

INSTITUTE OF ACOUSTICS

41st ANNUAL REPORT OF THE COUNCIL FOR THE YEAR ENDED 31 DECEMBER 2014



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41st annual report of the Council for 2014

The Institute has continued to serve the interests of its members through its established programmes in the areas of education, professional development, meetings and publications, and by providing representation in areas such as the Engineering Council, Standardisation and International affairs.

The Trustees confirm that in the exercise of their powers as charity trustees, they have had due regard to the published guidance from the Charities Commission on the operation of the public benefit requirements and the aims of the charity are carried out for the public benefit.

The strategic aims confirmed by Council remained as:

1. To advise Public Policy with regard to the impact and nature of acoustics
2. Increase public awareness of good acoustic design
3. Increase understanding of acoustics by other professionals
4. Developing tomorrow's professionals
5. Providing better support for members
6. Increasing members professional understanding

To achieve these aims Council agreed the following objectives against which progress in 2014 is listed.

Objective	Progress in 2014
Advise Policy Makers on acoustics	Members of the Institute have been involved in national working groups and the institute has responded to consultations on BS4142, BS 8233 and Acoustic Standards in Schools. The Institute is also a member of the Parliamentary and Scientific Committee and members have attend several meetings of the Committee. Science of Sound Booklet published and distributed to Members of Both Houses of Parliament.
Increase Public awareness of Good acoustic design	The first Peter Lord Award for Good Acoustic Design was awarded
Create opportunities for other professionals to gain a better understanding of acoustic and its interaction with their specialist field	Discussions have taken place about joint activities with IoP and RIBA. NPPF/PPG Guidance was jointly commissioned with ANC and CIEH Sustainable Acoustic Guidance produced Supplementary Guidance Notes Issued for Wind Turbine Noise Assessment

To develop links with undergraduate students	The new student E-zine was produced and 277 student members recruited
To support the teaching of acoustics at AS/A2 level	Under review
To improve the operational efficiency of the Institute	New website launched with Branches and Groups being given the option of having dedicated pages which they can edit directly TORs for Groups and Branches reviewed
To develop mechanisms for supporting members professional development	CPD monitoring introduced. Members given ability to record CPD on their personal records Series of conferences and events held during the year

Standing Committees

The operation of the Institute is guided by Council through standing committees concerned with Education, Engineering, Medals and Awards, Meetings, Membership, Publications and Research Co-ordination. The reports of the various committees follow.

Education Committee

The Diploma and Certificate courses have continued to provide education and training for both members and non-members of the IOA. The education programmes and courses introduce many working in acoustics and associated professions to the Institute and support the recruitment of new members.

The Diploma in Acoustics and Noise Control is now in its seventh year since revision in 2008. As a result of grades obtained in 2013/14, the Diploma was awarded to 75 students from five institutions and four distance learning centres. Jen Taylor (London South Bank University) won the prize for best overall performance and Gareth Thompson (DL Dublin) for the best performance by an Irish student. Six students received special commendation letters for achieving five merits. Southampton Solent and London South Bank Universities are both centres, the latter after a gap of 17 years. Sadly the University of Salford is no longer offering the Diploma, and Colchester Institute was unable to recruit enough candidates. NESCOL is considering re-starting the Diploma for the academic year 2015-16. The Education Committee continued to monitor the effects of the changes in higher education funding on students and centres, and is developing options for electronic delivery of learning materials, and agreed purchase of video tutorial facilities at St Albans when suitable network access is installed.

In 2014/15, the Certificate Courses recruited as follows: Management of Hand-Arm Vibration 16 students (10 passes), Environmental Noise 222 students (200 passes), Building Acoustics Measurement 25 students (22 passes) and Workplace Noise and Risk Assessment 36 students (29 passes). The Certificate of Proficiency programme in Anti-Social Behaviour (Noise) continues to run in Scotland by Bel Education and Strathclyde University and recruited 28 students (22 passes).

Since 2011, Diploma members have been able, for CPD or other reasons, to register for additional specialist modules. In 2014 one person has taken advantage of this opportunity. Additional “formal” CPD courses (with a syllabus and assessment) are being considered in conjunction with groups and branches. Options for alternative delivery of courses (including e-learning) continue to be considered. The committee is also keen to work with groups and branches to support “formal” CPD, where there is a defined syllabus and assessment of learning outcomes. This may include on-line learning and topics for consideration include “sustainable acoustics”, new acoustic guidance (e.g. BS 4142:2014, BB93:2014, BS 8233:2014) and devolved guidance (e.g. Scottish and Northern Ireland Building Regulations).

In 2012 Council approved the purchase of sets of demonstration equipment to support the “You’ve Been Banned” acoustic workshop for presentation to schools. Twelve “You’ve Been Banned” presentations were given during 2014.

Simon Kahn, Chairman, attended two functions on behalf of the President, a launch of the “STEM Alliance” at the House of Lords, and “Tomorrow’s Engineers” at the Shell Centre. Both events recognised the current predicted shortage of STEM graduates and the need to promote STEM subjects to 11- to 14-year-olds.

The committee continues to be indebted to the support of its members, course tutors and examiners, the work of the Education Manager Keith Attenborough, supported by Education Administrator Hansa Parmar and other members of office staff.

Engineering Division Committee

The committee met twice during the year, confirmation of approval of registration for some candidates being given by email correspondence with committee members. The number of enquiries for registration from Institute members remained strong, but many potential candidates still deferred or failed to complete their applications, despite the personal support provided.

The number of formal applications for Chartered Engineer and Incorporated Engineer registration was similar in 2014 as in recent years. Seven candidates presented themselves for Professional Review Interview, of which three were “Standard Route” candidates, holding accredited degrees, and four were “Non-standard Route” candidates with diverse backgrounds, including physics degrees. Their areas of employment were equally diverse: aerospace engineering, architectural and building acoustics, and naval noise and vibration engineering. Five candidates were successful.

Following a visit in October, the Engineering Council has granted IOA a further five-year licence for CEng/IEng registration and invited IOA to discuss an extension of our licence to encompass the accreditation of academic degree courses.

Medals and Awards Committee

The majority of the 2014 awards were made at the 40th Anniversary Conference/Reproduced Sound in October 2014.

The Raleigh Medal was awarded to Professor Timothy Leighton and Dr Leo Beranek received a specially issued Raleigh Medal. The Tyndall Medal was awarded to Dr Stephen Dance and the Engineering Medal to Dame Ann Dowling. The Peter Lord Award was awarded for the first time, to Professor Jian Kang and his team from the Acoustics Research Group in the

School of Architecture at the University of Sheffield. Honorary fellowships were awarded to Trevor Cox, Ken Dibble and Rob Hill for their exceptional service to acoustics and the Institute. Professor Malcolm Hawksford was awarded the Peter Barnett Memorial Award and Alex Krasnic the award for Promoting Acoustics to the Public. Sam Daintree was presented with an award for the best performance in the IOA's 2013 Diploma. Leah Evans was awarded the Professor D W Robinson Prize at her graduation ceremony at ISVR in July and John Bowsher the Award for Services to the Institute in December.

