make it more widely available to the

theatre industry, across theatres large and small with a system that is deployable and affordable."

In just a few short years, every performance at every theatre in the world could be subtitled in dozens of languages, accessible to millions.

That's why this 'Open Access Smart Capture' system isn't simply a game-changer for the hard of hearing, it's potentially a revolution for everyone.

*Oliver Smith is a Senior Reporter at The Memo. Winner of the Gold Award at MHP's 30 To Watch, he previously covered technology, media and telecoms at City A.M. newspaper. He can be found tweeting @OliverSmithEU. You can email him at oliver.smith@thememo.com.*

## Room Acoustics solution

How many times have we been out socialising, in a restaurant or other such place and found the background noise so overwhelming it took the pleasure of the occasion away?



*Fluffy Woollen clouds and pebbles*

We came across this recently, a company making noise reduction products but just made out of pure wool rather than industrial materials.

They have provided help for our friends at Hearing Dogs for the deaf amongst others and they seem to be



providing good results in schools as well.

So the next time you are out, just have a look up and see if there are any clouds on the ceiling!



*Fitted unobtrusively to ceilings and yes they do work !*

The company is called 'The Woolly Shepherd' and they specialise in natural acoustics for lots of different types of buildings.



(<http://www.woollyshepherd.co.uk/>)

# Ten minute interview with Lynn Grimshaw

Can you tell me a little bit about yourself, and what you do.

I am a single mum with two grown up sons and I am working as a support worker providing supported living services for four service users.

How long did you have a hearing problem before going for the implant?

I was born deaf because my mum had German measles while pregnant. They only discovered I was deaf when I was 5 years of age but I went to mainstream schools, Primary, High and College.

How did the hearing problems affect your work?

I had a hearing aid in my left ear and managed quite well with it until I was 48 years of age. Unfortunately while I was working at a school as a dinner supervisor, my ear popped and all sound went and the hearing aid was no more use. I was lost as I couldn't hear anything at all!

I found the loss of hearing scary, frustrating and lost my confidence, luckily I could lipread but couldn't hear my family, they got frustrated with me especially as I couldn't hear the TV or use the telephone, it felt like my life was on hold.

How long did it take for you to get on to the implant program?

I was made to manage for three months with different hearing aids but I kept telling them that I couldn't hear at all, I was frustrated and upset. One day, a lady from the hearing centre took me to one side after hearing me upset and asked if I had

heard of Cochlear Implants and got me referred to the MRI.

It didn't take long to get onto the implant program it just took a lot of research, tests and questions, meeting a lot of professionals and seeing people who had experienced it. I must admit I was apprehensive about the operation.

How long is it since your operation?

I have now had the implant for seven years and it was the best decision I ever made.

How have you been since the operation, are you getting used to the new device?

At first the sound was a bit robotic and strange so it took a while to train my brain to recognise sounds again.

How has the cochlear implant changed your hearing?

I can hear birds now and can say it's a noisy world out there!

How have your work colleagues and family been with the operation and the rehabilitation

I can do my job, my family and friends are amazed how I have coped with it, it just gets better and better! I have now just had an upgraded sound processor and it cuts out background noises so I can hear better when I talk one to one with people.

So you're a film star ;) How did you get involved with that?

I did drama for five years with the Wigan Pier Theatre Company and then joined an



extras agency. I stopped when I lost my hearing but rejoined a few months ago doing student filming and extras work.

**What do you enjoy most about acting?**

Meeting people, dressing up and getting into character for the parts.

**Do your acting colleagues know about your implant and how have they been?**

Everyone's been great but it isn't brought up much about it, it hasn't been much of an issue really

**Has your acting helped you in other ways?**

It has built my confidence up and helped me get out more and meet new people and has given me experience in front of the film cameras.

**What would you say to other CI Users who may have thought about acting?**

If you want to do something you enjoy doing, try it and see if it's for you.

**How did you find out about CICADA?**

Through reading the newsletter from the Manchester Implant Centre when I was going through my switch on process.

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The photographs below were from a film entitled, 'The life of Joanna Vassa'.

Lynn played her grandma 'Mrs Cullen' and the gentleman was Mr Audley played by Mr Robert Clement-Evans. The scene was at the wedding of Joanna and her husband to be Rev. Bromley



*At the church in Dobcross, Near Saddleworth.*



*Lynn in one of the rooms at Gaskell house where CICADA had a tour last year.*



### No evidence of hidden hearing loss from common recreational noise

#### **Study finds no evidence of auditory nerve injury or permanent hearing difficulties in young adults after attending a loud event.**

Exposure to loud noises during common recreational activities is widely cited as a cause of "hidden hearing loss."

A new study of young adults, however, finds that while hearing is temporarily affected after attending a loud event, there is no evidence of auditory nerve injury or permanent hearing difficulties.

The study is the first to look for a causal relationship between recreational noise exposure and auditory function in humans.

Rodent studies have suggested that loud noises can permanently damage nerve and hair cells in the ear, even if there is no permanent change to threshold sensitivity -- that is, is the level below which certain sounds cannot be detected.

