

## 43<sup>rd</sup> Annual Report of the Council

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 2016 is listed.

Objective	Progress in 2016
Advise policy makers on acoustics	The Institute has regularly sent a representative to the Parliamentary and Scientific Committee meetings and has supported the Campaign for Science and Engineering (CaSE) and the Royal Academy of Engineering in their reports to the Government on the implications post the vote to leave the European Union (EU).
Increase public awareness of good acoustic design	The Institute sponsored the <i>In Pursuit of Silence</i> film which had its UK premiere in London in October.
Create opportunities for other professionals to gain a better understanding of acoustics and its interaction with their specialist field	Joint activities have taken place with young members of other professional institutes.  The Institute has contributed to debates on Engineering for the Future and the Nature of 21 <sup>st</sup> Century Engineering Professional Institutions and the role of engineering post the decision to leave the EU.  Professional practice and guidance document on noise sensitive development jointly commissioned with the ANC was consulted upon and is due for publication in 2017.

To develop links with undergraduate students	The student e-zine was produced twice and student membership increased from 377 at the end of 2015 to 397.
To support school children's understanding of acoustics	The Institute has agreed to sponsor Generation Science teaching in primary schools and secondary schools Careers Hive in Scotland in partnership with the Edinburgh International Science Festival in 2017.
To improve the operational efficiency of the Institute	Further improvements have been made to the website with the development of a learning platform planned for 2017.
To develop mechanisms for supporting members' professional development	10% monitoring of members' CPD continued.  Series of conferences and events were held during the year, including online events attended by groups across the UK.  A learning platform capable of delivering online CPD courses is planned for 2017.

## Standing Committees

### 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 ninth year since revision in 2008. As a result of grades obtained in 2015/16, the Diploma was awarded to 94 students from four universities (Derby, Leeds Beckett, London South Bank and Southampton Solent) and four distance learning (DL) centres (Bristol, Dublin, Edinburgh and St Albans). Beth Paxton (DL Edinburgh) won the prize for best overall performance and Sinead McAleer for the best performance by an Irish student. Twelve students received special commendation letters for achieving five merits. The 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. Video tutorial facilities at St Albans continue to be used for overseas candidates and DL candidates at St Albans.

In 2016, the numbers taking and passing the Certificate courses were as follows: Hand-Arm Vibration, 15 students, 11 passes; Environmental Noise, 156 students, 140 passes; Building Acoustics Measurement, 31 students, 30 passes (including presentations made in Ireland); Workplace Noise Risk Assessment, 66 students, 49 passes. The Certificate of Proficiency in Anti-Social Behaviour (Noise) continues to

be run in Scotland by Bel Noise Courses and by Strathclyde University, 26 students, 17 passes.

Since 2011, Diploma members have been able, for CPD or other reasons, to register for additional specialist modules. Nobody has taken advantage of this opportunity in 2016. However, in view of recent changes in Planning and Assessment regulations and guidance, there is the possibility of increasing numbers on the Regulation and Assessment of Noise Module by promoting it as “stand-alone” updating. 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).

“You’re Banned” presentations in schools continue using demonstration equipment purchased in 2012. Also, through Acoustics Ambassadors on the committee, opportunities for promotion of acoustics to school children continue to be monitored and pursued including local Big Bang fairs. The committee is also supporting Council’s decision to participate in the Edinburgh International Science Festival in 2017 and is considering exhibiting in the national Big Bang Fair 2018. Education committee is also supporting applications for a Commonwealth Professional Fellowship to knowledge and skills in Commonwealth countries and enhance acoustics learning opportunities abroad.

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**

Richard Perkins stood down as Chairman, following six years in this position, after the first meeting of the year. The new Chairman is Jim Glasgow.

The committee met three times during the year. As is usual the meetings were held following Engineering Council Registration professional review interviews, where there is a full complement of reviewers with the necessary skills available.

In 2016 we interviewed eight applicants. Of these, five were processed through the individual route and three through the standard route. Seven applicants were successful and one unsuccessful.

The Engineering Division mentoring policy is continuing to produce improved numbers of better prepared candidates.

This year the IOA has appointed Blane Judd as its new Engineering Manager. Blane is a Chartered Engineer with extensive experience gained in many other engineering institutes/institutions. He has particular experience in supporting EngTech applications with his involvement in the EngTechNow campaign. He has participated in registration interviews with IET and other institutions. He has excellent contacts within the Engineering Council and is familiar with its regulations.

Blane held a joint IOA/IET meeting at BAE Systems Barrow-in-Furness and used the opportunity to promote membership of IOA with developing engineers.

Kelvin Griffiths of Engineering Division Committee has been appointed IOA Liaison Officer at the Engineering Council and is already attending meetings.

The committee has started examining the processing of various categories of TR (Technical Report) candidates for registration.

### **Medals and Awards Committee**

The majority of the 2016 awards were made at Acoustics 2016 in September.

The Raleigh Medal was awarded to Rupert Thornely-Taylor and the Tyndall Medal to Jonathan Hargreaves. The A B Wood Medal 2016 was awarded to Dr Yan Pailhas and the Engineering Medal to Dr Carl Hopkins.

An Honorary Fellowship was awarded to Alistair Somerville for his exceptional service to acoustics and the Institute. Geoff Kerry became the first recipient of the Geoff Kerry Distinguished Service Medal.

Mark Dodd was awarded the Peter Barnett Memorial Award and Vicky Stewart the Award for Promoting Acoustics to the Public.

Sarah Wakeley was presented with an award for the best performance in the IOA's 2015 Diploma and Lina Adlouni and Shang Qi Guo Wang shared the Professor D W Robinson Prize awarded at their graduation ceremony at ISVR in July.

### **Meetings Committee**

The membership of the committee has changed slightly, but significantly, since last year's report. The Chairman remains Hilary Notley and Chis Turner Secretary and young member. Chris Skinner, Robin Woodward and Martin Lester continue to be valued members of the team, whilst Peter Rogers' input ensures the meetings programme is designed with the aims of the Sustainable Development Task Force in mind at all times. However, it was with sadness that we said goodbye to Jeremy Newton who has decided to step down from the committee after more than 20 years' service, including around 10 years as Chairman. We wish him all the best and are extremely grateful for his dedication over the years.

The committee presided over the organisation of 14 events covering a wide variety of topics. There were 12 single-day meetings/workshops and a two-day event; the annual Reproduced Sound conference, this year held in Southampton. Last, but by no means least, there was also the annual flagship event – Acoustics 2016. 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.