Meetings Committee

The committee met four times in 2014. Its membership has changed quite significantly since last year's report. The chairmanship passed to Hilary Notley, although Jeremy Newton remains a valued member of the committee. The new Chairman would like to take this opportunity to thank Jeremy Newton for his excellent contribution to the committee and is delighted he is still willing to contribute. His experience, knowledge and mentoring is greatly appreciated. Chris Turner remains as Secretary and young member. Unfortunately, both Ken Dibble and Paul Lepper felt they needed to step down; the committee will miss their input greatly and would like to thank them both for their time and efforts over the years. Two new members have been recruited to the committee – Chris Skinner and Robin Woodward. Additionally, Peter Rogers has been co-opted to allow the meetings programme to be designed with the aims of the Sustainable Development Task Force in mind at all times.

The committee presided over the organisation of 14 events covering a wide variety of topics. There were 11 single day meetings/workshops and three two-day events; an underwater acoustics conference, the Reproduced Sound conference and Acoustics 2014, which was badged as the IOA 40th Anniversary Conference. The feedback from the events' questionnaires in general continues to be very favourable and many of the proposals for future meeting topics are passed to the relevant specialist group.

The 40th Anniversary event covered new ground and was judged to have been a great success. The first unusual aspect was the co-location of this event with Reproduced Sound. Both events were two days, with an overlapping day in the middle. Around 50 members took advantage of the opportunity to attend both events because of this. Secondly, all specialist groups organised parallel sessions. This provided a great opportunity for members to attend not only the sessions closest to their professional needs, but also to explore areas not often encountered in their day-to-day working lives. Feedback was excellent and in particular the provision of an opportunity to network across the profession was appreciated.

The financial performance of meetings has continued to be closely monitored and we continue to review performances and learn from our experiences so that deficits may be minimised in the future and events continue to generate a moderate surplus. Specifically, the committee aims to meet a target of an average surplus of £1,000 per event. During 2014, this target was exceeded by more than 100%.

Membership Committee

The committee met four times during 2014. Ellen Harrison was welcomed to the committee as a representative of our Young Members. The CPD review team agreed to review the CPD records of 5% of the membership and a series of meetings was held over the year to achieve

this aim. The Institute's CPD record forms were revised and members reminded of the need to participate in appropriate CPD. As well as revised CPD forms, the committee revised the sponsor member application forms to provide improved information on applicants. Discussions were held with officers of the Environment Agency on the reporting of environmental issues. During the year the committee proposed a new grade of sponsorship to recognise those organisations that had been key sponsors since the inception of that grade. The grade of founder key sponsor was proposed and was subsequently approved by Council.

A total of nine Code of Conduct complaints were received during the year of which one was withdrawn, two were proved, four were not proved and one was held in abeyance due to active planning issues. One is still actively being considered. Two of the cases were appealed and in both cases the appeals panel and Council confirmed the original decisions. Paul Freeborn completed his three-year term of office as Chairman, but, being eligible for a further term of office, the committee proposed that he should serve a further three years. This recommendation was endorsed by Council.

During the year 333 membership applications were assessed by the committee, a slight increase on the previous year. Of these, 316 were elected to membership of various grades, again representing a small increase on the previous year's figures.

2014	FIOA	MIOA	AMIOA	Tech	Affil	Student	Sponsor	Total
Applicants	9	113	159	23	3	24	2	333
Elected	9	101	155	22	3	24	2	316
New Members	2	42	134	22	3	24	2	229
Resigned	4	18	12	1	0	1	2	38
Deceased	1	3	0	0	0	0	0	4

Publications Committee

Acoustics Bulletin and *Acoustics Update* continue to provide a high standard of technical content, reporting news and details of the Institute's meetings and affairs. During 2014 an editorial board was set up to provide technical opinion on the technical contributions for the Bulletin to aid Charles Ellis in his editorial duties. Electronic distribution of *Acoustics Bulletin* was trialed through 2014 and members are now being given the option to opt out of receiving the paper version in 2015 with a view to reducing the amount of paper the IOA produces. Options are being investigated for a potential electronic version in the future. The revised website came on-line at start of 2014, and this continues to be developed. During 2014 agreement was reached to get a blog on the site aimed at students/teenagers making decisions about careers, which will be managed by the Young Members' Group and also for the index of the IOA library to be searchable on the website. It has also been agreed that abstracts will be collated for all payable meetings. During the year the committee has been joined by Chris Middleton, with Dave Sproston leaving. Thanks are due to all committee members for volunteering their time and enthusiasm throughout the year: Daniel Goodhand, James Hill, Rebecca Hutt, Mark Lawson, Mike Lotinga, Allen Mornington-West, Seth Roberts and Bob Walker. Thanks are also due to IOA Office, Charles Ellis, Allan Chesney and Dennis Baylis. Lastly, thanks are due to everyone who contributes to the Bulletin with meeting reports, technical contributions, letters, book reviews and everything else.

Research Co-ordination Committee

During 2014, the committee (RCC) met in May and November at the Defra offices in London. The committee welcomed its new tier one members: Dr Olga Umnova (University of Salford), Dr Benjamin Fenech (PHE) and Dr Andrew Bullmore (Hoare Lea Acoustics). The committee noted that there was no democratic mechanism for the election of new members and membership rotation within the RCC. This topic will be discussed at our next RCC meeting in May 2015. Some of the groups within the Institute are strongly research active and it makes sense to have their input each time there is a need to inject new blood into the RCC. It makes sense to develop a process for the RCC to make a call for new nominations to become tier one or tier two members of the RCC and for Institute members to make on-line application. These matters will be discussed further at the next RCC meeting in May 2015.

The committee reviewed the current level of research funding related to acoustics and maintained close contacts with the EPSRC via teleconference calls to the programme managers, Dr Daniel Smith and Dr Andreas Kontogeorgos. It was noted that the total value of grants related to acoustics, ultrasonics, audio engineering, noise and vibration has gone down a little over the last year. In November 2014 it was estimated that approximately 142 acoustics-related grants were funded by the RCUK with a total value of £84 million (down from 223 grants with the value of £120 million in April 2014). The committee also discussed the potential for funding of acoustics-related research in the UK from €70 billion of research funding available through the EC Horizon 2020 Programme.

The committee discussed various options for promoting acoustics as a research discipline and agreed to seek to achieve it through better cooperation with various professional bodies, i.e. the Institute of Physics (via Dr Umnova), Public Health England (via Dr Fenech), Defra (via Mr. Turner/Ms Notley) and with the industry (via Dr Williams and Dr Bullmore). The promotion of acoustics as a research discipline can also be achieved through a new EPSRC Network Grant in Acoustics. This opportunity was discussed with Dr Andreas Kontogeorgos of EPSRC in November 2014. An action group comprising Professor Horoshenkov, Dr Williams and Dr Bullmore was set up to develop this initiative in 2015 in collaboration with the EPSRC.

The committee expressed concern that there were not enough students studying acoustics at the UG /PG and PhD levels in the UK to service the number of acoustics-related grants awarded annually by the RCUK. Therefore, the appointment of research staff on these grants will continue to depend on the supply from outside the UK. This situation presents a potential problem for the future of acoustics-related research in the UK. The committee also noted that the number of publications on acoustics and ultrasonics co-authored by researchers from the UK has been stagnant since 2009-2010.