Such neural injury is often called hidden hearing loss as it cannot be detected by standard hearing tests, which look for a permanent threshold shift.

These studies raised alarm about potential hidden hearing loss in humans -- and more recently, whether typical recreational noise can cause such damage.

"The rodent studies serve as the basis for concern that adolescents and young adults may be at risk of neural injury from dance parties, listening to music on personal headphones, and other common activities,"

explains Dr Colleen Le Prell, a Professor of Hearing Science at the University of Texas at Dallas, USA. "However, the level of noise exposure in these rodent studies was very high.

Later studies with a lower noise exposure showed reduced or no neural injury."

Given the worrying implications of hidden hearing loss caused by recreational noise, Le Prell and her team assessed neural function and hearing performance in young

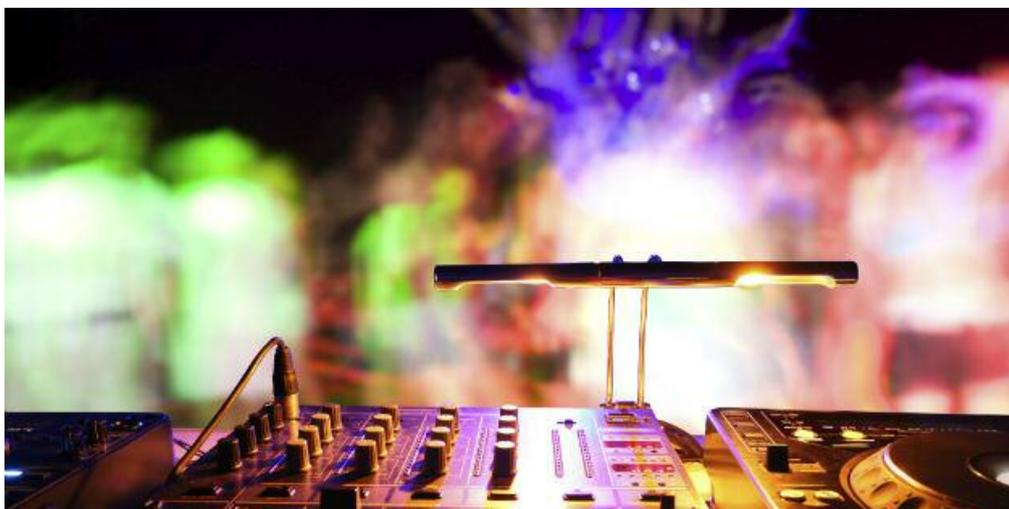


adults before and after attending a loud recreational event.

Different people attended different types of events, which included a concert, a multi-day music festival, a bar with live or electronic music, and a movie.

The team also looked for any relationship between the participants' history of noise exposure in the previous 12 months and their baseline "before" assessments.

The study, published in open-access journal *Frontiers in Neuroscience*, is the first to prospectively monitor potential hearing change: examined this retrospectively



when there is background noise," says Dr Le Prell.

This does not mean that all recreational loud noise is safe, however. Other studies suggest that firearm users, for example, are almost certainly likely to be at risk for neural injuries.

based on self-reported noise exposure history.

In another first, the participants used a SmartPhone app to measure the sound level during the recreational event.

The tests included assessments of middle ear, cochlear and auditory nerve function, determination of the hearing threshold level, and a Words-in-Noise test to evaluate how well the participants could understand speech in background noise.

The team did not find any statistically significant relationship between retrospective recreational noise history and neural function.

While a temporary threshold shift was observed within 24 hours of attending the recreational event, the effect was generally small and had disappeared one week later.

Similarly, while Words-in-Noise performance was lower one day after the event, there was no significant effect one week later.

There was also no evidence of neural injury following the recreational event, either within 24 hours of the event or one week later.

"Despite multiple calls for alarm in the media and in the scientific literature, we found no evidence that typical recreational noise exposure is associated with permanent decreased auditory nerve function or poorer understanding of speech

"We do not know where risk begins in humans for acute recreational noise exposure or for acute high-level exposure," says Dr Le Prell. "We also do not know how, or if, the risk of injury changes with frequent, repeated noise exposure, such as chronic daily exposure in a loud working environment." She advises that anyone experiencing temporary hearing changes or "ringing" in their ears (tinnitus) should protect their hearing in future loud situations.

The study suggests that hearing-in-noise tests may be more sensitive for detecting hearing loss than the current gold standard of testing for permanent threshold shifts.

"If future studies show that hearing-in-noise is the earliest auditory deficit to emerge following exposure to loud noises, then testing for this instead of threshold shifts may allow earlier detection of noise injury," says Dr Le Prell.

"This is extremely relevant for occupational noise regulations and monitoring. Hearing-in-noise tests may also be more appropriate for measuring the safety of recreational events, as well as for assessing new otoprotective drugs," she says.

Story Source:

Materials provided by Frontiers. Note: Content may be edited for style and length.

