



IOA

The first 40 years



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*“Those who cannot remember the past
are condemned to repeat it”*

The life of reason by George Santayana

A message from the President

It is a matter of great personal pride that the Institute's 40th anniversary occurred during my Presidency which meant that it befell to me the huge honour of inaugurating the celebrations at the special conference we held at the NEC in Birmingham in October 2014 to mark this significant milestone. As those of you fortunate enough to have been present will have noted, the range of topics was a wonderful showcase of the wide range of our members' interests and expertise and, above all, a great advertisement for their contribution to society.

As this book clearly shows, the Institute has come a long, long way since 1 January 1974 when, after a protracted "birth", it officially came into being. At times the road was not always easy nor the route to take obvious. But thanks to the immense dedication and sheer hard work of both members and staff, the curve on the graph has always continued to rise steadily upwards.

The list of its successes is huge: the staging of internationally acclaimed conferences, the establishment of a highly regarded education programme, a strong commitment to improving professional standards, the creation of specialist interest groups dedicated to knowledge sharing, the provision of nationwide networking opportunities for acousticians and the raising of the public profile of the science - these are some just some of the achievements listed here of which we can be justifiably proud.

With the increasing recognition of the impacts that acoustics, noise and vibration issues have on all our daily lives, it can be strongly argued that the role of the Institute, and with it the work of its members, has never been more important. The challenge for us all, therefore, is to build on the work of our founding fathers so that, through a steadfast commitment to the advancement of acoustics, we can continue our mission.

To both members of the Institute and the wider public, I heartily commend this book. For the former, it provides a wonderfully detailed history of how our Institute has grown from small beginnings to the modern, professional, thriving and well-regarded members' body that it is today, while for the latter it provides a fascinating insight into the world of acousticians, the many diverse areas in which they specialise and why their work has made and will always continue to make a difference.

William Egan
President 2014-2016

Acknowledgements

Preparing the history has involved many Institute members, especially from the groups and branches, and I can only mention by name those with whom I had direct contact. However, this in no way diminishes the gratitude that I feel towards all the other unsung heroes for the considerable effort that they have put in to ensure that their own committee, group or branch contribution is as accurate as can be. In many ways this merely reflects the history of the support from its members for the many projects that the Institute has undertaken during its 40 year history. The names of main authors and/or co-ordinating authors are provided with each contribution and I acknowledge the effort that they have all put in both in the writing and in the co-ordination of the detail, sometimes provided by others, sometimes all down to their own individual efforts. I am particularly grateful to those who have moved on into or towards retirement but nevertheless were happy to provide their reminiscences.

Particular thanks must go to the History Project Committee who volunteered their time and effort to guide the project towards a successful conclusion. In person, Ralph Weston, Peter and Sue Bird, Alex Burd, Bob Peters, Bridget Shield, Roy Bratby, Graham Parry, Ian Bennett and by e-mail Chris Rice, Peter Wheeler and Bernard Berry. Peter Bird and Rebecca Hutt who did much of the photocopying and production of electronic versions of *Acoustics Bulletin* and Council minutes deserve the gratitude of the membership generally because that long and difficult task will pay dividends in future when those documents are researched for information. Ralph Weston also assisted with the task of distributing the electronic files via his own drop box when the Institute's website was in a state of flux. The St Albans office team have also been pretty active in providing information, especially in their areas of expertise, and in assisting with photocopying.

A team of proof readers including Peter Bird, Paul Freeborn, Brian Tunbridge, Rob and Alison Hill and Janet Webb provided much welcome assistance in preparing the final document. When we failed to find a local champion, Peter Bird, Ralph Weston and Graham Parry stepped in to assist with the preparation of several branch histories using whatever records we had available. I cannot finish without thanking our two editors, Ian Bennett, without whom I would have been totally lost, and Charles Ellis, who has found time, between his Bulletin editing and other publication and publicity tasks, to round the job off.

Geoff Kerry

Co-ordinating Editor and Chairman
of the IOA History Project Committee

Preface

Geoff Kerry

I cannot remember exactly when I first discussed the idea of having a history of the IOA written up. I do recall having a conversation about it with Bob Chivers and Mike Ankers at a Spring Conference, probably at Oxford in 1989. I can also recall discussing it with various other members at times, no doubt prompted by the preparations for the Institute's 21st anniversary and then its 25th anniversary. In those days I rather assumed that Bob would write up the history since he had shown some interest in doing so. Unfortunately it was not to be and the idea next surfaced, in my mind at least, during the numerous discussions I had leading up to the formation of the Senior Members' Group, more often than not with Peter Wheeler on train journeys to and from St Albans. The driving force behind my returning to the idea every so often was my lack of knowledge on exactly what happened within the acoustics profession before the formation of the Institute.

Yes, like so many of my contemporaries, I had, upon graduation with a physics degree, joined the Institute of Physics (IoP), in those days the Institute of Physics and the Physical Society, and working in the aircraft industry dealing with noise and vibration, I had ticked the Acoustics group box. But I was, of course, fully aware that at that time (1967) another acoustics society had just left the starting blocks, the British Acoustical Society (BAS). I joined that as well. I say another acoustics society because being a student at Salford and with Peter Lord as my tutor, I could not have failed to notice the emergence from 1963 of the Society for Acoustic Technology (SAT). In fact, when meetings were held at Salford it was effectively compulsory for Peter's students to attend. Joining the acoustics research group at Salford in 1969 and working with Peter until his retirement some 25 years later I had many discussions with him on the acoustics profession and in particular the IOA, and from time to time those discussions would drift to its origins and the involvement of the other societies, but I never pieced together the whole story. When in 2010 Trevor Cox, on behalf of Council, asked me to oversee the production of a history of the IOA for the 40th anniversary, my first thought was "now I must really sort the early stuff out with Peter", but his illness and untimely death precluded that. All was not lost, however, because Alex Burd, who had initially also been a member of the Acoustics group of the Physical Society and the BAS – but not the SAT – fortunately volunteered to help, and with the assistance of some of his contemporaries he has compiled the first chapter of this book.

I cannot continue without mentioning a little faux pas. At an early stage in the book's preparation Alex had asked if anybody knew whether the minutes of the Acoustics group had survived. The answer was a deafening silence. A request to the IoP also drew a blank, as did a search of the IOA library. The minutes of the IOA Council were all neatly filed in a cupboard in the Chief Executive's office, and a few other early documents were in the library, but there was no sign of those past minutes. The previous Chief Executive, Roy Bratby, remembered seeing something during his time at St Peter's Street, St Albans, but the office had just moved premises a short distance away to Victoria Street and we all feared the worst, especially after the staff had searched the (as yet unopened) removal boxes to no avail. Standing one lunchtime in the Chief Executive's new office and searching again through the files in the grey cupboard I noticed a small two-drawer wooden filing cabinet in the corner. "What's in there?" I asked. Kevin Macan-Lind, the CE at the time, replied: "I'm not sure" and promptly opened it. There, neatly stuck in ledgers, were not only the minutes of the Acoustics group and the BAS but also those of the joint working group set up to oversee the merging of the two societies into the IOA. Unfortunately there was no sign of any minutes from the SAT, but there were some loose documents that have subsequently helped put together the story.