The committee's pages on the RCC's website were revised. These pages also contain the past agendas and minutes of the committee. These are accessible to IOA members only. It was noted that a new research database should be developed under the IOA website. This database could list names of the research active members of the IOA and their research interests. It can then be populated via the usual on-line membership renewal form issued by the IOA once per year. The committee noted that it would also be helpful to link the list of research active members of the IOA with the search engine which is available through the RCUK website (<http://gtr.rcuk.ac.uk>). This link will enable the RCC webpage to scan regularly the RCUK site and update the list of the current research grants won by the IOA members. It may also be possible to link it the EU Horizon 2020 database. These and other actions are detailed in the meetings notes which have been submitted regularly to the IOA.

Specialist Groups

Building Acoustics Group

2014 was very much focused on celebrating the Institute's 40th anniversary. The main event was the 40th Anniversary Conference at the NEC in Birmingham in October. The event was a huge success – the main highlight was listening to the 100-year-old Leo Beranek who, in acoustic terms, is something of a legend.

Due to the continued success of the multi-room, multi-discipline conference format, 2015 will see another similar event taking place in the Harrogate International Centre on the 15 October and BAG will be organising a full day to include acoustic issues arising from flexible structures such as CLT, post-tensioned concrete and lightweight steel framing systems.

We are also organising a one-day meeting on 19 September focusing on natural ventilation in acoustics.

Our members have also been busy with writing and consulting on several acoustic documents including the *Acoustic Design of Schools*, CIBSE guides, sound and impact isolation field testing, pubs and clubs and many more. We are looking forward to the long-awaited release of the guidance document that will accompany the new revision of the schools document BB93, which many of our members have been deeply involved.

The industry is buzzing again with a huge boom in residential and commercial development and there is a real excitement centred on all aspects of the industry i.e. academic, manufacturing and consultancy.

I would like to personally thank all of my committee members and everyone else who provides their valuable time for free – the Institute would not function without you. Here's to a bigger and better 2015!

Electroacoustics Group

The main activity of the group during 2014 was the organisation of the annual Reproduced Sound conference. This year, the 30th conference was timed to coincide with the Institute's 40th Anniversary Conference, with an overlap of one day. Although precise numbers are impossible to gauge due to the overlap, attendance at the conference is estimated to be more than 100, including a healthy number of student delegates. The conference included two notable keynote lectures from Peter Mapp and Leo Beranek, who had recently celebrated his 100th birthday. The 2014 Peter Barnett Award was presented to Professor Malcolm Hawksford, who also gave a lecture. At the group AGM, held at the conference, the committee thanked Paul Malpas for five years as Chairman of the group and the position of chair was handed to Keith Holland. Helen Goddard remains as Secretary and a new member, Robin Dibble, joined the committee. The conference is moving venue for 2015 to the Fire Services College in the Cotswolds.

The group committee met on three other occasions during 2014. On 8 January the call for papers for the conference was decided, the review of abstracts took place on 24 April and the details of the conference were finalised on 24 September. As in past years, each member of

the EAG committee has a defined role in the organisation of the conference and the fact that this is a real team effort is acknowledged here.

Environmental Noise Group

In April the group held a workshop in London attended by 70 members to debate the proposed revision of BS 4142, Method for rating and assessing industrial and commercial sound. This fed into the submission of an IOA response to the consultation on the standard that is widely used by many of our members. The revised standard was published in October and a series of workshops is being planned to help ensure members apply the expanded standard consistently and as intended.

A committee was formed to progress national guidance to fill the gap left by the repealing of Planning Policy Guidance 24. The committee secured IOA support to develop Professional Practice Guidance on Planning and Noise with the Chartered Institute of Environmental Health and the Association of Noise Consultants. A series of meetings was held to progress the draft guidance with a view to a consultation in 2015.

The group made a substantial contribution to the IOA's 40th Anniversary Conference in Birmingham in October, through contributing a history of environmental noise for *Acoustics Bulletin* and holding a six-paper session at the event, which was well supported.

Measurement and Instrumentation Group

During this period, the group has organised two one-day meetings and two sessions of presentations at the 40th Anniversary Conference.

For the first meeting of the year, 12 March, we were in Birmingham to take a look at *Railway noise – on the right track* with an eye on both the developments of the HS2 rail link and the Crossrail project through London. A short presentation from HS2 Ltd was followed by details of the assessment methods and sustainability of the project. Measurements and predictions of noise and vibration relating to Crossrail were covered by multiple speakers in an extended presentation and other speakers covered different aspects of noise and vibration from railways, some by measurement and some by prediction, which was obviously appreciated by the 47 delegates present.

On 25 June we were at London South Bank University to hear *How noisy is that machine?* Nine presentations were organised and introduced by the inimitable Liz Brueck from HSL with information coming from HSE and HSL as well as guidance on declaring noise emissions in the workplace, for HVAC systems, lawnmowers and a variety of machinery. It was a pity only 26 people attended, as the information available would have been of use to a wide range of manufacturers, but three presentations were thought so useful that they were recommended for transfer to *Acoustics Bulletin* at a later date.

For the 40th Anniversary Conference at the NEC in Birmingham, two sessions of presentations, four on the first day, and three on the second, were organised by the group, and John Seller presented a retrospective look at a variety of less-well-known measuring devices and techniques at the group's plenary session. A good attendance at the papers was realised, and relevance of such topics as measuring sound with light, International Standards, sound level and power declarations, reverberation time sound stimuli and

outdoor propagation modelling covered a wide variety of measurement and instrumentation topics.

Over the past year, the group's committee members have continued contributing to the regular *Instrumentation Corner* article to *Acoustics Bulletin*, 33 to date, which has produced some interesting discussion and articles, and this is scheduled to continue for the forthcoming year.

For 2015, it is hoped the group can introduce webinars as well as two one-day meetings, which will be an interesting development to see unfold.

My thanks go to all members of the committee for the active roles they take in all aspects of the group's activities and to Martin Armstrong for his secretarial skills on behalf of the group.

Musical Acoustics Group

For the group, 2014 could be considered as a "vintage" year of activity with a wide range of topics relating to musical acoustics covered at the meetings. First was a half-day meeting held by the Southern Branch in collaboration with the Musical Acoustics Group and the Brighton Science Festival held in Brighton on 28 February. Entitled *Creative Soundscapes 2014*, it examined the role of soundscapes within sustainable acoustic design. Professor Jian Kang picked up on some musical elements in his presentation on the design of urban elements. These elements were even more prominent when Professor Trevor Cox presented *Sonic Wonderland: A Scientific Odyssey of Sound*, providing examples of an alto saxophone playing within some incredibly reverberant locations. Dan Pope from Atkins followed this with a presentation based upon his work on the video game *Call of Cthulhu: The Wasted Land*. There was also a glimpse of the possibilities provide by the use of Aeolian harps. With around 50 people attending, including some from outside the Institute, the meeting surely helped to publicise the aims of the IOA.