Acoustics 2015 was a one-day event, however feedback suggested more members favoured the two-day format. Accordingly, Acoustics 2016 was held in Kenilworth over two days and this time the feedback consistently reinforced this as the preferred format. The event was judged to have been a success with 203 different attendees in total and more than 170 on each day. One hundred and fifty delegates attended the

conference dinner at which awards were presented. In response to feedback, the number of parallel sessions was also reduced from five to two, allowing delegates to attend a greater number of presentations of interest to them, as well as the poster display and exhibition.

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. This year the committee saw a surplus of around £20,000, which is a little above the target. Additionally, the committee made progress on its aims to develop the digital meetings strategy and increase communication between the centre, the specialist groups and the regional branches.

### **Membership Committee**

The committee met four times during 2016 under the chairmanship of Paul Freeborn. Geoff Kerry, having been a representative of Council, left the committee as his term of office on Council ended. The committee expressed its extreme gratitude to Geoff for his many years of service on the committee. Council was asked if it wished to appoint a replacement. In addition the committee was seeking an additional member to restore it to its full complement.

A revision to the Institute's Code of Conduct was submitted to and approved by Council. The revised code now fully complies with guidance from the Engineering Council.

The CPD sub-committee continued its work through the year working towards assessing some five per cent of the members' CPD records (approximately 5% check by the Membership Committee as part of membership upgrades and another 5% checked by the CPD sub-committee). The main aim of the sub-committee was to provide constructive advice where needed. The sub-committee expanded to include an additional representative from the Senior Members' Group and also a representative from the Young Members' Group. A short presentation was prepared covering the main principles of CPD, for use by Groups and Branches. In addition maintenance CPD guidance was being prepared for members whose career position required them to maintain their current level of knowledge. The CPD sub-committee was delighted that one of its members, Sue Bird, was awarded an MBE for her achievements in the fields of acoustics and women in engineering.

At the request of Council the committee has taken the first steps in setting up a Professional Standards Committee with a remit to raise standards of work by identifying areas in need of improvement and then assisting to provide resources such as informative articles, presentations or conferences to help raise standards.

A comparison of member benefits was made with other institutes and the Institute provision compared favourably. Work is being undertaken to review the benefits provided for our Sponsor Members.

The committee assessed five Code of Conduct cases over the year, of which three were not proved. One was withdrawn and one is currently being assessed by an appeal panel.

During the year 311 membership applications were assessed by the committee; slightly less than the previous year. Of these 302 were elected to membership of various grades, representing a small decrease on the previous year's figures.

2016	FIOA	MIOA	AMIOA	Tech	Affil	Sponsor	Total
<b>Applicants</b>	<b>4</b>	<b>106</b>	<b>154</b>	<b>32</b>	<b>9</b>	<b>6</b>	<b>311</b>
<b>Elected</b>	<b>3</b>	<b>100</b>	<b>152</b>	<b>32</b>	<b>9</b>	<b>6</b>	<b>302</b>
<b>New Members</b>	<b>0</b>	<b>57</b>	<b>140</b>	<b>29</b>	<b>9</b>	<b>6</b>	<b>241</b>
<b>Resigned</b>	<b>3</b>	<b>34</b>	<b>12</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>55</b>
<b>Deceased</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>

## 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 2016 the committee started encouraging conferences to record videos of keynote papers for inclusion on the Institute's YouTube channel, and has been working to get live tweets from IOA meetings. You can now watch the Rayleigh Medal lecture from Acoustics 2016. Many of the other ideas of the committee are on hold as they require interaction with the Institute website, including further work on abstracts and proceedings, standards lists, and having content more searchable and downloadable.

Proposed developments to be submitted to Council for approval in 2017 include finalising a style guide to enable members to ensure that documents they produce for the Institute are in line with others, and having details of future IOA meetings available in an electronic calendar.

During the year the committee has been joined by Scott Castle with Allen Mornington-West leaving. Thanks are due to all committee members for volunteering their time and enthusiasm throughout the year: Matthew Cassidy, Daniel Goodhand, James Hill, Mike Lotinga, Jordan Mayes, Chris Middleton, 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 and website with meeting reports, technical contributions, letters, book reviews, blog posts and everything else.

## Research Co-ordination Committee

In 2016 meetings of the committee (RCC) were held in May and November at the Defra offices in London. Professor Kirill Horoshenkov stepped down as Chairman after five years in the role, during which time the committee was re-balanced to increase industry representation. In 2016 the RCC welcomed Mike Swanwick of Rolls Royce and Alan Curtis of Thales as Tier 1 members. Professor Abigail Bristow took over the role of Chairman.

In order to promote acoustics as a research discipline Professor Horoshenkov and Dr Andrew Bullmore led the organisation of the successful *Acoustics research challenges in the 21<sup>st</sup> century* workshop held at the Royal Society in London in April. This workshop brought together academic and industry researchers working in acoustics. The attendees discussed the challenges faced by acoustics research in the UK and, most importantly, agreed on actions that could help mitigate the impact of the funding cuts on this important science discipline. Speakers at the workshop included Dr Neil Viner (EPSRC), Mark Jeffries (Rolls Royce) and Aaron Hankinson (Jaguar Land Rover) and Dame Professor Ann Dowling. Stephen Turner produced a report of the event published in *Acoustics Bulletin* in August 2016. A key outcome of this event has been the development of a Network Grant proposal to EPSRC led by Professor Horoshenkov and Professor Richard Craster, UK Acoustics Network (UKAN). This activity has already brought together a diverse range of stakeholders from Universities and industry. The formal proposal was submitted in early February 2017.

The RCC submitted evidence to the EPSRC balancing capabilities call for evidence in June 2016. The RCC submitted a note on UK acoustics research and the proportion of funding for UK researchers from the EU to the House of Commons Select Committee on Leaving the EU: implications and opportunities for science and research inquiry call for evidence (<http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/science-and-technology-committee/leaving-the-eu-implications-and-opportunities-for-science-and-research/written/35111.html>).

In 2016 the value of RCUK funding to research in the discipline of acoustics was £110 million supporting 155 live grants (Source: RCUK, <http://gtr.rcuk.ac.uk/>, 13/05/2016). At the same time, £98 million (€118 million) in grants from the EU for collaborative research in acoustics in the UK supported 29 live grants (Source: Cordis, EU, [http://cordis.europa.eu/search/simple\\_en](http://cordis.europa.eu/search/simple_en), 13/7/2016). Effectively, the EU provides 47% of the funding for acoustics-related research in the UK, and so any reduction in EU funding that follows Brexit will see a significant drop in the level of financial support for acoustics. A reduction of this level will have potentially serious consequences for the UK research community in acoustics, and cause significant harm to our position internationally. RCC members have attended meetings on Brexit and the Higher Education Bill.