## Ringling in ears keeps brain more at attention, less at rest, study finds

*Tinnitus, a chronic ringing or buzzing in the ears, has eluded medical treatment and scientific understanding. A new study found that chronic tinnitus is associated with changes in certain networks in the brain, and furthermore, those changes cause the brain to stay more at attention and less at rest. The finding provides patients with validation of their experiences and hope for future treatment options.*

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"Tinnitus is invisible. It cannot be measured by any device we have, the way we can measure diabetes or hypertension," said study leader Fatima Husain, a professor of speech and hearing science at the University of Illinois. "So you can have this constant sound in your head, but nobody else can hear it and they may not believe you.

They may think it's all in your imagination. Medically, we can only manage some symptoms, not cure it, because we don't understand what's causing it."

One factor that has complicated tinnitus research is the variability in the patient population. There are a lot of variables -- for example, duration, cause, severity, concurrent hearing loss, age, type of sound, which ear and more - - which have led to inconsistent study results.

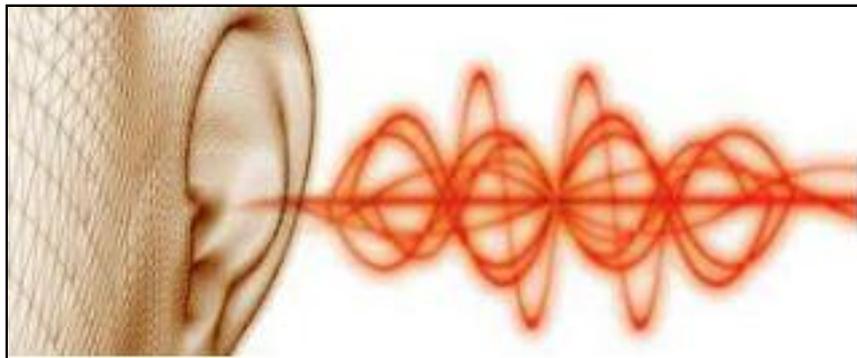
"We have been so swamped by variability that finding anything that is consistent, that gives us one objective metric for tinnitus, is very exciting," said Husain, who also is affiliated with the neuroscience program and the Beckman Institute for Advanced Science and Technology at Illinois.

Using functional MRI to look for patterns across brain function and structure, the new study found that tinnitus is, in fact, in the hearers' heads -- in a region of the brain called the precuneus, to be precise.

The precuneus is connected to two inversely related networks in the brain: the dorsal attention network, which is active when something holds a person's attention; and the default mode network, which are the "background" functions of the brain when the person is at rest and not thinking of anything in particular.

"When the default mode network is on, the dorsal attention network is off, and vice versa. We found that the precuneus in tinnitus patients seems to be playing a role in that relationship," said Sara Schmidt, a graduate student in the neuroscience program and the first author of the paper.

The researchers found that, in patients with chronic tinnitus, the precuneus is more connected to the dorsal attention network and less connected to the default



mode network. Additionally, as severity of the tinnitus increased, so did the observed effects on the neural networks. The results were published in the journal *NeuroImage: Clinical*.

"For patients, this is validating. Here is something related to tinnitus which is objective and invariant," Husain said. "It also implies that tinnitus patients are not truly at rest, even when resting. This could explain why many report being tired more often. Additionally, their attention may be engaged more with their tinnitus than

necessary, and that may lessen their attention to other things. If you have bothersome tinnitus, this may be why you have concentration issues."

However, patients with recent-onset tinnitus did not show the differences in precuneus connectivity. Their scans looked more like the control groups, which begs the question of when and how changes in brain connectivity begin and whether they can be prevented or lessened.

"We don't know what's going to happen to the recent-onset patients later, so the next step is to do a longitudinal study to follow people after developing tinnitus and see if we can spot when these types of changes with the precuneus start to happen,"

Schmidt said.

The researchers hope their findings generate new paths for future research, providing one invariant metric to look for and guidelines for patient groupings.

"Knowing that duration and severity are factors is important, and can help guide future study design. We can look at subgroups and see differences," Schmidt said.

Husain's group currently is conducting a study to look at tinnitus across military and civilian populations.

Story Source:

Materials provided by University of Illinois at Urbana-Champaign. Note: Content may be edited for style and length.

## Sound deprivation leads to irreversible hearing loss

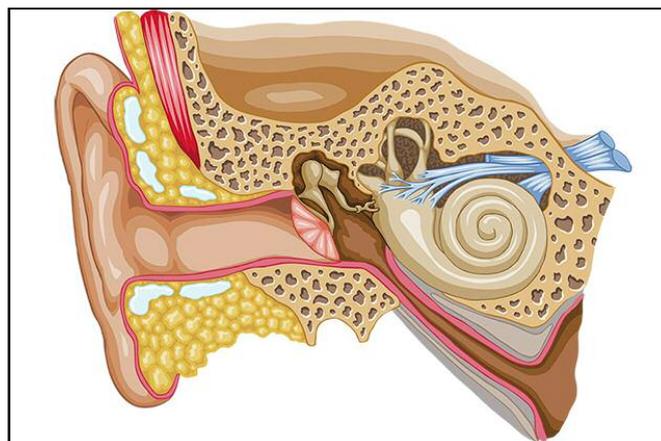
*Researchers show that chronic conductive hearing loss leads to cochlear degeneration*

Sound deprivation in adult mice causes irreversible damage to the inner ear. The findings suggest that chronic conductive hearing loss, such as that caused by recurrent ear infections, leads to permanent hearing impairment if it remains untreated.