In March, the University of Salford's impressive MediaCityUK saw 30 delegates attending a joint one day meeting on *Sound Recording Techniques* with the Electroacoustics Group. This raised some important questions about the relationship between technology and the art of music. The efforts of Trevor Cox and colleagues provided an excellent and stimulating opportunity for experienced acousticians and sound engineers to meet with students entering the field and to hear a number of very well prepared and delivered presentations. This included Professor Patrick Gaydecki, with his talk entitled *From Electric to Acoustic Violin: digital synthesis and emulation*. Dr Bruce Wiggins looked at *Ambisonics: the pros, cons and pitfalls of 3D audio*, and Dr Rob Toulson examined *Case Studies in Modern Music Production: where science meets art* illustrated by his own work in recording groups such as the Mediaeval Babes. Professor Mark Plumbley gave a wide-ranging talk on "Analysing Digital Music". Finally, Trevor Cox described *How Distortion Affects the Perceived Quality of Music: psychoacoustic experiments*, derived from work carried out with students at the University of Salford Acoustics Research Centre.

April saw further collaboration, this time with the London Branch, with Dan Pope repeating his presentation *Calling Cthulhu* and Mike Wright repeating his argument about the "right temperament in music".

The group held its main one day meeting and AGM at the Royal Academy of Music Duke's Hall, London in July. It focused on the new organ recently built by Orgelbau Kuhn of Switzerland and funded by past students, Sir Elton John and Ray Cooper. The meeting looked into ways that architects, acousticians, organ builders and consultants can successfully match a fine pipe organ to its acoustic space in the course of fitting out new performance buildings and refurbishing existing ones. It included contributions by the past Chairman of the British Institute of Organ Studies, John Norman; Nicholas Edwards, principal consultant at Acoustic Dimensions; Alan Woolley, University of Edinburgh; and David Howard, University of York. Paul Wiseman and John Miller of Bickerdike Allen described their further work since the 1990's refurbishment. To finish the event, Chris Stanbury explored the design of the new organ, concluding his observations by performing a jazz-inspired *Homage to Fats* on the fine new instrument.

The group's involvement in Institute's 40th Anniversary Conference saw a very wide range of musical acoustics topics. On the first day, Stephen Dance presented the Tyndall Medal Lecture: *Conservatoires – acoustics and music working together*. This described collaborative work to address the new Control of Noise at Work Regulations. In the group sessions, Murray Campbell, University of Edinburgh, described why brass instruments sound "brassy" on the basis of recent research. Kuriijn Buys, Open University, described and demonstrated work in developing and evaluating a hybrid wind instrument excited by a loudspeaker. Ongoing experimental investigations of the motion of a cello bridge in the low- to mid-frequency range were described by Ailin Zhang, University of Cambridge. Meanwhile, Richard Seaton explained why choirs performing Western music a cappella are not able always to maintain pitch. Owen Woods described a good example of the contribution that acoustics and vibration can make to organology, the science of musical instruments, by analysing a plucked stringed instrument from the Andes region and linking the musical sound to the ethnomusicology. Carl Hopkins reviewed recent research on the potential for using vibrotactile feedback to facilitate interactive musical performance for deaf musicians.

The group management committee held six meetings during the year. Most of these were possible using Omnijoin video conferencing, the only way possible to economically enable members as far apart as Edinburgh and Devon to hold such meetings. There were two issues of *MAG MAG* in 2014 with Christopher Stanbury taking over temporary editorship from Owen Woods.

Noise and Vibration Engineering Group

Two full committee meetings were held during the year, by teleconference in both cases, supplemented by a number of sub-group meetings to focus on planning for the two events that were run during the year. The first was a meeting on *New Technology for Noise Control Engineering*, held in July at the Royal Society in London and chaired by Simon Stephenson, which focused on noise control within large process and petrochemical plants. The speakers and audience reflected the diversity seen within this particular speciality and there was a good turnout and lively discussion. The group also organised two sessions at the 40th Anniversary Conference in October, focussed mainly on automotive NVH (chaired by Stephen Walsh) and on vibration transmission in buildings (chaired by Malcolm Smith).

The group also contributed an item to the Anniversary Bulletin reviewing changes in the field of Noise and Vibration Engineering over the past 40 years. Since the new year we have sadly

lost Andrew Wolfindale as our Young Member, killed in an accident, and Reuben Peckham is stepping down from the committee due to his other IOA commitments (examiner for the Noise and Vibration Control section of the Diploma). As a result, recruitment of new members to the committee is now a priority.

Physical Acoustics Group

After some while with little activity, the group (PAG) will be re-established in 2015. A small interim-committee is to be formed to provide a modest programme of events whilst recreating the link with the Institute of Physics (IOP), and its programme, including the time-honoured Anglo-French Physical Acoustics Conference (AFPAC).

In 2014, a joint meeting between the IOA and the IOP PAG committee, defined two possible ways for a rejuvenation of PAG activities for IOA the membership: a modest programme of IOA events and visibility of IOP activities. Access to parallel PAG activities run by the two institutes will assist with our common goal of promoting physical acoustics. A programme of events should be expected in 2015. To achieve this, we do need some help from anyone with a passion for physical acoustics, who could offer a few hours, to be a potential committee member, or speaker at one of our future events.

Senior Members' Group

All communications have been by email, particularly with the committee, and this seems to have worked well. We also use the IOA *Acoustics Update* from time to time. We have had only one meeting during the year and this was held in conjunction with fourth AGM in March 2014, which was kindly hosted at IOA headquarters in St Albans. Alison Codling, Senior Occupational Health Nurse, Centre for Workplace Health, Health & Safety Laboratory Buxton, Derbyshire, gave us an interesting talk about her work in otoacoustic emissions (OAE) testing and hearing conservation. The talk gave rise to much discussion on this important topic which raises the prospect of detecting the effect of noise on the ear before it becomes evident by conventional audiometry, and is not dependent on a conscious response by the patient. Arrangements for a half-day meeting at RAF Henlow dealing with aircraft noise did not, unfortunately, come to fruition in time. However, it is hoped that this meeting will go ahead in 2015. Ian Campbell proposed a meeting at his office with the fifth AGM for late in 2014. However, following discussion it was agreed that it would be better to hold the AGM in conjunction with *The ear and hearing – a tutorial for acousticians* meeting on 29 January 2015 at London South Bank University.

The group is cooperating with the CPD committee and this scheme is now operating. The group is looking for further volunteers to review members CPD. This is done mainly by email and does not take an inordinate amount of time. In particular your Chairman is looking for someone to replace himself.

At the beginning of the year it had been hoped by the committee that the group could take an active part in the 40th Anniversary Conference. Sadly this was not possible, and due to the diversity of SMG members it was not possible to hold an anniversary meeting, such as was held by most IOA branches. The group continued to support Geoff Kerry with his History Project. The document is almost ready and will be published 2015.

For the future we still have to revise our terms of reference but are awaiting advice and guidance from Council. Your Chairman has volunteered to serve one more term but will then be definitely standing down.