These and other actions are detailed in meeting notes submitted to the Institute in a timely fashion following meetings.

## **Specialist Groups**

### **Building Acoustics Group**

I have been part of the BAG committee for nearly 20 years now and I still marvel at the commitment, sacrifice and fortitude of the many volunteers that allow the Institute of Acoustics to be what it is. I thank all of my committee members for their hard work in helping to deliver conferences and meetings, and their help with writing and commenting on Standards and guidance documents. This is all without any thought of their own personal gain. They should be very proud.

2016 was focused around helping to organise Acoustics 2016. The return of the conference dinner allowed us to not only enjoy the vast array of presentations but also to strengthen current friendships and to meet new people. I think we are all agreed that this model works well and should be repeated.

Much work has also been done on helping Standards and guidance documents throughout the year. These include:

- Pro PG
- BS EN ISO 12354 parts 1, 2, 3 and 4
- BS EN ISO 16283 parts 1 and 2
- EN 15657
- Good practice guide on the control of noise from places of entertainment
- CIBSE Guide B4.

With the start of 2017 we look forward to the opportunity of hosting ICSV24 in London – our “Olympics”. It is a great opportunity to show the rest of the world that the United Kingdom is at the forefront of acoustics in research, consultancy and manufacture. We encourage all members of the Institute to embrace this opportunity and secure the future of our profession in this great country.

### **Electroacoustics Group**

The main activity of the group during 2016 was the organisation of the annual Reproduced Sound conference. This year it was held at the Holiday Inn in Southampton, which was chosen partly because of the close proximity to two universities, both with significant acoustics teaching, consultancy and research activities. The organisational tasks were once again spread amongst the committee members which made this very much a team effort. The conference was well attended with 97 registered delegates, and the committee agreed that it was a success overall. The Peter Barnett Memorial Award was presented at the conference to Mark Dodd who kicked off the conference with a highly enlightening talk on transducer development. The conference is moving venue again for 2017 to the Nottingham Conference Centre.

There have been a few changes to the EAG committee this year: Stan Boivin-Champeaux has joined as Robin Dibble has retired and Helen Goddard has stepped down from the role as Secretary, which has now been taken up by James Allen alongside his existing role as Young Persons' Representative. The committee is grateful to Helen for many years of service as Secretary but it is noted that she will continue as an active member of the committee. The committee met on three other occasions during 2016. In January, the committee carried out a review of RS2015, decided on a short list of possible venues in Southampton for RS2016 and drafted the call for papers. The abstracts were reviewed and the programme mapped out in June and the details of the conference were finalised in September.

### **Environmental Noise Group**

Through 2016 the Professional Practice Guidance on Planning & Noise (ProPG Planning and Noise) committee met regularly drafting national guidance to fill the gap left by the repealing of Planning Policy Guidance 24. The committee has eight



IOA members, working with representatives from the Chartered Institute of Environmental Health and the Association of Noise Consultants, and has been sponsored by all three organisations. In January 2016 the committee published the consultation draft; *Professional Practice Guidance on Planning and Noise: New Residential Development*. Consultation events held in London and Manchester in March were attended by more than 100 IOA members and the online consultation questionnaire generated 249 responses. The committee continues to work on finalising the guidance for publication in 2017.

The group held a workshop in January entitled *Next steps for UK aviation industry following the Airports Commission's Final Report*. The meeting was held at London South Bank University to discuss the lessons learnt from the Airports Commission's process and how the acoustics industry could apply these when approaching future projects. Around 50 delegates attended comprising acousticians, local authorities, the CAA and community representatives.

Committee: Chairman: Steve Mitchell; Secretary: Nicole Porter; Young Persons' Representative: Robert Miller; members: Tony Clayton, Dani Fiumicelli, Colin Grimwood, Bernadette McKell, Robert Miller, Claire Parsons and David Waddington.

### **Measurement and Instrumentation Group**

During 2016, the group organised two one-day meetings.

The previously successful *BS 4142 workshop revisited* was re-run on 10 March at Austin Court, Birmingham, again organised by Mark Dowie and Tony Higgins, and we are also grateful to the original contributors for making themselves available.

On 6 October, another one-day meeting was organised, *Where shall we three measure again, in lightning, thunder and rain...* concerning accurate measurements in the face of inclement weather. The meeting took the format of a workshop, which involved "real" measurements outdoors, at the Fire Service College in Moreton-in-Marsh. Aably organised by Mark Dowie, the format was deemed a success, generating a useful surplus, and future meetings will certainly benefit from lessons learned.

The group also contributed a half-day session at the Acoustics 2016 conference on 5-6 September.

During 2016, the group identified a need to cover numerical methods as part of its remit, and co-opted Giles Parker on to the committee. Giles is organising the next meeting in 2017, on 14 March in Manchester entitled *Sound transport modelling*.

The group committee will also provide several session co-chairmen at ICSV24 in July.

2016 also saw two events potentially affecting the acoustics instrumentation community – Brexit, and the closure of the airborne acoustics facilities at NPL. Tony Higgins provided a detailed summary on the Brexit issues for the IOA, and we are also pleased to retain the services of both Susan Dowson and Ben Piper, despite the latter moving on from NPL to pastures new. The group will continue to provide input to the IOA efforts at mitigating the effects of the NPL changes on the acoustics community.

Over the past year, group committee members have continued to contribute to the regular Instrumentation Corner article in *Acoustics Bulletin*, 44 to date, which has produced some interesting discussions and articles, and this is scheduled to continue for the forthcoming year.

All available articles have now been edited and made available on the members' page of the group on the IOA website.

My thanks go to all members of the committee for the active roles they take in all aspects of the group's activities.

### **Musical Acoustics Group**

The group had a successful year in its efforts to convince the wider acoustics community that musical acoustics is much more than a "hobbyist" subject. This was well demonstrated by two events during 2016.

The main meeting of the year was *Current developments in musical acoustics* which was our fourth consecutive July event, this time held at London South Bank University. There were technical papers covering the understanding of the acoustics of various instruments and possible ways to enhance the sounds they produce. For those interested in improving outdoor music events, an innovative and sustainable design of acoustic shell was illustrated. An interesting discussion and demonstration of organ design included a reminder of Sabine's work in a recreation of surprisingly accurate Victorian acoustic apparatus! Meanwhile, there was a health and safety warning via a presentation focussing on the factors that can lead to singers experiencing vocal strain during the course of their careers. Finally, there was food for thought, with a total reappraisal and new developments based on 19th century piano design, the subject of a collaboration involving Daniel Barenboim. The AGM was held during the lunch break. The committee remained the same apart from Owen Woods who retired due to his workload.