I am tempted to say that putting the remainder of the history together, the important bit about the IOA, has been a nightmare. But as my involvement over the years has told me, the IOA doesn't do nightmares. You might think you are entering a nightmare but your fellow acousticians are always there to help you out, you only need to ask (occasionally more than once, or perhaps even more than twice) but help and advice is always at hand. And so it was from a general call for assistance I was able to find several old hands who were prepared to do much of the donkey work, and as things progressed, several young hands too. From the outset we decided not to be too ambitious, but we had the resources and time to produce a general history augmented by members' reminiscences. We could not hope to research all the activities that had been undertaken by the Institute over the past 40 years, nor could we acknowledge by name all the members who had been involved in those activities. As the project progressed we did decide to make sure that documents we had found and used extensively, or not used, as the case may be, would be copied into electronic format and archived for future use. So, with the help of the office staff and several members we have scanned and recorded the Council minutes, the annual reports and most importantly the Acoustics Bulletins. The last-mentioned, in particular, will be available online to the membership once space can be allocated on the website.

The way we decided to proceed was to follow what is in effect the organisational structure of the Institute, starting with the Council and its standing committees followed by branches and groups. Various members of those committees and groups and branches were asked to write or lead a team to write up the important aspects of their history within the Institute. This was done so that members could readily learn about the history of their particular areas of interest. However, I was concerned that we might not actually have a coherent history covering the full 40 years of the Institute's life. I need not have worried. Tony Jones, whom I had asked to write up the history of Council itself (a natural choice since he is a past Secretary as well as a past President), actually produced a first-class history of the Institute's activities by going through the Council minutes very thoroughly.

Members of the History Group committee, stalwarts Alex Burd, Ralph Weston, Peter Bird and Roy Bratby, helped considerably by Bridget Shield, Graham Parry and Bob Peters together with Peter Wheeler, Chris Rice and Bernard Berry, have assisted with the organisation and provided advice. They have written various sections even if these were not their particular areas of interest because they were essential to the completion of the story. The whole has been held together by the experience and editorial glue of Ian Bennett and the task was made much easier by the willing assistance of the office staff.

As I indicated earlier, this volume was never intended to be the complete definitive history of the Institute of Acoustics. There are many pieces missing and members out there might just know something about them. If reading this history prompts those "little grey cells" into recalling some event in the Institute's life, please write it down and send it to the office. The next member to take on the task of writing up the history in future years will be most grateful.

From pretty small beginnings, the Institute has grown into an independent professional body that has achieved much to raise and maintain standards within the acoustics world, all within a relatively short timescale. The current membership owes much to those who started the ball rolling and to those who have maintained its impetus over the past 40 years.

The origins of the Institute

How the Institute came about

Alex Burd

Although the document you are now reading is a history of the IOA from 1974 to 2014, the Institute did not spring from nothing: it represented the final step in the development of a series of specialist groups which preceded it. It also marked the culmination of the development of acoustics from a fragmented series of occupations into a profession.

In the immediate post-war period acoustics had no unified representation, but existed as a series of specialist fields within a variety of professions. There were no university departments of acoustics: the subject was taught – where it *was* taught – as part of physics, engineering, architecture, music or other courses. National research in acoustics was largely confined to the National Physical Laboratory (NPL), for standards; Building Research Station (BRS), for domestic and industrial applications; and the BBC Engineering Research Department for its specialist studio needs and associated interests. Individual industries employed their own specialists to solve problems.

Two public-spirited individuals in the BRS (nowadays the BRE) decided to rectify this omission: Alan Pickles, who had recently joined BRS from the Admiralty Scientific Service as Head of Physics Division, and Bill Allen, an architect who was involved in problems of sound insulation in domestic premises. Alan Pickles was a Life Fellow of the Physical Society (PS) and knew that the Society had a Colour Group; he approached the Society for permission to form an Acoustics Group and this was granted, with assistance forthcoming from the secretariat of the Physical Society.

An inaugural meeting under the chairmanship of Mr H L Kirke and attended by about 170 people was held at the Royal Institute of British Architects (RIBA) in 1947. Dr Alex Wood (who co-authored with Hope Bagenal a book entitled *Planning for Good Acoustics*) spoke about the contribution of acoustical science to allied studies. Following the lecture, a précis of the events leading up to the meeting was presented.

“In this country the need for a focus for acoustical studies and investigations has been apparent for some time: and, in seeking to organise a Physical Society Acoustics Group, the success of other Groups of the Society in similar fields of divided interests has been borne in mind. A meeting of a number of interested persons was held in October 1946 in the rooms of the Physical Society under the chairmanship of Dr Alex Wood, in order to assess the degree of support which might be expected. At this preliminary meeting it was unanimously agreed to hold the present open meeting at which the group might be formally inaugurated. It was also agreed that the group should cater for all different kinds of acoustical interests – musical, architectural, physiological as well as physical and electrical.”

It was agreed by all present that the group should be formed and a committee was elected with H L Kirke as chairman, Alex Wood as vice-chairman and Alan Pickles and Bill Allen as the honorary secretaries.

The object of the new group was “to provide an opportunity for the various groups of people concerned with acoustics – physicists, electrical engineers, musicians, physiologists, psychologists, architects, manufacturers etc – to meet and become familiar with each

other’s problems”. Free membership was available to members of the Physical Society. Membership at a fee of 10s 6d (half a guinea) was open to members of several other institutes, the Institute of Physics, Institute of Civil Engineers, Royal Institute of British Architects, Institution of Electrical Engineers, British Kinematograph Society, Physiological Society, and the Science Master’s Association. This list was subsequently extended by the committee to include the Institution of Mechanical Engineers, Incorporated Society of Musicians, Royal Musical Association, Institute of Musical Instrument Technology, Institution of Civil Engineers, British Sound Recording Association, Royal Aeronautical Society, British Psychological Society, British Institute of Radio Engineers and 14 other bodies.

The first chairman of the new group, H L Kirke, was Head of the BBC Engineering Research Department. In order to satisfy the wide interests of the group, the first committee was said to include people representing musical instrument makers, music performance, recording, criticism and broadcasting, engineering and architectural acoustics, acoustic technology and education.

The first AGM of the group was held at the RIBA on 8 April 1948. The committee reported that:

- Seven evening meetings had been held during the winter
- A summer meeting had been held in 1947 to discuss “auditorium acoustics and reverberation” based around a presentation by Professor Per Brüel
- A research panel had been set up to consider problems of auditorium acoustics
- Membership of the group was 205, made up of 53 members of Physical Society; 103 members of other participating societies and 49 other members.

In 1948 the group organised its first International Symposium entitled *A comprehensive review of noise and sound transmission* to be held at the RIBA. Some 40 papers were presented over a three-day meeting and, of the speakers, 11 or 12 were from overseas.