Massachusetts Eye and Ear investigators have shown that sound deprivation in adult mice causes irreversible damage to the inner ear. The findings, published in PLOS ONE, suggest that chronic conductive hearing loss, such as that caused by recurrent ear infections, leads to permanent hearing impairment if it remains untreated.

Sound waves travel through the ear canal before reaching the eardrum and the tiny bones of the middle ear. They are then converted into electrical signals within the

inner ear and transmitted to the brain by the auditory nerve. Conductive hearing loss occurs when sound transmission from the ear canal to the inner ear is impaired. It causes a reduction in sound level and an inability to hear soft sounds.



In this study, a team of researchers led by Stephane F. Maison, Ph.D., investigator in the Eaton-Peabody Laboratories at Mass. Eye and Ear and assistant professor of otolaryngology at Harvard Medical School, followed the inner ear changes in

a group of mice with chronic conductive hearing loss in one ear.

"After a year of sound deprivation, we observed dramatic changes in the inner ear -- notably, a significant loss of the synaptic connections through which the sensory cells send their electrical signals to the

brain," Dr. Maison said. "Although there have been many studies of acoustic deprivation on the auditory system, few have looked at adult-onset deprivation, and none, to our knowledge, has documented changes in the inner ear."

Leading causes of conductive hearing loss include earwax blockage, otitis media (ear infections) and otosclerosis.

"Although these conditions are routinely treated in industrial societies, a number of patients choose not to receive treatment, particularly when their medical condition affects only one ear," Dr. Maison said. "For instance, patients with unilateral atresia, a condition in which the ear canal is closed or absent, see limited benefits of undergoing surgery when they can simply use their good ear."

At least 80 percent of children will experience one or more bouts of otitis media before they reach 3 years of age. Ear infections are the most common cause for physician visits and medication

prescriptions among children in the United States. These bouts can persist for many months in some cases, and deficits in communication abilities can persist for years after the middle-ear pathology has resolved.

Data from the present study suggest that the auditory deprivation, in itself, damages the inner ear in ways similar to that seen in age-related and noise-induced hearing loss. Although the mechanisms underlying this inner ear damage following sound-deprivation are not known, the authors suggest that its effects need to be considered in the management of chronic conductive hearing loss in clinic.

"Our findings suggest that audiologists and physicians should advocate for early intervention and treat these middle ear conditions," Dr. Maison said.

Story Source:

Materials provided by Massachusetts Eye and Ear Infirmary. Note: Content may be edited for style and length.

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## Study raises expectations for improved language skills in the deaf and hard-of-hearing

*Universal screening of newborns for hearing loss before they leave the hospital is not enough to improve language skills of children who are deaf and hard of hearing. At least 40 percent of children with a hearing loss have the capacity for higher language levels -- beyond what test scores indicate.*

Universal screening of newborns for hearing loss before they leave the hospital is not enough to improve language skills of children who are deaf and hard of hearing, according to a new study.

Research scientists at Cincinnati Children's Hospital Medical Center say that at least 40 percent of children with a hearing loss have the capacity for higher language levels -- beyond what test scores indicate.

"We have focused efforts for children who are deaf or hard of hearing on obtaining a language level that is often considered in the normal or average range on

standardized assessments," says Jareen Meizen-Derr, PhD, an epidemiologist at Cincinnati Children's and lead author of a new study. "But their language skills are not good enough if we account for their cognitive abilities."

Dr. Meizen-Derr says there is a mismatch between the cognitive level children test at and the expectations for their language skills. With a slightly modified evaluation approach, therapists would be able to recognize these mismatches at very young ages, she says, and intervene to bring these children up to their ability.

"We should not be satisfied with language

levels that are lower than a child's cognitive ability." The study is published online in the Journal of Developmental and Behavioral Pediatrics.

Researchers conducted the study in two phases. The first occurred between 2011 and 2014 and enrolled children between the ages of 3 and 6 with mild to profound hearing loss in both ears (bilateral). The second phase began in 2014 and enrolled children up to 3 years old, also with mild to profound bilateral hearing loss. A total of 152 children were enrolled.

All children received a language assessment and a neurocognitive assessment. A speech-language pathologist administered a standardized test to assess language skills. Forty-one percent had a significant disparity between their language scores

and their nonverbal cognitive scores, which the researchers defined as a "language underperformance."

"We believe that all children have potential," says Meinzen-Derr. "Our measurements give us a target for that potential so that we at least know what the language goals for a child should be. This also has implications for other aspects of development, such as social development and -- further down the road -- academics. This is why we are pushing for better intervention, because we know we can do better for children who are deaf or hard of hearing.