Speech and Hearing Group

The group hosted one event during 2014. This was a talk entitled *Hearing Aid Signal Processing Strategies to Improve Speech Discrimination* by long-standing group committee member Graham Frost, held on 9 April (and followed by the group's AGM). It was particularly good to have Graham speaking, not only due to his in-depth knowledge of the topic, but also because it signified his return to being active in the group following a period of poor health. The group also co-organised meetings with both the Younger Members' Group and London Branch. A special screening of the film *Lost and Sound* – a documentary made by Lindsey Dryden, a partially-deaf filmmaker, which followed a music critic, a dancer and a pianist over three years as their experiences change following hearing loss – was given on 11 March. A talk entitled *Cochlear Implants – the second most successful medical implant ever produced is evolving. How much better can it get?* was given by D. Bradford Backus of Audio3 Ltd on 19 February. (The re-scheduled talk on *Protecting the professional ear* by Andy Shiach of Advanced Communication Solutions was also co-organised with the London Branch and held in December 2013.)

Members of the group were active in the organisation (particularly with respect to reviewing submitted papers) of the sessions on topics relating to speech and hearing at the 40th Anniversary Conference. The sessions included papers on a wide spectrum of subjects, ranging from assistive speech technology, through speech perceptual and audiometric measurement, to concepts such as “speech security” and “speech privacy”.

A half-day co-sponsored tutorial meeting is due to be held in late January 2015 on *The ear and hearing – a tutorial for acousticians*, and another workshop meeting is being planned (possibly in collaboration with the British Society for Audiology) on *Audiology for Acousticians*. Preparations are also under way to hold a joint one day meeting with the Musical Acoustics Group on *Hearing impairment and the enjoyment and performance of music* in July 2015.

The group are also liaising with the British Library to arrange a visit to and talk on their Sound & Vision Section. A talk on *Looking after your voice*, and a follow-up to the successful one-day tutorial workshop on “*Speech recording and analysis*”, held in London in 2010, are also planned.

The group committee met four times (in January, April, July and November) during 2014. The group's AGM, as noted above, was held on 9 April 2014. This meeting was quorate, and reasonably well-attended.

During the course of the year, Graham Frost returned to the committee following a successful recovery from his health problems, but Emma Greenland temporarily stood down due to going on maternity leave. Long standing co-opted member Roz Commins asked to stand down late in the year, and a replacement for her is currently being sought. The remaining committee members due for re-election were re-elected nem. con.

Underwater Acoustics Group

As in previous years, the group's main endeavour for the past year has continued to concentrate on the dissemination of knowledge via its conferences and other activities. A synthetic aperture sonar conference in Lerici, Italy, in September 2014 was successful with 30 good quality papers and 40 delegates. The group organised an underwater session at the IOA 40th Anniversary Conference with seven papers. Group members also organised four sessions at the 2nd Underwater Acoustics Conference in Rhodes in June 2014, and the 2013 AB Wood

Medal was presented to Brian Todd Hefner at this meeting. Some members of the committee are on the ISO TC43 SC3 Working Groups 1, 2 and 3. These are working on measuring ship noise, measuring piling noise and acoustical terminology. WG 2 and 3 plan to produce their ISO standards in 2015. The group is now dedicating its efforts to future meetings, including sessions at UAC 2015, collaboration with Michel André on Oceanoise 2015, a meeting on seabed and sediment acoustics in Bath in September 2015 and, looking further ahead, a conference on acoustic and environmental variability, fluctuations and coherence in Cambridge in 2016.

Young Members' Group

The group committee meets quarterly with three meetings by telecom and one meeting in person. In 2014 our face-to-face meeting was held in December before a London Branch meeting which was then followed by a social, open to all members, not just young.

We held a good number of educational events in 2014 including a joint meeting with the Society of Light and Lighting (with the Sustainable Acoustics Task Force) and a CPD event at the Illustrious Company in London. We also held a quiz as part of the 40th Anniversary Conference and Young Members' reps helped with various 40th anniversary offerings.

In addition to the December social we also had a social event at Bounce, a table tennis bar in London. To promote the IOA to students we gave presentations at London South Bank University, University of Salford and the University of Southampton about the benefits of IOA membership and chartership. To promote the IOA further afield we participated in an inter-professional networking event in Manchester and an inter-professional football tournament in London.

There have been a number of group reps who have not participated in YMG activities or meetings. I have been monitoring attendance and will discuss the less active reps with the relevant chairmen to discuss if the rep is active within their group, branch or specialist committee or whether it might be better to suggest they step aside and allow someone else to replace them.

For the year ahead we aim to present to students at more universities (e.g. Anglia Ruskin University, Southampton Solent University, University of Derby, University of Liverpool, Edinburgh Napier University, University of Edinburgh). We are also hoping to provide more events outside of London, including a mock planning appeal in Birmingham. The largest ambition for the year ahead is to organise an inter-professional networking event in London, similar to that in Manchester. We have so far received positive responses from IMechE, IStructE, the Landscape Institute and CIBSE which show that they are as keen as we are. I am hoping for responses from at least 10 other professional bodies before the end of January.

Regional Branches

Central Branch

The branch held 10 meetings in 2014 with an average attendance of 15, attracting a total of around 70 different people (including the speakers and Easter Branch members). Despite a quiet period in late summer/ autumn, this was close to the target of 12 meetings a year. Membership of the branch continues to increase, year on year, finally exceeding 200 and now standing at 222.

Meeting topics during 2014 were as broad as usual covering noise and health effects (Bernard Berry); acoustic instrumentation (John Shelton); BS4142 (Richard Collman); materials sustainability (discussion); wind turbines (Mike Stigwood); expert witness (Mark Thomas); vibration isolation (Bob Pratt); predicting vibration (Jorge De Avillez); and noise impact assessment guidance (Graham Parry), which was held jointly with Midlands Branch to celebrate the IOA's 40th anniversary. The second meeting about BS4142 to review the new edition was held jointly with Eastern Branch. NHBC once again kindly hosted the vast majority of the meetings, although BRE provided a welcome venue in Watford and B&K at Royston, together with Derby University for the 40th anniversary meeting.

Webinar technology continues to be a valuable enhancement to some branch meetings for members who are either unable to attend a meeting, or where they are interested in the topic but cannot justify the time/ cost of attending. However, physically attending meetings will continue to provide additional benefits such as the opportunity to network with colleagues and participate in discussions before and after the meeting, including the "post meeting meeting" at a local restaurant. Our grateful thanks are extended to all the speakers and the venues for hosting for the meetings.

Eastern Branch

Another year has galloped past us all. It's certainly been a busy one, with the economy showing real improvement as I'm sure many of us have seen. We've certainly had some interesting discussion meetings this year, with our meetings well attended and varied.

The programme began in January with *Recent and not so recent, developments and trends in sound level meters* (John Shelton) in Ipswich. In February Huw Myles spoke on *Improving airborne & impact sound insulation in new and existing buildings* at the British Racing School, Newmarket, and in March Peter Mapp gave *An overview of PA and sound system design, technology and effectiveness* in Marks Tey. In April there was a facilitated open forum in Colchester on The review of new public consultation draft of BS4142. And in November we returned to Marks Tey where Bernard Berry spoke on *Environmental noise and effects on health, recent developments*.