Programme for 1948 Symposium	
Dr L L Beranek	Sound transmission through partitions
Dr G H Aston	Sound transmission through partitions
Dr T Vogel	Sound transmission through partitions
Dr W Furrer	Absorption by elastic layers
Dr L Cremer	Absorption by panels at oblique incidence
Mr W A Allen	Transmission through party walls
Dr F Ingerslev	Transmission through party walls
Mr P H Parkin	Proposals for International standards for measurements
Dr C W Kosten	Proposals for International standards for measurements
Dr G H Aston	Proposals for International standards for measurements
Dr V L Jordan	Impact sound
Dr G H Aston	Insulation of wood floors
Prof P V Brüel	Impact sound insulation

Dr C W Kosten	Impact sound
Mr H Humphreys	Floating floors
Mr P Kipper	Insulation measurement for footstep noise
Mr W A Allen	Survey of domestic noise
Dr C Kosten	Sound insulation in experimental buildings
Dr D L Burn	Noise in schools
M J Grunenwaldt	Noise in ships
M R Lehmann	Noise in aeroplanes
P H Parkin	Sound insulation of flats
M F Canac	Acoustics of old theatres
Mr R S Dadson	Noise meters
Dr A J King	Objective noise meters
Mr C A Mason	A mains-driven objective noise meter
Mr P Baron	Objective measurement of noise
Mr R S Hogben	Apparatus for measuring noise & vibration
Mr D Maurice	Certain aspects of noise measurement
Lord Halsbury	A noise analyser
Mr E Noel Storr	Stethoscopes
M P Chavasse	Complex sounds for use in acoustic tests
Prof P V Brüel	Attenuation of noise in ducts
Dr C Kosten	Absorption by porous materials
M J Grunenwaldt	Noise level in ducts
Dr A Schoch	Absorption
Mr C A Mason	Noise of lighting chokes
Mr K Westmijze	Noise and stereophonic hearing
Dr E Meyer	Properties of rubber
Mr C H Bradbury	Machinery noise

The opening speaker of this International conference was Dr Leo Beranek, now an Honorary Fellow of the IOA. Dr Beranek, who reached his 100th birthday in 2014, remembered his contacts with British Acoustics.

“During WWII I served as Director of the only airborne-acoustics laboratory in the USA, which was supported by the Office of Scientific Research and Development (OSRD) that had been set up by President Roosevelt to underwrite civilian research on military needs. It was called the Electro-Acoustic Laboratory and was located in the physics buildings of Harvard University. Its principal accomplishment was greatly to improve voice communications in military aircraft, tanks and ships. After the war, the OSRD’s functions went to the Office of Naval Research (ONR). In the fall of 1947 I became Associate Professor of Communication Engineering at the Massachusetts Institute of Technology. In 1948, the ONR underwrote the expenses of chosen scientists to go to Europe to learn about research carried out there during the war. I was chosen to make a survey of airborne acoustics research in 12 countries. My survey started in England in July. There, I first attended an international conference on building acoustics at which 28 papers from eight countries were presented. One morning a standards meeting was called and I was invited to be the chairman. I was the first American acoustician seen in Europe since 1939 and I was something of a curiosity. As chairman I did my best, and when the session was over everyone thumped the tables with their knuckles. I never experienced this before and I hoped it meant approval. I formed permanent friendships at this meeting with Peter Parkin and William Allen of England, Willi Furrer of Switzerland, Erwin Meyer and Lothar Cremer of Germany, C Kosten of Holland, Paavo Arni of Finland, and F Chavasse of France.

Then came the opening of the Royal Festival Hall in 1951. During

its design stage, Richard Bolt had been invited to England to give what help he could on its acoustics. A special concert was given for those who had taken part in its design and I went because Bolt had another commitment. The British press tried to get me to express my opinions on the acoustics, but I refused on the basis that I needed to go to several concerts, and to occupy various seats, before expressing an opinion. From the start, there were complaints about insufficient reverberation. In a paper by Parkin and Allen, their analysis was that the ceiling was absorbing the sound. I showed a few years later that this was incorrect and that instead the cubic volume was too small. Hope Bagenal was the elder acoustician who had been involved in the design. He invited me to his house for an afternoon tea which was a most enjoyable occasion. A few years later Bagenal was our house guest in Winchester, Massachusetts. We took him to see the historic buildings in Boston. When we suggested going to suburbs to see contemporary architecture, he begged off saying that would be too upsetting. I went again to see him in his home in 1960 when we were planning the acoustics for Philharmonic Hall. We had a fruitful discussion on where to put the organ. During each of several visits later I was the guest in Bill Allen’s home and he took me to see buildings where he and his colleagues had been the acoustical consultants.

During one of my visits I spent a day at the Institute of Sound and Vibration in Southampton. I was fascinated with the variety of research projects and with the quality of staff and equipment. In June 1967 I received a letter from B L Clarkson, Professor of vibration studies, offering me the directorship of the Institute. He said this would strengthen the links with work in the USA and particularly with that of Bolt, Beranek and Newman. I declined saying that I was very happy with my work and life in the US and that the change would be too difficult.

One of my most impressive invitations came from the Institute of Mechanical Engineers in London to deliver their 45th Thomas Hawksley Lecture, scheduled for the fall of 1959. I chose as my subject the transmission and radiation of sound waves in structures. I repeated this lecture in Oxford and Bristol and gave it in following weeks in Switzerland, Czechoslovakia, Poland and Russia.

My longest stay in Great Britain was in the winter of 1959-60. I attended symphonic concerts in London, Edinburgh, Manchester, Bristol, Glasgow and Liverpool. Because there were only a few concerts in each city each week, my stay was extended as I zigzagged by train from one city to another. My acoustical findings were written up in my book *Music, Acoustics, and Architecture* (Wiley, 1962).”

Many years later, Bill Allen recalled that a friend of his father, Erwyn Meyer, had come to the (BAS) inaugural to give a paper. It was particularly poignant and memorable because Meyer had been the scientific head of German underwater attack and Pickles was his opponent on the Allied side. Pickles’ team included Parkin, who had calibrated underwater pressure formation, because Pickles assumed that Meyer would at some time introduce a pressure mine and, indeed, it appeared on D-Day. It was countered without the loss of any ship and Erwyn Meyer congratulated Alan Pickles when they were introduced to each other.

Committee meetings were held at roughly monthly intervals and were largely concerned with the organisation of the lecture programme. Lectures were held on a monthly basis and attendances were usually around 60 persons. The subjects were diverse but the content and presentation may well have had a scientific slant as befitted an offshoot of the Physical Society.

Most years included one major symposium, and the subjects included loudspeakers, vibrations, underwater acoustics, sound propagation in the atmosphere, traffic noise, calibration of microphones and hydrophones. Lecture subjects were varied and covered all of the interests of the current IOA specialist groups.