Story Source:

Materials provided by Cincinnati Children's Hospital Medical Center. Note: Content may be edited for style and length.

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## **Cochlear acquires exclusive licence to Artificial Intelligence assistant to support better, outcomes-based cochlear implant fitting**

Cochlear Limited (ASX: COH), the world leader in implantable hearing solutions, has entered into an exclusive licensing and development agreement with Otoconsult NV for its artificial intelligence fitting assistant FOX (Fitting to Outcomes eXpert).

This technology is expected to enable a faster and more consistent fitting of cochlear implants to deliver the best possible patient outcomes. This investment will strengthen Cochlear's portfolio of tools and services to be offered to clinical partners to improve patient care.

Unlike other fitting methods, FOX uses speech perception and other patient outcome tests as an input to its fitting optimization algorithm, in order to maximise outcomes for patients.

Outcomes testing is conducted using the Auditory Speech Sounds Evaluation (ASSE) test suite, also developed by Otoconsult, which can be directly linked from the clinician's computer to the Cochlear speech

processors using a proprietary link.

FOX then provides the additional opportunity to analyse the patient's test results and previous MAPs against other anonymised MAPs to provide its recommendation of the best possible MAP for that patient. Working in this way expedites the cochlear implant fitting process to take the measured results even closer to an ideal hearing target.

FOX is the only artificial intelligence fitting assistant using anonymised outcomes data and the results of other MAPs stored in its proprietary database. FOX will continually improve its predictive ability as each new MAP is created and performance data is added to its database.

"FOX's artificial intelligence assistant will provide clinicians – no matter where they are in the world – a platform to speed up the cochlear implant fitting process while also helping them achieve the best possible

patient outcome," said Cochlear CEO and President, Chris Smith. "Partnering with Otoconsult, we hope to strengthen our technology offering to clinical care professionals, giving them greater consistency of outcomes with this cutting-edge solution."

"The FOX technology will change how we program cochlear implants," said William H. Shapiro, AuD, CCC-A, Clinical Associate Professor in Otolaryngology and Supervising Audiologist, NYU Cochlear Implant Center, NYU School of Medicine, New York, NY. "The audiologist can perform a set of simple, yet critical tasks,

where the patient is an active participant, to provide the evidence for target-based fitting much like hearing aid verifications today. Additionally, it allows the clinician to take the patient out of the audiometric booth providing a better patient experience."

Under the terms of the agreement, Cochlear will licence FOX and a proprietary link to the ASSE performance testing suite exclusively over a five-year period. During that time the services of Otoconsult and its founder, Dr. Paul Govaerts, will be retained to further develop and enhance the application with Cochlear technologies.

## Using a Cochlear Implant with a SmartPhone

### The Cochlear Nucleus 7 Sound Processor



The new processor from Cochlear, apart from its redesign to make it smaller and more efficient, also includes facilities to allow it to be controlled and monitored from a smart phone.

Most manufacturers over recent years have been providing a range of remote control devices to manage such things as volume control and program changing. These devices were wirelessly connected to the processors. In addition to this there have

been control devices that also allow a mobile phone to be linked in to the processor using a Bluetooth connection.



Cochlear have now produced an App which runs on the iPhone, which will allow the user to directly control their processor, monitor such things as battery life and also by combining with the location services on the phone, will allow you to find where you've left your processor!



...and from down under...

## How the brain balances hearing between our ears

UNSW researchers have answered the longstanding question of how the brain balances hearing between our ears, which is essential for localizing sound, hearing in noisy conditions and for protection from noise damage.

"The balance of hearing between the ears and how we discriminate between sounds versus noise is dependent upon this neural reflex that links the cochlea of each ear via the brain's auditory control centre," Professor Housley said.

The landmark animal study also provides new insight into hearing loss and is likely to improve cochlear implants and hearing aids.

The findings of the NHMRC-funded research are published in the journal *Nature Communications*.

UNSW Professor Gary Housley, senior author of the research paper, said his team sought to understand the biological process behind the 'olivocochlear' hearing control reflex.

"The balance of hearing between the ears and how we discriminate between sounds versus noise is dependent upon this neural reflex that links the cochlea of each ear via the brain's auditory control centre," Professor Housley said.

"Until now we haven't fully understood what drives the olivocochlear reflex."

"Our hearing is so sensitive that we can hear a pin drop and that's because of the 'cochlear amplifier' in our inner ear. This stems from outer hair cells in the cochlea which amplify sound vibrations."

"When sound intensity increases, the olivocochlear reflex turns down the 'cochlear amplifier' to dynamically balance

the input of each ear for optimal hearing, sound localisation and to protect hearing."

The study found that the cochlear's outer hair cells, which amplify sound vibrations, also provide the sensory signal to the brain for dynamic feedback control of this sound amplification, via a small group of auditory nerve fibres of previously unknown function.

In mice lacking the sensory fibre connection to the cochlear outer hair cells, loud sound presented to one ear had no effect on hearing sensitivity in the other ear. In normal control mice this produced an almost instant suppression of hearing.