Irish Branch

During the year the branch held three events.

In response to the issue of a consultation document on the proposed revision to the Irish Government Wind Energy Development Guidelines 2006, a meeting was held in January to discuss and provide a response to this. The response was submitted in February.

The annual Gerry McCullagh Memorial Lecture for 2013 was finally held in February 2014. The IOA President at the time, Professor Bridget Shield, gave a most interesting talk on *Acoustic Design of Schools – 100 Year of Guidance*. The branch AGM was also held at this meeting. Martin Lester was re-elected as Chairman for a further three years, and Heather Armstrong, Sam Bell, Sarah Middleton and Diarmuid Kearney were re-elected unopposed as committee members. Gary Duffy stepped down from the committee (and the position of Vice-Chairman) having served on the committee since its inception in 1997. Gary was thanked for his time and support for the branch over 17 years. The available position on the committee was filled by Chris Jordan and the position of Vice-Chairman was taken on by Damian Kelly.

With the issue of a consultation for the proposed revision of BS4142, a small branch meeting was held on April 2014 in order to allow members to discuss their understanding and comments in relation to the proposed revision to the Standard. No formal response was

submitted by the branch although comments were relayed to Steve Mitchell who was collating a response on behalf of the IOA. The meeting did allow those that attended to have a very open and informative discussion.

London Branch

Our evening meetings have been successfully held for the sixth year at WSP's offices. Attendance began well, with the first session by Roger Kelly drawing 96 attendees. Attendance at all other meetings has typically been around 30 people. It has been one of our busiest years with an amazing 10 London evening meetings (probably the highest number to date), a half-day visit and a one off 40th year IOA celebration party.

As usual, the topics for the evening meetings have been very varied in nature, covering subjects such as vibration isolation, cochlear implants, underwater acoustics and black holes, followed by presentations on the BS8233 and BB93 revisions.

The year started with the talk that generated the highest attendance of the year with an inspiring talk by Roger Kelly who discussed aspects of building design which affect the performance of buildings which have been constructed with vibration isolation. This was followed by a fascinating talk by Dr Bradford Backus on the latest developments of cochlear implants. The diverse range of talks then continued in March with a presentation by Dr Paul Lepper on the potential impact of sound on the marine environment. In April and we were delighted by yet another unique topic covering *Video games and the right temperament*. This was a joint presentation by Dan Pope and Mike Wright.

May saw both a half day visit and an evening talk. The visit comprised of an informative tour of the newly refurbished organ (£2.3 million) in the Royal Festival Hall. The tour was followed by a presentation from Eddie Smith the Technical Director of the South Bank Centre. The May evening meeting was given by Martyn Ware (Heaven 17) who described the evolving world of immersive soundscapes in public spaces. In June we were fortunate to have Professor Keith Attenborough talk about black holes and sonic crystals. After outlining underlying physical principles Keith focussed on the application of periodic structures for noise control. In July we broke tradition and had another evening meeting with a talk from Professor Trevor Cox. Trevor gave a talk, based on his book, about the acoustic science behind some of the natural wonders of sound throughout the world. With just one month off over the summer period the talks continued with two award winning projects from students completing their MSc dissertation at London South Bank University. The first talk centred on an investigation into the whole body vibration induced by cycling with the aim of preventing regular cyclists from body fatigue both in the short and long term. The second talk recounted the work on Helmholtz resonators with a possible application of the resonators in South Bank's Queen Elizabeth Hall. The final two talks of the programme featured presentations on the new BS8233:2014 standard and the re-issued BB93. Both talks generated lively debates.

The highlight of the year was clearly the IOA's 40th year anniversary. In London we put on an evening event in central London at the exclusive Kettners club. The event was completely over-subscribed and comprised a social evening with food, refreshments and musical entertainment. A great evening was had by all.

Exciting and interesting talks are already planned for 2015 and I would like to take this opportunity to thank all the members of the branch committee and the Institute staff at HQ for all their invaluable support throughout the year. I would also like to thank all branch members for their continued support at the meetings and all the speakers who have helped make the branch such a success.

Midlands Branch

The branch had another successful year in 2014 with 11 monthly evening meetings, with an average attendance of 36. The November meeting saw a joint celebration of the Institute's 40th anniversary, Midlands Branch's 20th and Central Branch's ninth. This evening had a record attendance for the branch of 86 people who enjoyed a hot buffet after the presentation. The July meeting was an excellent tour of the BBC studios in Birmingham which was unfortunately limited to 20 people. Once again our meetings covered a wide and interesting range of subjects at eight venues across the Midlands. The committee continues to aim to appeal to the wide range of members' interests in the region and CPD certificates were provided at all meetings. The branch committee would like to thank the many speakers for their excellent technical contributions: Tom Marshall (HS2 Ltd), Adam Lawrence (Atkins), Dan Pope (Atkins), Richard Collman (Acoustical Control Engineers), Kevin Morgan (Loughborough University), Philip Harrison (JP French), Peter Hepworth (Hepworth Acoustics), Steve Cawser (URS), Mark Thomas (Thomas Sands Consulting), Graham Parry (ACCON UK) and Bernard Richardson (Cardiff University). Thank you also to the various venues that provide the meeting facilities and refreshments: Atkins Birmingham, Arup Solihull, Jacobs Coventry, URS Nottingham and the Universities of Derby and Loughborough. Special thanks go to Kevin Howell (Branch Secretary) and Andrew Jellyman (CPD Secretary) who have both stepped down from the committee after many years sterling service. Finally, thank you to the branch members who have supported the branch in ever greater numbers again this year.

North West Branch

During the year Peter Hargreaves volunteered to become branch secretary after Michael Lotinga was lured away by the bright lights of the south. The branch was grateful for both Michael's hard work over the previous two years and Peter's offer to take over. Six successful and varied meetings were held, starting in January with Professor Greg Watts speaking about the design of tranquil spaces. In February Professor Trevor Cox drew a huge crowd in a joint event to launch his book *Sonic Wonderland: A Scientific Odyssey of Sound*. In early April Bill Whitfield gave an interesting talk about uncertainty in sound insulation measurements and later in the month the branch hosted a discussion on the consultation for the 2014 issue of BS 4142. The latter drew a large crowd and the usual mixture of stunned silences and heated debate. Phil Dunbavin skilfully chaired the event. In October Dr Jorge de Avillez drew another large crowd for his presentation on ground borne and tunnel vibration from trains asking "*Why is vibration so much harder to predict than sound?*" The discussions afterwards raised more interesting questions.

The AGM was held in November, followed by a presentation from Peter Mapp speaking about the aspects of acoustic design that have impacts on inclusivity issues. Thanks again go to BDP and ARUP for hosting most of the meetings during the year and all those who provide the backup at the venues.

Scottish Branch

2014 has been an eventful year for the branch committee and one of significant change.

A number of members were due to stand down from serving on committee. Sincere thanks go to Bill McTaggart, Bernadette McKell and David MacKenzie for their long-term contribution to the success of the branch. We welcome Martin Butterfield, Craig Simpson, Anne Budd, Laurent Galbrun and Fiona Watson to committee and look forward to their input into branch matters.