Typical speech topics for Acoustics group meetings

Date	Speaker	Subject	Organisation
30 Jan 1952	W A Allen	St Paul’s Cathedral loudspeaker system	BRE
7 Feb 1952	Mr Archbold	Design of probe microphones	STC
26 Feb 1952	C M Harris	Building blocks of speech	Bell Telephone
6 Mar 1952	Prof Giacomini	Ultrasonic work at Rome Institute	Corbine Inst

27 Mar 1952	AA, NPL, BBC	Sound absorption measurements	
24 Apr 1952	Dr Meyer	Architectural work	
13 Oct 1952	A T Pickles	American acoustical scene	BRE
4 Nov 1952	R S Dadson, L J Wheeler	Normal threshold of hearing	NPL and RAF
19 Nov 1952	Discussion	Teaching of acoustics	
8 Dec 1952	G Bradfield	Measurement of elasticity of solids	
14 Jan 1953	Drs Kamm & Kurtze	Sound absorption in aqueous solutions	
26 Jan 1953	E Aspinall	Acoustical mechanical measuring set	
	J T Morton	Some results of measurements on ears	
18 Feb 1953	Dr D H Follett	Early acoustical instruments	Science Museum
22 Mar 1953		AGM, then high speed flight	
19 Apr 1953		Visit to Elstree Studios	
16 Oct 1953		Sound insulation of buildings	
8 Dec 1953	Dr F J Pumphrey, A Tumarkin	The theory of hearing	
5 Jan 1954	H Bagenal	Cathedral acoustics	
19 Jan 1954	A Fursey	Temperature anomalies in chromium	
12 Feb 1954	A J Forty	Technique of sound recording on glass discs	PO Research Station
4 Mar 1954	Dr Alexander, T Somerville	The techniques of broadcasting	
29 Mar 1954	W H Tait	Double reeds in woodwind instruments	
12 Apr 1954	Dr E C Cherry	Analysis, synthesis and recognition of speech	
28 Apr 1954	Prof Kneser	Absorption of sound in gases	

The speakers were drawn from both academia and industry although the presentation of the papers may have been more as expected for a learned society. It is undoubtedly true that most meetings were held in and around London and the South East. This was common to most organisations at that time because membership numbers in more distant regions were limited.

The Physical Society and the Institute of Physics amalgamated their activities in 1958 under the title of the Institute of Physics and Physical Society (IP&PS). The Acoustics Group moved with the Physical Society and continued as a group organisation with the secretariat provided by the IP&PS. The amalgamation had an impact on the group which had proposed to start a yearbook; this was put on hold until the amalgamation was completed. It was also noted in 1960 that the group had lost a lot of members following the

amalgamation: this was presumed to be because of a greater perceived emphasis on physical aspects of acoustics although the group itself felt that it was functioning as previously.

In 1962 it was noted by the membership that acoustics was no longer a subject in Part 11 of the IP&PS Graduateship examination and the committee agreed to press the Institute for its inclusion. However, the proposal was turned down as there was said to be no demand for the subject. Nevertheless, the group continued to explore the need for its inclusion.

Note that the Acoustics Group continued to function throughout the emergence and merging of the societies described hereunder and continued with a limited range of activities even after the formation of the Institute of Acoustics.

The A B Wood Medal

Dr Albert Beaumont Wood, who had been active in the formation of the Acoustics Group, died in July 1964. By 1970 a medal had been instituted in his memory by the Institute of Physics; its operation was transferred to the IOA after the formation of the Institute in 1974. The medal has been awarded each year "for distinguished contributions in the application of underwater acoustics". The prize is presented in alternate years to European and North American scientists.

Pre-IOA A B Wood medallists	
Year	Recipient
1970	B S McCartney
1971	Robert E Apfel
1972	B Ray
1973	M C Hendershott

It is surprising to note that no nominations or other comments regarding the award of this medal appear in the Acoustics Group committee minutes, so it must be assumed that setting up the medal was primarily an Institute of Physics venture.

Further details of the award of this medal in 1976 and subsequent years following its transfer to the IOA will be found elsewhere in this history.

Formation of Society of Acoustic Technology

In part at least as a reaction to the dominance of the South East in Acoustics Group meetings, a number of people, many of them without professional qualifications but involved in the manufacture of acoustical products or the study and control of sound or vibration, pressed for a body they could join to learn about the subject of acoustics in practical terms.

A steering group leading to the formation of such a society was formed in 1962 consisting of D Banks (Geo W King & Co Ltd), J

Graham (Public Health Department, City of Manchester), J Kuehn (B&K Laboratories Ltd), Dr P Lord (RCAT Salford), C R Maguire (AEI Group, Trafford Park), M Milner (Ferranti Ltd), Dr H D Parbrook (Liverpool University), Dr L H A Pilkington (Pilkington Brothers Ltd, St Helens), and Dr W A Taylor (Queen's College, Dundee). As a result of their work, the Society of Acoustic Technology (SAT) was formed in 1963 with its activities centred in the North West at the then Royal College of Advanced Technology, Salford. The steering committee

was elected to form the first committee with Professor E J Richards as the President, Dr L H A Pilkington as the Hon. Chairman and Dr P Lord and Dr D Parbrook as joint Hon. Secretaries. The main aim of the society as laid down in its Constitution and Rules was "to bring together people who had a common interest in the study of the various aspects of acoustic technology, particularly problems of measurement and control of aural noise".

The inaugural meeting was attended by some 80 people and heard a lecture on *Future problems of noise control* by Professor E J Richards, who at that time was Professor of Aeronautical Engineering at the University of Southampton and who had been a member of the Wilson Committee.

Over the next 18 months 12 meetings were organised, largely in the North West but including meetings in Southampton and Coventry, and a two-day meeting in Dundee on medical and industrial aspects of hearing loss. Three meetings were conferences of two days or more and two were evening meetings organised at the request of members, and intended to be educational in nature, rather than expositions of the very latest in acoustical developments. Two meetings were organised jointly with the Acoustics Group, one of these being on "some aspects" of the Wilson Committee's report on noise.

There were now four groups for specialists in the field: the Institution of Electrical Engineers, the British Institution of Radio Engineers, the Acoustics group of the Physical Society and the Society of Acoustic Technology. From the viewpoint of the Acoustics Group this proliferation stemmed from the recent growth of interest in acoustics combined with the deficiencies of the Acoustics Group. They felt these deficiencies to be that the group did not provide common professional status for specialists in acoustics among physicists, engineers, architects etc. In particular:

1. The group operated only in London, except for very infrequent meetings in the provinces. This appeared to be common to specialist groups within professional bodies owing to their inability to attract sufficient numbers of members in any other area.
2. Because the publication of papers in the journals of the Institute and Society is limited in extent, it was difficult to get original papers read at meetings.
3. Since the amalgamation of the Institute of Physics and the Physical Society, the group from the outside appeared to be dominated by the physicists, although in fact it was operating much as previously.