Similarly, the olivocochlear reflex normally causes a rapid reduction in hearing in the ear receiving an increase in sound. This hearing adaptation was also absent in the mice lacking the sensory fibre connection.

The researchers speculate that some of the hearing loss that humans experience as they age may be related to the gradual breakdown of this sensory fibre connection to the outer hair cells.

"A major limitation of hearing aids and cochlear implants is their inability to work in tandem and support good hearing in noisy conditions," Professor Housley said

"The ultimate goal is for cochlear implants in both ears to communicate with each other so that the brain can receive the most accurate soundscape possible. This research will help us move closer to that goal."

Story Source:

Materials provided by University of New South Wales

. Note: Content may be edited for style and length.

# A delayed dinner

By John Newton

On a recent visit with CICADA to Port Sunlight, I was intrigued to find on sale in the visitors' centre a brand of soap which triggered memories of my introduction to sailing. I wonder who remembers Wright's Coal Tar soap, a translucent oval cake with a very strong antiseptic smell? The incident which rose up from ancient memory also recalled a delayed meal.

You know how annoying it is when the phone rings or the door bell just as you sit down to eat, you have to leave your carefully crafted meal to congeal while you deal with the interruption. I have recently been reminded how that happened to me once and we didn't get to finish the meal until 24 hours later. In this case the interruption was rather more dramatic than a tinkle on the door bell, it concerned an incandescent cooker.

I started my sailing career by being invited by a colleague to join him for a sailing weekend in Essex. Graham who became a fast an old friend with whom I have since shared a few adventures including a crossing of the Atlantic, was the part owner of a very pretty 25 foot sailing boat moored in the River Blackwater in Essex.

"Bittern" was new but of traditional construction, clinker built, all real wood and with a gaff cutter rig with a bowsprit and a centre board (a retracting keel which allowed the boat to dry out upright on the Essex mud). She used to attract waves of admiration from passing sailors with more modern (and, it should be said, efficient) rigs.

Graham was an experienced sailorman accustomed to the shallow muddy waters of the East Coast and to sailing a small handy boat in which the engine was very much a last resort and anyway usually

failed to start when it was really needed. It was a single cylinder petrol job, started by hand if you were lucky.

25 feet doesn't provide a lot of living space. "Bittern" had what was called "sitting headroom" meaning of course no headroom unless you were sitting down. The saloon had a bunk at each side with a table in between and the kitchen consisted of a two burner stove and a plastic washing up bowl. The "facilities" were a bucket in the forepeak, what was called then the "bucket and chuck it" system, very efficient and absolutely foolproof but not for the squeamish. Here's where that aromatic soap comes in, we used it for our sketchy and infrequent ablutions because the smell of it gave an illusion of cleanliness.

Nevertheless I learned a lot and had a lot of fun on that first and subsequent voyages. The furthest we ventured was to Yarmouth in Norfolk where we stepped ashore perfectly convinced of our heroic status and were given a warm welcome by the august Royal Norfolk and Suffolk Yacht Club which was, and is seriously posh. We also had many nights in snug remote pubs or moored up dark muddy creeks in the cosy cabin lit by oil lamps.

On the occasion of the interrupted supper however we were in the middle of Harwich Harbour tied up to a mooring buoy belonging to the Royal Navy. There was an RN ratings training place there with a jetty and moorings usually deserted. The facility which had trained generations of sailors was either defunct or much curtailed and no one seemed to object to indiscriminate use of the moorings.

I like to think that although a greenhorn at the actual sailing lark, I was able to contribute to the domestic economy of

"Bittern" by improving the cooking. Graham was inclined to survive on cheese and biscuits at intervals during the day and chicken and chips, (popular at the time sometimes "in the basket") appropriately lubricated in the pub a long time later.

Anything beyond boiling a kettle on board was pretty well unknown. I had improved on that and on this particular evening when no pub was conveniently accessible anyway I resolved to serve up steak and onions no less.

The cooker burned methylated spirits, the blue stuff which is quite hard to light when cold but as volatile as petrol when hot. The meths was poured into cup sized burner and as the laws of physics dictate only ever ran out when you were in the middle of the cooking. (just like your car never runs out of petrol when it's standing in the drive does it?)

The procedure when the flame began to die was of course to extinguish it, fill it up and relight it. The temptation was to refill it without extinguishing it which was what I attempted to do on this occasion reluctant to delay the feast.

The results were of course disastrous. There was a woosh of flame and in a short time the deckhead (ceiling) was burning merrily. Fire is frightening especially in a small wooden boat covered in inflammable paint and with very confined spaces.

After a short interval of dithering, Graham

bravely grabbed the cooker, which was simply slotted into its mounts and chucked it overboard. With amazing presence of mind I managed to rescue the frying pan and its contents. A wet tea towel quenched the burning paint. Mmmm! What next? The danger was past, the food was saved but we had no means of cooking it.