Acoustics 2016 squeezed in six presentations on musical acoustics with diverse content. These included a study of emotional responses to emulated violins using electroencephalography, an insight into virtual emulation and listener evaluations of Stradivarius violins, a presentation on representing acquired light signals as sound: signal modality translation, and a study of intelligent loudspeaker design, all contributed by the University of Manchester. The session also presented interesting findings on pitch drift when singing in a *cappella* choirs and some ideas for measuring and rating the noise impact of church bells.

The management committee of the group has been active with six committee meetings held during the year.

### **Noise and Vibration Engineering Group**

Only one full committee meeting was held during the year, but there were a number of sub-group meetings to focus on planning for particular events, especially Acoustics 2016. The NVEG contribution to the conference was very successful, with a well-attended full day session on numerical modelling in acoustics covering a good range of topics.

Unfortunately, work commitments of individuals on the committee prevented any stand-alone meetings from being organised in 2016, and so it is important for the group to move forward with an event in 2017, in addition to individual contributions to ICSV24. Possibilities include meetings on automotive NVH (noise, vibration and harshness), underwater noise from ships, and awareness of noise at work issues.

### **Physical Acoustics Group**

Now better established, the group (PAG) has contributed to the Institute programme of events in 2016 in two ways: firstly, by holding a well-received session at Acoustics 2016, comprising nine academic papers. The various technical subjects discussed reinforce the supposition that there is still much to learn. For instance, the way that a sound wave propagates through and past various media, and how systems respond and react to an applied force, is clearly not yet fully understood. Our second contribution was providing two evening meetings (held by the Midlands and the Yorkshire and North-East Branches) where the presentations related to the misconceptions of what physical acoustics is, and its underlying knowledge providing the ability for “problem-solving”.

Providing a representation for physical acoustics within the IOA has been recognised as being fundamental to the requirements of what is the foremost learned society for acoustics in the UK. Albeit we remain to communicate with our sister PAG within the Institute of Physics to avoid duplication of effort, we no longer coordinate our separate activities. However, we do continue to advertise each other’s events.

In 2017, we will continue to support ICSV24, through the active encouragement of academics, environmentalists and industrialists to submit technical papers with a physical acoustics theme. Furthermore, now the IOA PAG has re-established itself as an autonomous group, we strive to maintain this level of momentum.

In addition to the above, we still need people who can help with finding conference papers or speakers who would like to present their work during PAG sessions as part of future conferences. We will also consider supporting ideas and requests for regional evening meetings, and collaboration with other specialist groups and institutes. Please contact the chair via the link on the PAG page of the IOA website.

### **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, which is circulated electronically once a month.

We have only had one meeting this year and that was at the time of our AGM when we had a presentation by Dr Rodger Munt on *Modelling the blast from guns*. This was well received.

Plans were laid for a second meeting for Dr Gurmail S Paddan, Head of Acoustics and Vibration, Institute of Naval Medicine, to talk about the role of the Institute and also at a later date to talk about his work. Unfortunately, no suitable venue or date was available and it was decided to invite him to give his first talk at our next AGM on 6 April 2017.

The group has continued to support the work of the CPD Committee throughout the year. The history project, to which many members contributed, was finally published during the year, with every member receiving a copy. Members were reminded that archive material is always welcome and that history marches on, so that it is helpful to keep full records including photos of work in progress.

Our future programme was discussed at the AGM and it concluded that it would be helpful if meetings included a place of interest. Meetings are always open to all IOA members. Travel is a constant problem (especially for members living abroad), not only in terms of time but cost of rail fares.

The members' page on the IOA website has been updated to give a description of group information, so do watch out for it.

With the history project completed, it is time to reconsider our role. While any gathering of senior members is always likely to have a social element, it might also be appropriate to consider a more substantial role within the IOA and within the study and practice of acoustics generally. It should be noted that some members are still helping with CPD; however the mentoring issue seems a bit moribund but has not quite died, it is just awaiting clarification.

The Chairman (Ralph Weston) is standing down at the AGM in April. He wishes to thank the committee for its support and contributions to the group, especially the Secretary, Mike Forrest.

### **Speech and Hearing Group**

The group hosted one event, a talk by Professor Mark Huckvale entitled *Avatar therapy for the relief of auditory hallucinations in schizophrenia*, held in central London in May. This was well attended, prompting a large number of very varied questions, and accompanied the group's AGM, which was attended by approximately 25 group members. At the AGM, Derek Nash stood down as Secretary, replaced by Graham Frost, and Emma Greenland and Bradford Backus were confirmed as having resigned from the committee. Phil Harrison and David Canning were re-elected as ordinary members of the committee, and Dan Doherty and Cleopatra Pike (previously co-opted members) were elected as ordinary committee members, with Cleo taking over from Rob Conetta as the Young Members' Representative. Pippa Wilson was also confirmed as a co-opted member of the committee. There is still one further vacancy for an ordinary member of the committee, and nominations are currently being sought.

The group committee met three times (in February, May and October) during 2016. The group continues to liaise with other professional bodies (such as the British Standards Institute, the Royal College of Speech and Language Therapists and the British Society of Audiology) and also other specialist groups (including the Building Acoustics and Musical Acoustics Groups) and local branches of the Institute regarding topics of mutual interest. Joint meetings in collaboration with some of these are being planned for the future.

The group was very disappointed to hear of the planned closure of the Airborne Acoustics group at the National Physical Laboratory, and noted its concerns about

the impact of both this and the impending Brexit on the UK acoustics community in general, and on speech and hearing science and technology in particular.

Committee: Chairman (Acting): Gordon Hunter; Secretary: Graham Frost; Bulletin editorial contact: To be appointed; Young Members' Representative: Cleopatra Pike. Other members: Dr Evelyn Abberton (co-opted), David Canning, Rob Conetta, Dan Doherty, Phil Harrison and Pippa Wilson (co-opted). Pippa Wilson is due to stand down in 2017 due to other commitments. Possible appropriate replacements for her are being sought.

### **Young Members' Group**

The committee meets quarterly with three meetings by telecom and one meeting in person. In 2016 our face-to-face meeting was held in December in London, which was followed by a social gathering of the committee.

In 2016 we held a mock planning inquiry with the Southern Branch. We also organised a number of social events, including a get together for young members attending Reproduced Sound.

The second Inter-Professional Networking Event in London was a success with more than 80 engineers and architects from six professional bodies attending. The event used the same format as previously with participants playing "networking bingo", i.e. seek out as many individuals as possible that fit the descriptions on the bingo card. Drinks and nibbles were provided.