Formation of British Acoustical Society

In 1963 D W Robinson of NPL wrote to the chairman of the Acoustics Group (and no doubt to other interested parties) in his capacity as British delegate to the International Commission on Acoustics. He pointed out that the UK had no unique focal centre for channelling acoustical opinion or for disseminating information. To rectify this he proposed that the electroacoustic activities of the IEE, together with the Salford SAT and the Acoustics Group of the IP&PS should be represented on a British acoustical advisory committee consisting of members from these groups and other interested parties with a secretariat perhaps supplied by the NPL. This committee would be recognised as speaking for international affairs but in addition could function domestically by coordinating meetings and publications and providing a focus to discuss teaching/conference/engineering aspects of acoustics. It could perhaps organise its own international conferences culminating in hosting a future ICA.

Opinion in the Acoustics Group was against the idea of an NPL secretariat as it was felt it could give the appearance of being a government body. Consideration was given to setting up two bodies, one physical (largely the Acoustics Group) and the other more practical (IEE - Electroacoustics, IRE and SAT). After discussion it was felt that the dichotomy would be difficult, if not impossible, to manage and, in any case, was undesirable as it would hinder progress by reducing the opportunities for cross-fertilisation between theory and practice.

However, the proposals clearly had merit and the committee decided unanimously that the desirable object was a single society embracing all the acoustical interests in the country. Such a British Acoustical Society could perhaps be sponsored by the IP&PS as in the USA, and a request was submitted to the Institute to consider and, if agreed, proceed with approaches to the Royal Society and the other bodies concerned. Owing to major differences in the

constitutions of the British and American Institutes of Physics, this way forward was found to be impossible. Dr A J King (the chairman of the Acoustics Group at that time) therefore approached directly the chairman of the British National Committee for Physics of the Royal Society and a meeting was organised at which the following bodies were represented:

- Royal Society
- Institute of Physics and the Physical Society (the Institute of Physics and the Physical Society had amalgamated in 1960 and used that title until the organisation received a Royal Charter in 1970 when it became known as the Institute of Physics (IoP))
- Society of Acoustic Technology
- Institution of Electrical Engineers
- British Broadcasting Corporation
- Royal Aeronautical Society
- Institute of Mechanical Engineers
- Society of Environmental Engineers
- Royal Institute of British Architects
- Institution of Electronic and Radio Engineers.

An exploratory committee of twenty members under the chairmanship of Sir Gordon Sutherland (at that time President of the Institute of Physics) and representing the above bodies drafted a Constitution and By-laws for a new society, and the British Acoustical Society was formed in March 1965 with a provisional Council to keep things going. The Society held its inaugural meeting on 5 and 6 May 1966 by which time technical meetings and symposia were being held regularly. The provisional council handed over to the first elected council in November 1966.

After some exploration of possible affiliations, the society agreed in July 1969 to become a daughter society of the Institute of Mechanical Engineers, and a secretariat was provided by the IMechE.

Presidential addresses

Professor R E D Bishop

The first annual dinner of the society was held on 24 February 1967 and a presidential address was given by Professor R E D Bishop, the first President of the society. In his address he noted that the exploratory committee had agreed that the purpose of the new society should be to promote and disseminate knowledge of acoustics which should be deemed to include all aspects of the science and technology of sound, hearing, and vibration. In other words, like Rayleigh, the society should pay no attention to artificial barriers

within the general fields of acoustics and certainly should not confine its attention to audible sound. Furthermore the promotion of acoustics would not entail the performance of a licensing function: the BAS - at least initially - would not be a professional body in the manner of engineering institutions.

The President noted that, in the absence of a regulatory function, the society would rely on scientific and technological interest to encourage young people to acquire membership. The importance of pushing ahead the programme of meetings was stressed and the possible inauguration of an invited lecture was proposed - possibly

a Rayleigh lecture with a person of distinction in some branch of acoustics invited to give a lecture and receive a suitable medal that would be struck by the society.

Clearly the society needed access to a published journal or it needed a journal of its own. Not only was there a need to convey information on the society's activities, but it was also to be expected that one method of promoting acoustics would be through the publication of new knowledge. The progress of *The Journal of Sound and Vibration* under the editorship of Mr (later Professor) Philip Doak was mentioned.

The President emphasised the necessity for the society to widen the range of engineering institutions with which it was in contact, and suggested that, besides its medical applications, the legal significance of noise would require acoustical advice to lawyers.

Referring back to the inaugural address given by A B Wood to the Acoustics Group in 1947, in which he drew attention to the role of the interpreter as distinct from the research worker, the President observed that since the BAS would be composed of architects, physicists, various kinds of engineers, doctors and so on, one of its particular aims should be to enable these groups of specialists to speak to each other as well as amongst themselves. The importance of scientific and technical lecturing in achieving this was emphasised and an appeal was made for improvements in this regard, as well as for new textbooks. Professor Bishop's presidential address may be read in full in *The Journal of Sound and Vibration* (1967) 5(3), pp509-514.

Dr E J Richards

In 1968 Professor Bishop completed his term of office and Dr E J Richards succeeded him as President. In his presidential lecture he described how technological advances over the previous generation had led to major growths in population and its mobility, increased power generation and its application in industry, increased personal earnings and the freedom to travel. The pollution of the environment arising from this growth had led to the expenditure of vast sums on the reduction of oil pollution of the sea, chemical pollution of rivers, air pollution and smog from petrol fumes, yet noise, the pollution of hearing, had received little attention from local or national authorities.

Dr Richards limited his address to commenting on the organisation of research and on the methods of legislation against noise. The problems of acoustic pollution lay primarily in the fields of physical acoustics, architectural and musical acoustics, vibration, subjective acoustics and speech, all topics which were inseparably interwoven and were the interests of the overwhelming majority of the society's members. Six general points emerged from the above arguments:

- Their importance was growing insidiously with industry becoming aware of the problem, firm by firm, with little apparent need for highly established acoustically qualified staff to deal with them
- The logarithmic nature of the units both minimised the apparent seriousness of the problem and maximised the difficulties of quick solutions. The fact that noise energy was such a small fraction of the energy used by the machine, and that vast improvements were needed for them to be noticed, implied a need for highly trained personnel with long experience to deal with the subject
- The solution must be introduced in the design stage of the noisy product rather than by the user later on. Firms could not be expected to do this unless their designers had at least a minimal knowledge of acoustics
- Research laboratories were not growing fast enough and neither engineering nor science students were being prepared for the new acoustical problems likely to arise in the normal course of their duties
- Legislation was not the answer unless it was backed up by the provision of the right personnel
- The need to do much about it would be minimised by government and industry until the problem stared the country in the face, or until foreign buyers of equipment enforced their noise requirements.

In real terms the Government laboratories were reducing their efforts on acoustics: material progress in a new field of study (in which the solution to each problem poses two more) called for a steady growth of research manpower. There was no sign of this happening at the National Physical Laboratory, at the Building Research Station or at the National Engineering Laboratory, even though plans for

such developments had been formulated in at least one of them. The difficulties of recruitment of suitable staff and the sharp freeze on growth in government science were both factors which were likely to preserve this situation in the foreseeable future.