The first meeting of the year was on the revised BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings and on the draft review of BS 4142 Methods for Rating and Assessing Industrial and Commercial Sound. We were fortunate that Richard Collman from Acoustic Control Engineers could attend and update the meeting on the work of the BS 4142 Committee. The meeting was held in April at Edinburgh Napier University following which the views of the branch were submitted to British Standards as part of the consultation process. The AGM was held at the Crowne Plaza Hotel in Glasgow in May, immediately following the seminar on wind turbine noise. This subject continues to be very topical and we were very fortunate to have an excellent line up of speakers, including Richard Perkins who gave an update on the final drafting of the IOA's six wind turbine supplementary guidance notes. We were also privileged to have Graham Marchbank, Principal Planner from Scottish Government, who gave an update at the meeting on planning policy, its approach to renewable energy and discussed several planning inquiry decisions. The meeting was very well attended and some lively discussion took place during the break-out sessions.

The highlight of this year was the branch IOA 40th anniversary celebrations held at Edinburgh Napier University's Craiglockhart Campus. This proved to be an excellent venue for both the afternoon technical conference and the celebratory evening drinks reception and dinner. The technical conference was chaired by Alistair Somerville, branch Chairman, and featured three very interesting and diverse presentations. Professor Sean Smith gave the first presentation, on *Future global developments in sound insulation*. This was followed by Dr Laurent Galbrun's presentation on *Soundscape design for the built environment* while Andrew Bullmore from Hoare Lea Acoustics concluded the conference with *Scottish wind farms: case study review of noise impacts of onshore wind farms – progress report*. All the presentations were very well received and thanks go to Sean, Laurent and Andrew for their interesting and informed presentations. A fitting tribute to the branch was delivered by Professor Robin MacKenzie during the dinner reception. Robin's speech was educational in terms of the formation and history of the branch, significant events and notable individuals linked to the branch, and we thank him for the time and research he put into preparing such a detailed and at times humorous speech.

Many thanks to the new committee for planning and organising the event. Particular thanks go to Sean Smith and Nicola Robertson for also organising the venue.

Southern Branch

The past year has seen the branch continuing to revive the activity of the branch and find new ways to serve and reach its members, with meetings aimed at dissemination of information and collaboration with experts in varying sectors relevant to the industry. With Peter Rogers agreeing to continue for another term as Chairman and Daniel Saunders as an efficient Secretary supported by a diligent and enthusiastic committee, we have held six meetings over the course of 2014, which included two half day conferences. The year began with the AGM re-appointing the serving committee and formally electing two previously co-opted members. This was held in tandem with our January meeting where we held a joint meeting with the Audio Engineering Society at the University of Surrey. February saw the first of our

half-day conferences, held in Brighton, focussing on *Creative soundscapes* (a joint meeting with the Musical Acoustics Group with collaboration from the Sustainable Design Task Force). In April, Ed Clarke (IOA) and Neil Scott (CIEH) pitched the joint local pilot initiative for a checklist for noise and vibration reports to CIEH members locally; aimed at assisting to raise standards in consultancy and providing comprehensive assessments to aid decision makers for planning applications particularly. In September, *Priorities in Aviation* was held at QinetiQ in Farnborough, which included a tour of the impressive noise test facility, the first meeting to be held in the anechoic chamber there. A follow up article was published in *Acoustics Bulletin*. In November the branch celebrated the 40th anniversary with a half-day conference at the University of Southampton looking to the future of acoustic. This was hugely successful and enjoyed by all. The format of short showcases for new and established members is being carried forward to Acoustic 2015 due to its success. Our final meeting saw Peter Rogers and Ed Clarke give updates on BB93:2014 (ahead of its publication) and IOA/CIEH initiative respectively. This meeting was made available to the members via webinar and recorded for future access, a process which is becoming commonplace now for meetings as we strive to reach out and connect with more of our members. We continue to strive to keep access to the meetings free to members, and work hard for this to be a significant benefit of IOA membership. As always, we are grateful to all our speakers and participants for their time and efforts during 2014. The 2015 calendar is filling up, with events already organised at Winchester Cathedral and to cover the BS4142 revision. We also aim to build on our use of webinar and present the first inter branch virtual meeting by joining for forces with the Scottish Branch over webcast later in the year to find out the very latest in the assessment of wind turbines, amplitude modulation. We also hope to provide a further opportunity to visit QinetiQ for those unable to attend in 2014 due to the limited availability of places. As Chairman I am pleased to say that we are now looking at a strong revival of the branch, which is again providing members with an engaging and valuable contribution to their CPD and staying in touch with developments in their fields.

South West Branch

The branch had a diverse and interesting 2014, hosting four events and co-promoting a further two.

In April Eleanor Ratcliffe of University of Surrey presented on her PhD research into *Responses to environmental sounds* and James Kennaway of Newcastle University presented on *Hypnosis: sound and the loss of self from mesmer to brainwashing*. This led to a heated debate on the role of sound in mind control, but was that just what he wanted?

May saw the two co-promotion events, organised and financed by others but offering reduced entry fee to IOA members. The first was Professor Trevor Cox's *Sonic Wonderland: A Scientific Odyssey of Sound* soundwalk around Bristol city centre. This was notable for taking place at the same time as the Bristol half marathon, which significantly changed the soundscape from that normally experienced in the area.

The second event was organised by the Cube cinema and featured Adam Brown of Working Men's College presenting and demonstrating his *Concentricism* technique for encoding images onto vinyl. Henry Bainbridge of Bristol Dub Studio also presented on the techniques of lathe cutting vinyl.

Unfortunately the branches annual foray deeper into the south west was cancelled. Despite being fully booked, the planned trip to Fullabrook Wind Farm was cancelled by the operators.

On a trip to Tilon Composites and Noise Barriers in Ebbw Vale, Gwent in July, members saw installed samples of the recycled barriers and watched the manufacturing process up close. The largest event of the year was the branch's 40th anniversary celebrations at the At-Bristol Science Centre in November. By reaching out to those who do not often attend meetings, to young members and to non-members alike, it was discovered that offering free food and booze tempts much larger audiences. Who'd have thought that?

The record number of attendees were also treated to talks by two Young Members, who had responded to a call for papers in order to encourage presenting of ideas and provide a platform. Miguel Blanco of University of Bath and MACH Acoustics presented on *Quantifying the acoustic characteristics of open windows and vents* and Georgia Rodgers of Max Fordham presented on *Understanding soundscapes: BS 12913-1 and acoustic design*. Branch Chairman Dan Pope presented on *The future sound of cities* and keynote speaker Bernard Berry provided an update on *Environmental noise and effects on health: recent developments*. We look forward to many exciting meetings in 2015.

Welsh Branch

2014 was a quiet year for the branch. One very successful conference was held at the prestigious Celtic Manor that discussed wind farm noise. No other meetings were held, but it is hoped that more interest can be encouraged in 2015.