We thought for a while about fishing for the cooker but at that place, unusually for Essex rivers the water was deep, 20 metres with the characteristic deep soft mud on the bottom, no chance! We were condemned to a cold supper from the meagre contents of the locker with only alcohol as consolation. The precious steak was unharmed however and



carefully preserved.

Given the difficulties of navigation in those shallow tidal waters, it was late afternoon the following day when we managed to reach civilisation at Pin Mill in the river Deben, find a chandlery selling boat cookers and a replacement for the drowned one.

The steak was unharmed, we resumed our interrupted meal which seemed to have added savour after a day of cold food and drinks and not much of either.

We were very careful when filling up the new cooker though!

**MED-EL introduces the RONDO 2 with wireless charging**



Easy to Use. Easy to Charge. Easy to Wear.

New from MED-EL, RONDO 2 is the only single-unit audio processor with a fully integrated rechargeable battery, one-touch activation, and automatic sound management that adapts to any environment. This makes RONDO 2 the natural choice if you prefer to forget about your cochlear implant and simply enjoy each day.

The revolutionary wireless charging pad recharges the RONDO 2 in just four hours; this provides 18 hours of battery life, giving you a full day of hearing from one overnight charge.

Carrying and changing batteries is a thing of the past!

Being a single-unit processor with an elegant design, RONDO 2 is worn off-the-ear and is easily hidden thanks to its slim-line design and hair tone design covers. RONDO 2 wearers also benefit from never needing to use a drying kit overnight, a splash proof design, and Bluetooth connectivity.

For more information about RONDO 2 visit <http://www.medel.com/rondo2>

It is interesting that lip-reading classes started in Chester in June/July 1918 for rehabilitation of discharged soldiers affected by deafness (due to noise of artillery and chemicals).

Letters about this to the editor of two local papers are in Chester Archives. The letter to the Chester Chronicle said

"Sir: may I be permitted through your columns, to call attention to a class for discharged soldiers in lip-reading which is being held in the Council School in Love Street at 5p.m. every Saturday. My committee is most anxious that every discharged man who has been afflicted by deafness should take advantage of learning this art and thus greatly minimise this terrible disability from which they are suffering and enable them to undertake employment as well as materially brighten their walks of life.

By learning this art instructions from employers or customers may be fully understood and conversation in everyday life carried on with almost the same facility as when they were not afflicted by deafness.

The instruction is most interesting and we are fortunate in having secured a most tactful and pleasant teacher in Miss Goldsack who met with great success in the classes of discharged soldiers."

E.G. Husey. Major. Chairman of the Disablement Sub-committee. July 2nd 1918

A similar letter from Major Husey to the Chester Courant said

"Sir: I think that perhaps not every one of our deafened discharged soldiers is aware that although he is prevented from the enjoyment of entering into the humour and brightness of life it is possible for him to

understand all that is being said by lip-reading without actually hearing what is being spoken. I am convinced soldiers will be interested if they attend classes that are being conducted on Saturday afternoon at 5pm in Love Street Council School.

I feel sure I may count upon your help in urging the value of this system of conversation upon all discharged deaf soldiers through the medium of your columns. I am anxious to impress upon every deaf soldier that knowledge of lip reading is a valuable industrial asset as it restores to even a totally deaf man the powers of understanding orders or instructions from employers or customers."

E.G. Husey. Major. Chairman of the Disablement Committee. The Castle, Chester June 29th 1918

Major Husey was maybe over-optimistic about the ease of learning of lip-reading but it is well known that many workers in the Lancashire cotton mills became expert lip-readers. The noise affected their hearing

and as their hands were occupied with working the machines they communicated by lip-reading.

After WW2 Captain Richard Annand VC set up the British Association of Hard of Hearing (now part of HearingLink) for returning soldiers similarly affected by deafness. Many civilians who had been deafened by infections, industrial work and disease such as measles and meningitis also joined and found encouragement and



Captain Richard Annand VC

fellowship.

Lip reading was encouraged and annual competitions started. Meetings had a lip speaker interpreters and written text on a whiteboard or overhead projector.

BAHOH had a strong support in the North West. The NW Federation of HOH Clubs still hold lip reading and clear speech competitions.

The life of Captain Richard Annand is another interesting story which can be found on the internet and is worth reading.

## Bramall Hall visit



In July a group of us went to Bramall Hall for an organised guided tour.

Meeting for lunch first we had our own private look around the Hall, before it was officially open for business, which lasted an hour and was made all the more interesting as we had the opportunity to use our neck loops so no one missed what the guide said.

The tour guide was excellent and everyone came away with a different perspective of what life was like many years ago.

## Barn Owl research may help combat deafness

If ageing humans had ears like those of Barn Owls, they would never need hearing aids, scientists have shown.

The largely nocturnal birds, whose sensitivity to sound helps them locate prey, suffer no hearing loss as they get older. Like other birds, but unlike mammals such as humans, barn owls are able to regenerate inner ear cells.



Aged birds experience minimal hearing loss, but the research shows that the barn owl suffers no meaningful loss at all.