Some growth was occurring in isolated industrial firms such as Rolls Royce, but other firms were showing considerable unwillingness to recruit personnel they felt to be highly specialised in a subject of peripheral interest to them and one in which the financial gain was not by any means clear.

In the light of all this, Dr Richards posed the question of what the universities' policy of education and training should be. Should they recognise the apparent lack of need judged by the lack of recruitment by government or industry, or should they (by virtue of their recognition of the importance of the problem) anticipate the need?

He thought the latter attitude was the right one on grounds both of need and good education. Acoustics as a practical subject was not just a study of the solutions of the wave equation by the latest mathematical techniques. For such education to be really useful, it had to include studies of electronic measurement, applied psychology and physiology, social science, structural theory, computer application, architectural engineering design, fluid mechanics, and mathematics. In these days of reaction to over-specialisation in undergraduate and postgraduate studies, acoustics stood out almost alone in its wide range of disciplines. We should shout this from the rooftops since the opposite was the generally held view, and we should recruit our students with the belief in mind that they were going to be widely and usefully trained for a whole range of occupations. Additionally, we should emphasise the value of acoustics as a broad undergraduate discipline to be included as part of specialist degree courses in any of the following subjects – engineering, architecture, medicine, electronics, mathematics, physiology, psychology, physics and aeronautics.

Where would the staff come from to do such teaching? There was a need for (say) three or four centres of excellence in the country's universities, well equipped with facilities and available to all universities in the area. Such units would be very much welcomed by industry, which was willing to spend money on its needs but unwilling to recruit its own staff. The Institute of Sound and Vibration Research at Southampton had, with great success, established a commercial unit concentrating on noise source studies and their effect on the neighbourhood, and there was ample scope for other similar ventures and for a growing professionalism to develop alongside university education.

Nationally, noise control measures had been disappointing both in the levels specified and in their enforcement. For aircraft noise, the levels specified had been based on the noise levels made by the worst quarter of piston-engined aircraft over John F Kennedy Airport in New York. Even though it was by then known that nuisance depended more on the number of aircraft, no reduction was being made in the limiting levels as the number of flights increased. Noise legislation regarding vehicle noise had failed both in the levels specified and in its enforcement. The specified levels were higher than those recommended by the Wilson Report (Dr Richards was a member of the Wilson Committee) and even though the committee had recommended a writing down of the specified levels after five years, by the time of his paper only five out of almost 100 UK police forces had ordered the noise meters recommended.

British Acoustical Society in operation

Membership

The categories of membership initially proposed for the society made special provision for young members. Applicants up to the age of 27 were to be admitted as Junior Members and pay a reduced subscription. Secondly, there were to be Sponsor Members composed of professional, industrial or public bodies engaged on, or having an interest in, acoustics or an allied field. Each was to nominate one representative for voting purposes.

Council later considered that the reduction in membership fees for Junior Members which had operated since the formation of the society was not necessary, and this grade was dropped. However, in order to satisfy the charitable status of the society, it was considered necessary to introduce a grade of membership (Associate or Associate Member) for those having an interest in the subject. The formal grades of membership were subsequently agreed to be Sponsor, Member, Associate and Student.

When formed, the society had 287 Members, 24 Junior Members, 32 Overseas Members, one Junior Overseas Member and nine Sponsor Members. Total numbers had increased to 408 in 1968 and continued to grow at roughly 7% per annum. By the 1970s, when the formation of the IOA was under discussion, there were 527.

Branches and groups

The BAS inherited a strong North East presence from the SAT and this was transformed into the first branch in 1968, centred in Newcastle-upon-Tyne. Council agreed that there should be a small subscription and a meeting charge if the branch felt this to be necessary. A representative of the branch was co-opted to Council; this was initially Dr W H Raine but his untimely death led to the nomination of B Berger.

In 1969 the Rayleigh Building was opened at the University of Southampton, with a visit for BAS Council members arranged by Professor Doak. With the growing acoustical representation in the region, a Southern branch was initially proposed by Professor Brian Clarkson and subsequently organised mainly by Professor Doak. Plans for additional branches in the North West and South Wales were left in abeyance with Council notifying interested parties that no action would be taken until they had put forward proposals to the Council. By 1970 an existing Scottish group for noise control was invited to amalgamate with the society and to become the Scottish branch; however, after closer examination, it was considered that the group was incompatible with the aims of the BAS. In January 1970 it was proposed that specialist groups should also be formed, but no further action was taken as the number of members was thought too small.

However, in 1971 Professor Doak reported that he had discussed the setting up of an aerodynamic noise group with Dr Fisher and Dr Lowson of Loughborough University. Dr Lowson submitted a paper to Council on proposals to set up a junior aeronautical noise colloquium, to hold quarterly meetings: support for this group was agreed at a later meeting. The chairman of the group was to be co-opted to Council but support stopped short of financial help to those attending meetings, though some contributions were made to the administrative costs. A case was put forward for closed sessions to discuss the work, and overnight arrangements to allow discussion. It was finally agreed that meetings could be by invitation only, with the provision that invitations could be applied for. A provisional committee would be set up to draft a constitution: the group would be recognised within the society and routine secretarial help would be forthcoming, all meetings should be self-supporting but proceedings would not be published, and an annual report would be provided to the society. Dr Fisher, chairman of the group, was co-opted to Council.

Medals

The Rayleigh Medal was proposed and its funding, design and supply actively pursued during the period 1967-69. This medal was to be awarded to a British acoustician and an international recipient in alternate years. A silver medal (later renamed the Tyndall Medal) was instituted in 1970, to be awarded for outstanding work by a UK acoustician 40 years of age or younger. The medals presented in each year were to be displayed at the annual dinner.

Pre-IOA Rayleigh Medal and Silver (Tyndall) Medal recipients		
Year	Rayleigh medallist	Silver medallist
1969	Prof Meyer	
1970	Dr R W B Stephens	David E Weston
1971	Prof S S Stevens	
1972	Prof R E D Bishop	Christopher L Morfey
1973		Michael J T Smith

Papers presented by the medal recipients were printed in the Proceedings of the BAS.

Education

It was agreed that the terms of reference of the committee should be to examine the scope and availability of education and careers in acoustics and to advise on these, specifically in regard to sixth-form students, but also their teachers, and to provide annual lectures suitable for these students. A programme of sixth-form lectures was introduced in 1971 with talks by two members at two or three locations each year. Aggregate attendance in the first year was estimated to have been 1,150 at lectures in Birmingham, Bradford and London. In the second year lectures were organised in Newcastle, Salford and Surrey with attendances rising to 1,700. Funding for the lectures was sought from local education authorities but this was not forthcoming, so the society funded the lectures – but charged for drinks!

A brochure listing education and careers opportunities in acoustics was prepared based on the replies to a questionnaire circulated to educational establishments. A first edition of 500 copies was printed and efforts were made to improve the coverage of the brochure by an additional circulation of more questionnaires.