Yorkshire and North West Branch

The branch met once, in December 2014, at Leeds Beckett University. Dr Andrew Bullmore of Hoare Lea Acoustics talked about current issues on wind turbine noise. It was the first meeting of the branch after more than a year of inactivity. This meeting was very well attended and provided the opportunity to hold the AGM at which the Chairman, Professor Kirill Horoshenkov of Sheffield University, and the Secretary, Daren Wallis of Cirrus Research, were elected to form the new branch committee. Jason Evans and James MacKey of URS (now AECOM) have agreed to join the committee to help revive the branch, which will be achieved through a careful selection of topics, speakers and venues.

TABLE 1 MEMBERSHIP

Grade	2013	2014
Hon Fellow	35	38
Fellow	174	174
Member	1751	1761
Associate Member	731	758
Affiliate	69	58
Technician Member	88	100
Student	72	80
Totals	2920	2969
Key Sponsor	2	2
Sponsor	50	49

TABLE 2 GROUP MEMBERSHIP

Group	2013	2014
Building Acoustics	1234	1357
Electro-Acoustics	340	387
Environmental Noise	1563	1723
Measurement & Instrumentation	546	641
Musical Acoustics	299	377
Noise and Vibration Engineering	998	1123
Physical Acoustics	206	246
Senior Members	96	116
Speech & Hearing	183	214
Underwater Acoustics	190	236
Young Members	172	266

TABLE 3 BRANCH MEMBERSHIP

Branch	2013	2014
Central	194	222
Eastern	261	276
Irish	125	126
London	789	843
Midlands	380	397
North West	385	387
Overseas	345	331
Scottish	168	171
South West	271	270
Southern	472	490
Welsh	77	74

TABLE 4 DETAILS OF EMPLOYMENT

Employment Category	2013	2014
Architectural Practice	56	183
Consultancy	1455	1654
Education	221	419
Industry/Commerce	170	380
Public Authority	390	401
Research & Development	219	428
Retired	146	135
Other	88	142

TABLE 5 MEETINGS AND ATTENDANCE IN 2014

<i>Topics, Date & Venue</i>	<i>Attendance</i>
Railway noise-on the right track? 12 March Birmingham	30
Wind turbine noise-AM, and where to next for ETSU-R-97? 20 March Cardiff	92
Sound recording techniques 26 March Salford	30
BS4142 workshop 3 April London	72
Acoustic standards for schools 15 April London	54
Wind farm noise 15 May Glasgow	57
Casting light on sound 17 June London	41
How noisy is that machine? 25 June London	27
The acoustics of organs 4 July London	21
New technology for engineering noise control 8 July London	34
Synthetic aperture sonar and radar 17-19 September Italy	40
Reproduced Sound 2014 14-15 October Birmingham	107
40 th Anniversary Conference 15-16 October Birmingham	297
AM workshop 27 November London	68

<p>COUNCIL</p> <p>Officers</p> <p>President</p> <p>President Elect</p> <p>Immediate Past President</p> <p>Honorary Secretary</p> <p>Honorary Treasurer</p> <p>Vice Presidents</p> <p>Engineering</p> <p>Groups & Branches</p> <p>International</p>	<p>Mr W Egan MIOA</p> <p>Miss J Webb FIOA</p> <p>Prof B M Shield HonFIOA</p> <p>Mr J R Richardson MIOA</p> <p>Dr M R Lester FIOA</p> <p>Mr R A Perkins MIOA</p> <p>Mr G Kerry HonFIOA</p> <p>Dr W J Davies MIOA</p>	<p>Ordinary Members</p> <p>Ms A L Budd MIOA</p> <p>Dr K Holland MIOA</p> <p>Mr R Mackenzie MIOA</p> <p>Ms H Notley MIOA</p> <p>Mr G A Parry MIOA</p> <p>Mr P J Rogers FIOA</p> <p>Mr A W M Somerville MIOA</p> <p>Mr D L Watts FIOA</p>
<p>Committees & Sub Committees</p> <p>Education</p> <p> Diploma in Acoustics and Noise Control, Board of Examiners</p> <p> Certificate of Competence in Environmental Noise Measurement</p> <p> Certificate of Competence in Workplace Noise Assessment</p> <p> Certificate of Proficiency in Anti-Social Behaviour (Scotland) Act 2004 (<i>IOA/REHIS</i>)</p> <p> Certificate in the Management of Occupational Exposure to Hand Arm Vibration</p> <p> Certificate of Competence in Building Acoustics Measurement</p> <p>Engineering Division</p> <p>Medals & Awards</p> <p>Meetings</p> <p>Membership</p> <p>Publications</p> <p>Research Co-ordination</p>		<p>Chairman</p> <p>Mr S W Kahn MIOA</p> <p>Mr S J C Dyne FIOA</p> <p>Dr M E Fillery FIOA</p> <p>Mr D Lewis</p> <p>Mr S Williamson MIOA</p> <p>Mr T M South MIOA</p> <p>Mr C Steel MIOA</p> <p>Mr R A Perkins MIOA</p> <p>Mr W Egan MIOA</p> <p>Ms H Notley MIOA</p> <p>Mr P T Freeborn FIOA</p> <p>Mr A Lawrence MIOA</p> <p>Prof K Horoshenkov FIOA</p>

Specialist Groups	Chairman	
Building Acoustics	Mr R O Kelly MIOA	Ms A L Budd MIOA
Electro-Acoustics	Mr P R Malpas MIOA	Ms H M Goddard FIOA
Environmental Noise	Mr S C Mitchell MIOA	Ms N D Porter MIOA
Measurement & Instrumentation	Mr R G Tyler FIOA	Mr M J Armstrong MIOA
Musical Acoustics	Mr M Wright MIOA	Mr D Sharp MIOA
Noise and Vibration Engineering	Dr M G Smith MIOA	Mr M D Hewett MIOA
Physical Acoustics <i>(Joint with the Institute of Physics)</i>	Prof V F Humphrey FIOA	
Senior Members' Group	Mr R J Weston MIOA	Mr M R Forrest MIOA
Speech & Hearing	Dr G J Hunter MIOA	Mr D Nash MIOA
Underwater Acoustics	Dr P F Dobbins FIOA	Mr A P Holden MIOA
Young Members' Group	Ms A Lamacraft MIOA	Ms E Keon MIOA
Regional Branches	Chairman	Secretary
Central	Mr R A Collman MIOA	Mr M Breslin MIOA
Eastern	Mr M Jones MIOA	Mr C M Pink AMIOA
Irish	Dr M R Lester FIOA	Mr S Bell MIOA
London	Mr J E T Griffiths FIOA	Ms N Stedman-Jones MIOA
Midlands	Mr P J Shields MIOA	Ms F Rogerson MIOA
North West	Mr M Hewett MIOA	Mr P Stringer MIOA
Scottish	Mr A W M Somerville MIOA	Ms L Lauder MIOA
Southern	Mr P Rogers FIOA	Mr D Saunders MIOA
South West	Mr D C Pope MIOA	Mr D O'Neil MIOA
Welsh	Mr G O Mapp MIOA	Mr J M Keen AMIOA
Yorkshire & North East	Prof K Horoshenkov FIOA	Mr D Wallis MIOA
Chief Executive: Mr A Chesney		