To promote the IOA to students we gave presentations at the University of Southampton about the benefits of membership and chartership. An Acoustics Exchange Day was held at the University of Sheffield with the aim of building a community of interest that spans all areas of sound.

For the year ahead we aim to fulfil the previous ambition of presenting to students at more universities (e.g. Anglia Ruskin University, Southampton Solent University, University of Derby, University of Liverpool, Edinburgh Napier University and University of Edinburgh). Young members are also being encouraged to volunteer for the IOA stall at Edinburgh International Science Festival. We are also hoping to host an event at the Science Museum and organise the third Inter-Professional Networking Event in London as well as putting on a quiz in London.

The big event for 2017 is ICSV24. The group has secured space within the programme to provide an early careers workshop for young acousticians and we will also be hosting an international social as part of the social programme for the conference.

### **Underwater Acoustics Group**

The group's activities continued to concentrate on the dissemination of knowledge related to underwater acoustics through its conferences and related activities. The main event in 2016 was the conference on *Acoustic and environmental variability, fluctuations and coherence* held at Cambridge University's [Møller Centre](#) on 12-13 December. This included a keynote lecture by Chris Harrison on relevant work he carried out at the NATO Centre for Maritime Research and Experimentation (CMRE) at La Spezia, Italy, and an A B Wood Medal Lecture on the overlooked information

that often lies in the phase of acoustic signals by Yan Pailhas of Heriot-Watt University. The medal was presented to Yan by Peter Dobbins, Chairman of the Underwater Acoustics Group.

The group has been active in promoting the idea of making past IOA conference papers freely available on the IOA website. Several members of the committee are currently on ISO working groups developing new International Standards for underwater acoustics and the group is represented on the joint MOD/DEFRA Underwater Sound Forum, where a group representative presents a regular update on group activities. The group is now dedicating its efforts to future meetings, including a conference on bioacoustics, to be held at Loughborough University and one on *Synthetic Aperture Sonar and Radar* in Lerici, Italy, as well as sessions at the *Underwater Acoustics Conference and Exhibition* in September 2017 at Skiathos in Greece.

## **Branches**

### **Central Branch**

After a reasonably busy 2015, including the full day conference in December, the momentum could not be sustained in 2016. After hosting many branch meetings during the last 10 years, which is greatly appreciated, NHBC became unavailable for further meetings during the year, which exacerbated the difficulty of finding suitable meeting venues. Following an appeal for suggestions a few possible alternatives were suggested, and Leica Geosystems has kindly stepped in to take NHBC's place. The search continues for alternative venues elsewhere to distribute meetings around branch area, although attendance at other locations can be challenging.

Despite a good start to the year, there were only four meetings during 2016 due to a combination of lack of venues, lack of committee members' time, and difficulty arranging three meetings towards the end of the year.

In January Bernard Richardson opened proceedings with a fascinating insight into the acoustics of stringed instruments in a joint meeting with the Milton Keynes Acoustic Guitar Club at NHBC.

In March Russell Richardson provided an informative talk, hosted by BRE, about the ANC Sound Insulation Testing Issues presentation, highlighting numerous "real world" challenges that this poses.

Later in March David Trew facilitated a discussion about the draft ProPG guidelines at David Lloyd, Milton Keynes. This gave members who had not attended one of the "official" ProPG meetings a chance to better understand the proposals.

The only other meeting in 2016 was provided by Rupert Thornely-Taylor, once again at BRE, on *The mysteries of groundborne noise and vibration*.

As ever, our grateful thanks are extended to all the speakers and the venues for hosting for the meetings.

### **Eastern Branch**

Over this year within our branch we have had a good range of meeting topics, with venues selected to be spread around the region. This has been relatively successful and will certainly continue as it gives more members access to these

meetings. Attendance has remained at the 2015 levels but there are so many IOA members in this region that we would like to see more peers and colleagues in attendance in 2017.

Other than the emails detailing meeting notices, we would look to investigate any other means of encouraging members from this region to attend the meetings.

The subjects of the meetings were: ANC presentation on sound insulation testing issues; safer suspended ceilings and acoustics solutions; mysteries of groundborne vibration; environmental vibration generated by freight trains; acoustics of schools for special needs; objectives assessment of tonality and impulsive character of industrial sources according to BS 4142:2015; and the AGM and Embleton presentation.

Hugo Cass is, as Branch Secretary, the man who keeps the branch going. None of this would happen without him and he has performed admirably this year. Please help him as he actively seeks meeting topics to fill the diary for 2017.

A social event and day conference have been talked about for some time now and opinion amongst the branch members will be canvassed in the first part of 2017 on activities, conference subjects, locations etc with a view to arranging something in the later part of the year.

## **Irish Branch**

During the year the branch held three events.

In response to the issue of a consultation on the Professional Practice Guidance (Pro PG) on noise sensitive development, a branch meeting was held in March, and a response was later submitted on behalf of the branch.

The annual Gerry McCullagh Memorial Lecture was held in June. Graham Parry from ACCON UK gave a background to past, current and future planning guidance in his talk *Developing new environmental noise guidance – noise impacts and constraints*, which concentrated on the ProPG consultation document and the responses to it.

The third event was a presentation *on Amplitude modulation and nuances in wind turbine noise* given by Jon Cooper of Resonate Acoustics (Australia) in November. Jon gave an excellent background to wind turbine noise, and his findings from many years of experience gained in the area.

Committee: Chairman: Martin Lester; Vice-Chairman: Damian Kelly; Secretary: Sam Bell; Young Persons' Representative: James Mangan; Membership Secretary: Heather Armstrong; Bulletin Editorial Contact: Sarah Middleton. Other committee members: Damian Brosnan, Diarmuid Keaney and Robert McCullagh.

## **London Branch**

Following on from the success of previous years, the branch has had another exceptional year with one of our most active years to date. The year's activities included a staggering 10 London evening meetings, a half-day visit and our summer social and our annual event. Last year set a positive precedent as a record number

of new members joined the committee which has in turn brought many fresh ideas, such as the introduction of the Eventbrite online booking system, which has been very successful and an efficient tool for our ever-expanding attendances at meetings.

As usual we endeavoured to showcase an array of topics regarding general issues within acoustics, noise and vibration as well as new and sustainable technologies that concern us as acousticians.

The year commenced with David Clarke from SRL giving a presentation on noise and vibration predictions of an underground temporary construction railway. This was standing room only as it was clearly a very topical subject. Russell Richardson of RBA Acoustics led a presentation in February discussing the fundamentals of sound insulation testing. This was presented on behalf of the ANC. The presentation reviewed the sound insulation testing schemes, building quality, common sound insulation mistakes and pitfalls.