Publication

The British Acoustical Society had a special relationship with *The Journal of Sound and Vibration* under which:

- The publishers offered a special reduced personal subscription rate available only to BAS members
- The Journal undertook to publish bi-monthly, without charge, a BAS News section including programme announcements, reports on meetings and other news of interest as supplied by the society
- The Journal undertook to publish, with footnote acknowledgements to the BAS, full written versions of papers presented at BAS meetings, subject to favourable reports from two referees, one of whom was to be the meeting organiser.

Historically, the BAS took the initiative in offering, and conferring, its special recognition of the Journal; the concessions and services offered by the Journal were in return for this recognition. The first issue of the JSV in January 1964 slightly preceded the establishment of the BAS but several years elapsed before the special recognition was conferred.

In 1969 Academic Press agreed to publish the full proceedings of a conference on Occupational Hearing Loss arranged by NPL, to be called *Special Volume No 1*. Academic Press also agreed that the society could either opt for special publication of similar proceedings or for their incorporation in a special issue of JSV. A library service was to be set up for such proceedings within the daughter society scheme.

International Congress of Acoustics

In 1968 it was noted at a BAS Council meeting that Dr Douglas Robinson had received an invitation to organise the eighth International Congress of Acoustics in London. It was agreed that an exercise should be launched to see what financial assistance could be raised, with the Royal Society as the first contact: Dr Richards and Dr Robinson would make the approach. However, in July that year it was noted that the IoP had also approached the Royal Society through the National Committee for Physics with a view to obtaining the financial support that would be needed to arrange the Congress. The President had therefore himself notified the Royal Society that the BAS also wished to obtain support for the same purpose and that the BAS felt itself better equipped (through its membership) to act as the British host. The Royal Society had agreed to call a meeting of interested parties. Council agreed that BAS representatives at such a meeting should bear in mind the magnitude of the task of arranging an ICA. The BAS was felt to be the only British body that was reasonably capable of taking on the job and it could not afford to run the risk inherent in a divided responsibility. However, the BAS realised there were other interested bodies in the UK which might wish to help under the general guidance of the BAS.

An organising committee was formed which decided upon Imperial College London as the venue. Dr Richards was elected as the President of the organising committee. Accommodation was to be provided at halls of residence including those at Imperial College and Queen Elizabeth College with the Imperial College lecture halls and the Great Hall used for the presentation of papers. The opening ceremony would be in the Royal Festival Hall. Supporting symposia at Southampton, Lancaster and Birmingham were proposed.

It was suggested that the secretariat should be drawn from conference staff at the University of Southampton, the IMechE having

previously been proposed. Budgetary doubts meant that an order could not be placed with a professional conference organisation company and discussions with the Acoustics group recommenced to see if joint organisation by the two bodies was possible. It was decided that it was, provided the budget was balanced by the exclusion or modification of some items of expenditure and that the IoP conference staff undertook the organisation. The IoP Council had already given its agreement to joint organisation on these terms, but some within the BAS still favoured a sole approach.

Discussion between Professor Tucker and the IoP led to a new, reduced budget which could be increased if more money became available. He warned that if sole responsibility for the ICA by the BAS were pursued, individuals would have to take up specific tasks in the organisation and he recommended that joint organisation with the IoP should be approved: Council agreed.

In June 1971 it was reported that the organising committee had agreed that the ICA would be sponsored jointly by the Institute of Physics and the British Acoustical Society. The Institute had undertaken to handle the administration work for the Congress.

The Chairman was authorised to continue discussions with the IoP in regard to the possibility of the unification of the Acoustics Group and the British Acoustical Society.

Previous ICAs had been held at:

1. Delft, The Netherlands	1953
2. Cambridge, Massachusetts, USA	1956
3. Stuttgart, Germany	1959
4. Copenhagen, Denmark	1962
5. Liege, Belgium	1965
6. Tokyo, Japan	1968
7. Budapest, Hungary	1971

IOA preliminaries

The proposal that the UK should host the eighth ICA in 1974 had provided the stimulus for a reconsideration of the state of acoustics in the UK and the birth of a new organisation although the gestation period was extended, lasting from about 1968 until 1974. The formation of the BAS had been a major step forward but, in reality, was not a sufficiently large step. Eventually a working party representing the Acoustics group of the IoP and the BAS was formed in July 1971. In May 1973 this became the preparatory committee and then the provisional Council of the IOA which held its first meeting on 29 September that year. On 1 January 1974 this body became the Council of the IOA.

The Royal Society had called a meeting of the interested parties in January 1969 and set up an organising committee under the chairmanship of Dr M J Lighthill (Physical Secretary of the Royal Society). There were to be four representatives from the BAS, three from the IoP, and one each from three other bodies (NCTAAM, NCPAAP and BSA). Professor Tucker, Dr Richards, Dr Clarkson and Dr Robinson were nominated as the BAS representatives while Professor Dobbs, Dr Delaney and Dr Knight represented the Acoustics Group. After some discussion it was agreed that the RIBA should ask the Royal Society for additional representation with Bill Allen as the nominated representative.

At a meeting between Professor Tucker (vice-president of BAS) and Professor Dobbs (chairman of the Acoustics Group) held on 13 June 1969 three points were discussed:

- The BAS proposed the union of the Acoustics Group and the BAS into a single British Acoustical organisation, but Professor Dobbs said as this would imply the dissolution of the former, in his view neither the IoP nor the physicists he knew would be in favour
- Professor Dobbs proposed a United Kingdom Acoustics Council (UKAC) drawing its membership from IoP, BAS, BSA, RIBA and other interested parties, and Professor Tucker was in favour of exploring this proposal
- An exchange of representatives on programme committees would be helpful.

These proposals were subsequently accepted by the Acoustics Group committee but rejected by the BAS. The group notified several other

bodies of the UKAC proposal, and some expressed interest or gave approval: IMechE (interested); IEE (under consideration); Society of Environmental Engineering (approved); NDT Society (interested); RIBA (acknowledged); IERE (felt that BAS already served that function); BSA (interested, with reservations on internal role). The British Society of Rheology did not respond.

In March 1970 Dr E J Richards in his position as President of the BAS wrote to all the organisations previously contacted by the Acoustics Group, strongly ruling out UKAC. By September replies had been received from RIBA and IEE discouraging the proposal and it was agreed to drop it for the present. The group considered that events had shown that the BAS was not fulfilling the role it was set up to do and thought that its new Council might make it more of a co-ordinating body.

It should be noted that although the initial stimulus for the exploratory committee had come from the Acoustics Group, its committee remained uncertain as to whether the BAS would provide the service its members wanted and proposed to continue to operate independently, for a few years at least, as would some other existing societies. Meanwhile, acoustical activities throughout Britain would be fully coordinated by a British Committee for Acoustics originally formed by the BAS. Council of the IP&PS confirmed in 1965 that it would not dissolve the Acoustics Group without the consent of a substantial majority of members who were full members of the Institute and society, and it circulated a questionnaire. The Acoustics Group, for its part, asked that a small acoustics group should remain in the Physical Society to consider matters of pure physics in the acoustics field, particularly in ultrasonics.