In contrast, humans, whose ability to hear high frequencies declines significantly with

age, will generally have lost more than 30 decibels of sensitivity to high-sound frequencies by the age of 65.

Testing showed no statistical difference between the hearing ability of young and very elderly captive barn owls. In captivity, the birds can live for more than 20 years.

The team of researchers, led by Ulrike Langemann from Oldenburg University in Germany, wrote in the journal *Proceedings of the Royal Society B*: "Overall, our data ... indicates that barn owl ears do not deteriorate with age."

"The lack of hearing loss in our old Barn Owls is remarkable given that the average life expectancy of barn owls is rather low".

In the wild, the birds have an average life span of only three or four years.

Understanding the preservation of hearing in birds could lead to new treatment options for deaf humans, a scientist said.

## Our ability to focus on one voice in crowds is triggered by voice pitch

Scientists have discovered that a group of neurons in the brain's auditory stem help us to tune into specific conversations in a crowded room.

In order to focus on a particular conversation, listeners need to be able to focus on the voice of the speaker they wish to listen to. This process is called "selective attention" and it has been long known by researchers that it happens in the part of the brain called the auditory cortex, which processes speech information.

Selective attention helps the brain to modulate sound information and to prioritise information over the background noise, such as focusing on one conversation above all others in a crowded room. However, what triggers selective attention in the auditory cortex has been debated by scientists.

In a study published today in the journal *eLife*, the researchers from Imperial College London write how they investigated the structures downstream of the auditory cortex. In particular, they looked at the

contribution that the auditory brainstem, which sits below the auditory cortex, makes to the selective attention process.

The researchers set up non-invasive experiments with 14 participants who listened to two competing conversations. Electrodes were fitted to the participants' heads and connected to a computer, which relayed the brain readings in the auditory brain stem. Algorithms devised by the team then decoded the information gathered by the electrodes.

When the participants chose to focus on one conversation above the other, neurons in the auditory brainstem responded more to the pitch of the voice that they listened to rather than to the pitch of the voice that they ignored. This suggests that an important aspect of selective attention occurs in the auditory brainstem and the neural signal is then relayed to the auditory cortex, where higher level processing of auditory information occurs.

Dr Tobias Reichenbach, the lead author from the Department of Bioengineering, said: "Humans excel at selectively listening to a target speaker when there are a lot of background noises, such as many competing voices. In this din of chatter the auditory cortex switches into action and with laser focus, processes information that enables us to zone in on one conversation. But how these selective process works have been debated.

"Now, our study is showing us that the pitch of the speaker's voice we want to focus on is an important cue that is used in the auditory brainstem to focus on a target speaker. This helps us to concentrate on a voice while filtering out all the background noise."

The team suggests that their discovery may hold the key to explaining why some

people, who do not have hearing problems in the inner ear, still find it difficult to keep track of conversations in large crowds. It could be that the neurons in their auditory brainstem, associated with receiving pitch signals, are not properly activated.

The researchers say their discovery may also help engineers to refine speech recognition technologies such as automated answering machine systems and speech recognition technologies. Currently, these technologies do not function at their optimum level when there is a lot of background noise. The team suggests that if the technology could focus on the pitch of the user's voice, then it may help to make the speech recognition process more accurate in environments with a lot of noise.

Now that the researchers have discovered that voice pitch causes a response in the auditory brain stem they want to refine their experiments further. The next stage will involve non-invasive experiments with participants who will listen to several conversations at once so that the team can determine how selective attention works in more complex environments.

Understanding this process in more detail could, for example, help engineers to build better hearing aids that are more adept at filtering out background noise for users, which is currently a challenge for those with hearing impairments in noisy places.

Story Source:

Materials provided by Imperial College London. Original written by Colin Smith. Note: Content may be edited for style and length.

## Notes for the diary

### Xmas Dinner - Liner Hotel Liverpool

November 25th.

We will be holding our annual Christmas meal at the Liner Hotel in Liverpool on November 25th, where private rooms have been reserved for us for drinks on arrival and for the meal.

We will meet in the Pacific Lounge and the meal will be in the Empress Suite.

We will be meeting from 12:00 and the meal will be at 12:30.

If you haven't received any details about this please contact Alan Corcoran at the address below.

### AGM and dinner - Liner Hotel Liverpool

March 17th 2018

More details about this will be sent out in the new year.

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### And finally ...

As our next issue will be in the new year on behalf of the CICADA EC can we wish you all a very merry Christmas and a happy New Year.



## Resound Notes Section

We welcome contributions from members on any subject that would be of interest to others, (including your CI experiences) your recent experiences with the health service, meet ups, activities or other news about yourself.

If you have something that you think may be of interest to others email it to:  
[editor@manchestercicada.org.uk](mailto:editor@manchestercicada.org.uk)

or fill in the form online at  
<http://www.manchestercicada.org.uk/resound-2/>

or write to:  
Kevin Williams, 107 Manchester Road, Hyde, Cheshire SK14 2BX.

A big thank you to Norah Clewes, Lynn Grimshaw and John Newton for their contributions to this issue.

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