In March the branch was treated to a talk by Jason Flanagan on the design of some unique outdoor acoustic canopies. These included acoustic shell designs on the beach in Littlehampton, inflatable mobile performance spaces and a competition winning scheme for a fixed canopy in Szczecin in Poland. From acoustic design we then went to noise control, with Poppy Szkiler from Quiet Mark leading a presentation in April highlighting the new eco-mega-trend on the high street, low noise technology and the desire to find solutions to the build-up of unwanted noise in our homes.

In May the subject moved to music festivals. David Leversedge of Aria Acoustics gave a presentation on good sound management from planning stages of a festival to the provision of on-site sound management and noise monitoring systems. From noise, we moved to vibration and the subject of vibration from freight trains. Oliver Bewes from Arup presented the long-term study of vibration from freight trains in east London. Mitigation measures were implemented and assessed.

Our half-day visit in June was to the Saint-Gobain innovation centre in central London, a space dedicated to showcasing the manufacturer's innovative building solutions. The visit consisted of two excellent presentations by Ecophon related to healthcare and office fit-outs and the visit included an interesting tour of the centre.

Breaking with tradition of having a summer break in July and August, an evening meeting and our summer event were held in July. The branch enjoyed presentations from Simon Brown, Doug Shearer and Andrew Steele, Masters students at London South Bank University. Their three award-winning projects covered physical scale modelling with 3-D materials, the measurement of low frequency absorption coefficients and the development and testing of a 3-D dodecahedron loudspeaker. The presentations followed a social gathering at The Knights Templar, Chancery Lane sponsored by Vanguardia, which was a success with a great turn out.

In the autumn/winter season, the branch enjoyed talks on the noise prediction of moored cruise ships by Francesca Remigi from the University of Padova and a film called *Sonic Sea* brought to us by representatives from the International Fund for Animal Welfare. The film promoted a fascinating debate and insight into mammals and their dependency on sound. We also held our annual social event at the Star Tavern.



To close an eventful year, our last presentation was by Qian Janice Wang titled *That sounds delicious*. The talk included a taste test with port and chocolate which was well received by all members who attended.

We are now in our eighth year of holding branch meetings at WSP | Parsons Brinckerhoff and I would like to thank them for allowing us to meet at their Chancery Lane offices for another year. I would equally like to thank all members who have attended the presentations and events during the year. Finally, I would like to thank everyone on the committee for their continued support and in particular, Nicola Stedman-Jones, who retired at the end of 2016 as Secretary and who worked tirelessly to provide the amazing support which has made the branch the success it is.

Each year we endeavour to bring more interesting talks than the last and we are very hopeful following the success of 2016, next year will be just as amazing as the last. I would like to wish you all the very best for the coming year, and thank you again for your continued support.

### **Midlands Branch**

The branch had another successful year with 11 monthly evening meetings with an average attendance of 34 (maximum 65, minimum six). The meetings included talks on a wide range of topics including auralisation, physical acoustics and occupational noise as well as a range of environmental and building acoustics topics.

We started the year with an excellent presentation by Dr Damien Murphy from University of York who talked about soundscape and use of auralisation. Other highlights included Geoff Kerry who presented at the July meeting on the history of acoustics from Vitruvius to the current era, with a particular focus on the formation and development of the IOA. In November a very well attended joint meeting was held with the Permanent Way Institute, which looked at a variety of railway noise and vibration issues. Also in November a few members of the branch joined London Branch meeting via Skype for a presentation of the fascinating film *Sonic Sea* with post screening discussion with three members of the International Fund for Animal Welfare.

Meetings were held at six different venues, with seven meetings in the East Midlands and four in the West 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: Dr Damien Murphy (University of York), Dr Sarah Haynes (RHMA Forensic Expert and Witness Service), Toby Lewis (WSP | Parsons Brinckerhoff), Bob Albon (Sandy Brown Associates), Tim Spencer (Rockfon), Geoff Kerry (IOA Past President and VP Groups and Branches), Chris Richardson, Tom Redfern and Charley Woodman (Derby University IOA Diploma graduates), Mike Swanwick (Rolls Royce and Chairman of the IOA Physical Acoustics Group), Paul Shields, James Block and Steve Cawser (AECOM), the London Branch plus their speakers Philip Mansbridge, Russell Leaper and David Cowdrey (IFAW) and Rupert Thornely-Taylor.

Thank you also to the various venues that provided the meeting facilities and refreshments: Atkins Birmingham, Arup Solihull, Aston Court Hotel Derby, Derby University, Loughborough University and WSP | Parsons Brinckerhoff Birmingham. Finally, thank you to branch members who have supported the branch again this year.

At the branch AGM, a number of changes were made to the committee for 2017. Longstanding member Brian Hemsworth stood down. The branch committee would like to thank Brian for his commitment and contribution to the branch over the past 11 years. Abigail Bristow also stood down and the committee would like to thank her for her contribution to the branch over the past three years. Young Youn was elected as an ordinary member, having previously been a co-opted member. Aglaia Foteinou was also co-opted onto the committee. Committee: Chairman: Paul Shields; Secretary: Fiona Rogerson; CPD Secretary: Heather Billin; Young Members' Representative: Chris Bradley; ordinary members: Mike Breslin, Fiona Devine, Christopher Humphreys, Mike Swanwick and Young Youn; co-opted members: Aglaia Foteinou and John Pritchard.

### **North West Branch**

Branch committee meetings were held in February, April, May and November. Many thanks again go to BDP and Arup for being such good hosts and to Iain, Phil, Philip, Alan and Achim and all to those who provide the backup at the venues.

25 February – *ANC sound insulation testing*. Building Design Partnership (BDP) Manchester Offices hosted this well attended meeting presented by Iain Critchley and Phil Dunbavin of the ANC. The duo gave a very insightful talk regarding sound insulation testing and provided a comprehensive and enlightening list of the common pitfalls that they had encountered during their years of testing, covering common defects and the problems found on site. The talk was followed by an equally informative Q&A session.

20 April – *Forensic analysis of speech and sound*. At this meeting, hosted by BDP Manchester, Dr Philip Harrison of J P French Associates and the University of York gave a very interesting presentation on his work and how the forensic analysis of speech is used in criminal cases to answer questions such as: Who is that speaking in a recording? What was said? Has the recording been edited? What made that sound? Where did that sound come from? Forensic analysts are often called on to answer these questions and the presentation introduced the different types of analyses undertaken and discussed some of the specific techniques used. It included newer developments such as automatic speaker identification and analysis of the electric network frequency (ENF) to determine the authenticity of recordings. The presentation was even more illuminating as it was illustrated with examples from real cases.

25 May – *The best stop on the organ*. At this meeting, again hosted by BDP Manchester, Alan Taylor gave a very interesting and interactive presentation. Alan began with a description of the construction and layout of a pipe organ, and the many factors that determine the tone or timbre of the pipes. This was illustrated by hearing a selection of pipes which Alan had brought with him, the largest being an 8 ft. flute. Alan then moved on to describe the work of Professor Wallace Clement

Sabine whose investigations when tasked with resolving the problem of the terrible acoustics of the lecture theatre of the Fogg Art Museum necessitated a portable reliable sound source. Sabine used a one foot Gemshorn organ pipe fed from an air reservoir with an electro-pneumatic valve that stopped and started the sound source; a chronograph was used to determine the duration of audible sound after the pipe was not sounding. Because of his meticulous experimentation and ability to interpret data he was able to derive the empirical relationship that bears his name and is still used today. Many other experiments of this type continued, some with multiple pipes, and became the foundation for architectural acoustics. The evening finished with a hands-on session (literally) where the various pipes on display could be sounded, tuned, or just be admired.

3 November. At this meeting, hosted by Arup Manchester, Achim Klein of Arup gave a presentation on the *Assessment of annoyance from road traffic noise and tramway noise*. Models that relate noise annoyance assessments to noise signal parameters are mainly based on energy-related indices (e.g. Lden). However, various studies have shown that sound characteristics of environmental noises linked to temporal and spectral signal features also influence noise annoyance responses. The presentation discussed the recent findings on the characterisation of annoyance-related sensations evoked by urban road single-vehicle pass-by noises and provided an overview of recent findings on the annoyance assessment of urban road traffic noise combined with tramway noise.

On a personal note I would like to thank the branch committee for helping me keep the ball rolling for the year or so whilst we have been without a Chairman and, more significantly, from September when I was unable to fully contribute to the branch. I would especially like to thank Peter Sacre, Geoff Kerry and Dave Logan for their support throughout my tenure as Secretary and also more recently Adam Thomas.

## **Scottish Branch**

This year has been a fairly active one for the branch with a number of meetings taking place.

*Scottish wind farm impacts study*, held in Edinburgh on 4 February, was a free joint webinar evening event with Southern Branch that was very well attended at both venues, with 44 in Edinburgh. Ragne Low (ClimateXChange) presented the context and drivers of the study. He was followed by Andrew Bullmore (Hoare Lea Acoustics) on the way assessment of noise impact was evaluated. This was followed by a Q & A session. The event was immediately followed by the AGM.

*The acoustics of conventional onshore oil and gas*, held in Glasgow on 21 April, was a paid full-day conference split into four sessions that attracted 55 attendees. The first session comprised: *Background of hydraulic fracturing and noise* by Claude Volker (Arcus Consultancy Services); *What would green hydraulic fracturing look like?* by Professor Jonathan Corney (University of Strathclyde); *The SEPA approach to "unconventionals"* by Emma Taylor / Jim McIntyre (SEPA). The second session comprised: *Sources of noise, vibration and control* by Steve Fraser (The Airshed); and *Sources of noise, vibration and control* by Simon Stephenson (RPS Planning

and Development). After a break for lunch, session three comprised: *'Unconventionals' oil and gas law – an international perspective* by Dr Peter Cameron (Dundee University); *The Lancashire Appeal – the objectors' view* by Andy McKenzie (Hayes McKenzie); and *The Lancashire Appeal – the proposers' view* by Dr David Hiller (Arup). The final session was a lively Q and A panel discussion involving Claude Voelker, Jonathan Corey, Jim McIntyre, Simon Stephenson and David Hiller. Most of the questions focused on the use and interpretation of the guidance available, and, in particular noise levels.

A visit to the Royal Scottish National Orchestra (RSNO) Centre in Glasgow on 28 September was a free event that was over-subscribed as numbers unfortunately had to be limited to 30. The recently opened centre was created to become the orchestra's home, and allow the Glasgow Royal Concert Hall to expand its performance programme. This new headquarters effectively incorporates two venues in one place. Luke Robertson (Arup) and Graeme Baillie (Architect, Glasgow City Council) provided an insightful presentation and tour, explaining the multi-disciplinary approach, placing acoustic quality at the forefront, culminating in an innovative solution to address the differing needs of the space allowing it to be refigured seamlessly within 30 minutes. The tour was followed by a social event.

*Sonic Sea*, held in Edinburgh on 16 November, involved the screening of the thought-provoking *Sonic Sea* film followed by a webinar debate with other regions. Due to the relatively short notice we had 11 attendees in Edinburgh, although this did not prevent a continued debate after the webinar had concluded.

Committee: Chairman: Alistair Somerville; Secretary: Martin Butterfield; Treasurer: Andy Watson; Branch Editorial Contact: Sean Smith; Membership Secretary: Craig Simpson; Meetings Secretary: Anne Budd/Laurent Galbrun/Nicola Robertson; Social Convenor: Fiona Watson; Young Members' Representative: César Bustos; Education / Professional Development Contact: Lilianne Lauder.

## **South West Branch**

The branch hosted six events during 2016, kicking off in April with a trip to Bath University for talks by Dr Michael Proulx and Dr Dave Brown and the "vOICe" system they developed to aid partially sighted people with navigation. There was a demo of the system that uses camera input to convert image to sound providing feedback onto the local environment.

In May Mark Dowie of Brüel & Kjaer presented a workshop on using the new BS 4142 guidance and demonstrated the large variation in results that can be found between likeminded consultants even with exactly the same source data.

Campbell Associates visited the branch in July to give two talks. The first was a demonstration from John Campbell on the Norsonic acoustic camera system. The second was a talk from Ian Campbell on calibration requirements and traceability.

Two events were held in June at the University of Bristol. Jointly with the Young Members' Group, three talks from young members on recent projects and research allowed important presentation experience to be gained as well as enlightening the branch on a diverse range of subjects. These were the assessment of *Reverberation*

*time in sports halls* from Paul Doyle of Ion Acoustics, *The singing whale* from Francois-Xavier Lallemande of Ramboll, and *Acoustic metamaterials* (using beer cans!) from Michael Kubicki of Atkins.

This was followed by a visit to the university's Wills Memorial Building and bell tower, including a chance to try to move the nine-and-a-half ton bell "Great George".

A film screening closed the year in November with a joint presentation of *Sonic Sea*, which included a live link to the question and answers session hosted by London Branch.

The branch has already had a strong start to 2017 with a film screening of *In Pursuit of Silence* at the University of the West of England, which was followed by the branch AGM. The planned event list for the year is the strongest the branch has seen yet so we look forward to a productive year.

### **Southern Branch**

The committee has had another strong and active year, focussing on leading branch activity in respect of membership connectivity as well as content.

The February meeting saw the trial run for connection of two hubs in the between the branch and our Scottish counterparts on wind turbine AM progress. This aims to be a way to further widen the ability for members to access the content from all branches in time.

In April we visited Basingstoke's Council Chamber for a mock planning inquiry expertly chaired by Graham Parry, with committee members Peter Rogers, Alex Foster and James Glen slugging it out.

In October our annual half-day meeting was held in Brighton and focussed on licensing challenges, with speakers from all sides having their opportunity, be they LPA, legal, promoter or consultant. It was a very well attended, debate was lively and ultimately was a very successful event.

Dan Saunders delivered an ANC Registration Scheme PCT update in May in Winchester which preceded the subsequent ANC workshop held in Birmingham later in the year. In July we heard from Alistair Moore on speech dereverberation at a meeting held at Southampton Solent University. We returned to the university in December for a showing of *In Pursuit Of Silence*, which was a great way to finish off a busy year.

As always, we have striven to move meetings around the region, and feel confident that we have offered members interesting, varied and high quality offerings.

One of my goals as Chairman was to carry on the re-ignition of the branch over the preceding three years. I feel that with a great committee to assist we have achieved that in 2016 and we continue to widen the benefits of the branch meetings for all members.

I offer my sincere thanks to all the committee members. We have a programme of events for 2017 taking shape, including events on fracking, the virtual singing studio and clay target shooting. In 2017 we will also try to regain the momentum in the

IOA/CIEH local initiative code of practice of noise and vibration reports which has stalled somewhat but for which there remains a need.

### **Welsh Branch**

There were no meetings of the branch in 2016.

### **Yorkshire and North East Branch**

The branch met four times during 2016. In April we had a presentation by Tim South FIOA on *Uncertainty in measurements*. He addressed the importance of expressing uncertainty inherent in our measurements and assessments. His presentation showed factors that contribute to uncertainty and a method for its calculation. Attendance was high and a good friendly atmosphere was enjoyed by all. It was a good opportunity for our members to get to know each other, especially with cakes and sandwiches in hand.

In August we had a presentation on the BS 4142:2014 by Colin Cobbing MIOA of Arup who was able to share his experience as a member of the BS 4142:2014 committee. He brought insight into the practical application of the standard and addressed many questions from our members during the meeting. There was a broad discussion on the practical and subjective elements of the standard, such as duration of measurements and the context of the noise environment. He demonstrated the value of experience and knowledge that the Institute has within its membership.

In October we had very clear and practical presentation by Mike Swanwick, Chairman of the IOA Physical Acoustics Group. His subject was *How does physical acoustics apply to us?* He demonstrated how basic principles of sources, transmission paths and receptors can be applied across many applications. He gave clear examples of applications in the air craft industry. We had a great question and answer session which enjoyed broad participation. Mike is an example of the willingness of our members to give of their valuable time to enrich our meetings.

In December we were delighted to have a fantastic presentation from John Pritchard MIOA on *Dog kennel noise impact and methods of assessment*. The presentation was thought-provoking and full of useful data and measurement practices in the assessment of dog barking noise from kennels particularly. It addressed measurement parameters and mitigation in the assessment and control of noise in kennels. We were honoured at this meeting to welcome Allan Chesney, IOA Chief Executive, who discussed the Institute's goals and future plans. He gave us valuable insights into the Institute's aims for reinvigorating and diversifying our membership.

Our meetings are fun and vibrant. We begin each meeting gathering around refreshments and socialising with each other. Our branch has benefited from our regularly meetings, a fine tradition that we will continue in the coming year.

To all who contributed to the success of our meetings we say "thank you". Till we meet again.

## Statistic and Information Tables

**TABLE 1 Membership**

<b>Grade</b>	<b>2015</b>	<b>2016</b>
Hon Fellow	38	36
Fellow	175	172
Member	1789	1794
Associate Member	772	799
Affiliate	57	53
Technician Member	125	127
Student	377	397
Totals	3333	3378
Founding Key Sponsor	2	2
Key Sponsor	1	1
Sponsor	46	46

**TABLE 2 Group membership**

<b>Group</b>	<b>2015</b>	<b>2016</b>
Building Acoustics	1475	1563
Electroacoustics	434	464
Environmental Noise	1804	1863
Measurement & Instrumentation	711	767
Musical Acoustics	433	468
Noise and Vibration Engineering	1215	1280
Physical Acoustics	285	321
Senior Members	122	126
Speech & Hearing	243	274
Underwater Acoustics	264	277
Young Members	324	370

**TABLE 3 Branch membership**

<b>Branch</b>	<b>2015</b>	<b>2016</b>
Central	244	247
Eastern	291	293
Irish	134	134
London	881	937
Midlands	446	455
North West	404	427
Overseas	341	326



Scottish	193	206
South West	297	312
Southern	517	545
Welsh	80	84
Yorks and North East	243	257

**TABLE 4 Details of employment**

<b>Employment Category</b>	<b>2015</b>	<b>2016</b>
Architectural Practice	324	376
Consultancy	1914	2000
Education	602	648
Industry/Commerce	634	658
Public Authority	437	433
Research & Development	623	689
Retired	141	124
Other	185	201

**TABLE 5 MEETINGS AND ATTENDANCE IN 2016**

<b><i>Topics, Date &amp; Venue</i></b>	<b><i>Attendance</i></b>
Aviation Noise 26 January London	50
The Art of Being a Consultant 3 February Salford	55
BS4142:2014 Revisited 10 March Birmingham	73
Acoustic Research Challenges 15 April London	55
Acoustics of Unconventional Onshore Oil and Gas 21 April Glasgow	33
Acoustics of Large Infrastructure Projects 10 May London	52
Current Developments in Musical Acoustics 5 July London	25
Acoustics 2016 5-6 September Kenilworth	203
Effect of Weather on Outdoor Measurements 6 October Moreton-in-Marsh	63
The Impact of Brexit on Noise Management 19 October London	50
Reproduced Sound 2016 15-17 November Southampton	97
Defra Research – A Synopsis of Recent Publications 23 November London	47
ETSU-R-97 Time to Move On? 7 December Birmingham	55
Acoustics and Environmental Variability, Fluctuations and Coherence 12-13 December Cambridge	59