A joint working group was set up between the Acoustics Group, IoP, and the British Acoustical Society, under the chairmanship of Dr R W B Stephens, and made up of Dr M E Delany, Dr J J Knight and Professor Dobbs (Acoustics Group), Professor P E Doak, Professor D G Tucker and A N Burd (BAS), and R P Itter (IoP) acting as secretary. During the first meeting the chairman described the purpose and background to the meeting, dealing with the setting up of the BAS, the relative strengths of the two organisations, and the broad pattern of meetings. It was noted that the publications supported by the two

organisations were largely complementary in content, and that both enjoyed world recognition. Acoustics Group membership was largely scientific, while that of the BAS was engineering, and there had been a lack of cooperation between scientists and engineers. The distribution of interests was not reflected in their programmes, and, in fact, the two bodies catered for different aspects of similar subjects: this was the reason for their continued separate existence. However, the outlook of the IP&PS had broadened recently since the advent of a new secretary and the Institute was now quite receptive to and even encouraged the applied physics side. Moreover, the training of engineers had moved away from empiricism towards physical understanding, becoming more broadly based with the inclusion of physics and mathematics. Circumstances were believed more favourable than ever for collaboration between scientists and engineers.

It was agreed to concentrate on the unification of the IoP Acoustics Group and the BAS rather than the possibility of a closer knit with other groups of acoustical interest, such as the British Society of Audiology, which, some thought, would have little prospect of success.

It was agreed that the main advantages that would accrue from unification were:

- Acousticians from overseas would deal with only one body, which would represent the interests of acoustics in Britain as a whole, and consequently would have greater prestige
- Overlapping meetings dealing with the same or similar topics would be avoided, so giving rise to larger attendances and in most cases a higher quality of lectures
- The building up of groups and branches over the country, because existing IP&PS branches might prove useful nuclei.

The general background having been agreed, it was felt that there could be little progress without a factual statement of the likely numbers of members, the interests and strengths of such members, and their geographical distribution. The chairman and secretary agreed to prepare such a statement before the next meeting.

The second meeting of the working group was presented with

a document summarising the status of the two bodies (BAS – independent, charitable status; Acoustics Group – specialist group bound by the Royal Charter and by-laws of the IoP). The professional qualifications required of members differed (BAS – none; Acoustics Group – Fellows and Members of IOP only). Also set out were the aims and objects of the group and society; membership grades, subscriptions and numbers in each grade; the geographical distribution of members, and details of the finances and administration of both organisations.

Following a wide-ranging discussion it was felt that sufficient points of agreement had been reached to progress towards a consideration of details. The chairman was requested to compile a set of rules for the suggested new body, Dr Cohen (executive secretary of the IoP) was requested to attend to present the views of the IoP, and the treasurers of the two bodies were asked to consider the finances and to attend the next meeting.

The paper prepared by the chairman for presentation at the next meeting of the working group set out various possible formats a new Institute of Acoustics could take. It could be expected to lead to an enlarged body because the overlap of the current membership was less than 10%. The amalgamation would lead to a more rationalised programme of meetings, and the publication of abstracts and “brieflets” (which in the case of the British Society of Rheology had proved a source of income) could continue. The running of the Institute on a voluntary basis would lead to low fees but it was felt that the committee would prefer to operate as a daughter society of the IoP paying for the service, so possible ways of increasing the financial income were suggested.

The BAS and the Acoustics Group of the IoP were agreed in principle to merge to form one body, operating as a daughter society of the IoP. The task of the working group was now to put together a package of proposals for consideration by both bodies. Various types of publication were considered but it was agreed that the question, and that of awarding professional qualifications, should be deferred.

Articles of Association

The 15-page Articles of Association, a legal document, were drawn up and presented to the preparatory committee in June 1973, and in September 1973 the preparatory committee became the provisional Council of the Institute of Acoustics. A joint meetings committee of BAS and Acoustics Group members had drawn up a programme up to the date of the eighth ICA, and it was agreed that this joint committee would become the meetings committee of the new Institute for the first year with Mr Waller as chairman. The chairmen of the BAS branches in the North East and Southern areas were co-opted

to Council. The draft Memorandum and Articles of Association were approved by the Charity Commissioners and the Chief Inspector of Taxes, and the organisation of the ICA became the joint responsibility of the IOA and the IOP.

The working group noted that IoP had approved the dissolution of the Acoustics Group on the formation of the IOA, and the BAS membership would formally approve the winding up of the Society at their AGM in November 1973.

The IOA came into existence on 1 January 1974.

Postscript

Much later, in 1976, Bill Allen was to be elected President of the IOA and he recalled the formation of the Acoustics group in his President's Letter.

Dear Member

The Institute of Acoustics is now in its third year of existence but it is built upon two previous generations. At a time when the Institute is entering a period of intensive development, in which the present and future must command full attention, it is appropriate to slip a brief reminder of the past into the record.

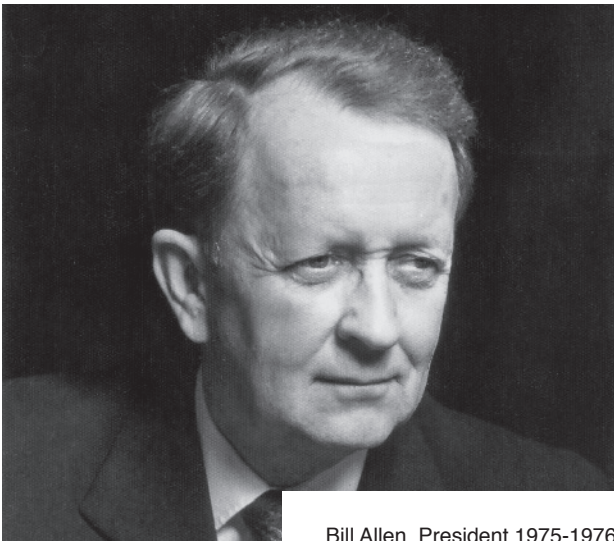
The first move was initiated by A T Pickles and myself. He had directed underwater defence research during the war and had come to Building Research Station as Head of Architectural Physics whilst I was his deputy, justifying the “architectural” part of the Division's title. Together we convened a group which included radio technology, musical acoustics, audiology and other major subject areas and in 1947 the Acoustics Group of the Physical Society was born. Alexander Wood from Cambridge gave the inaugural address and Per Brüel (just

then beginning his famous instrument firm) was an early speaker, as was Erwin Meyer. In due course the Physical Society merged with the Institute of Physics and the Acoustics Group went with it. During the 1960s the social and technological importance of acoustics rapidly expanded and the British Acoustical Society was formed. For a number of years the Acoustics Group and the BAS coexisted but it became apparent that the division was hampering the growth of acoustics in the United Kingdom; eventually a marriage was arranged and in 1974 our Institute was formed. And here we stand, approaching now 1,000 members, not as large as our American counterpart but comparable perhaps with the Japanese, and growing steadily in size and influence.

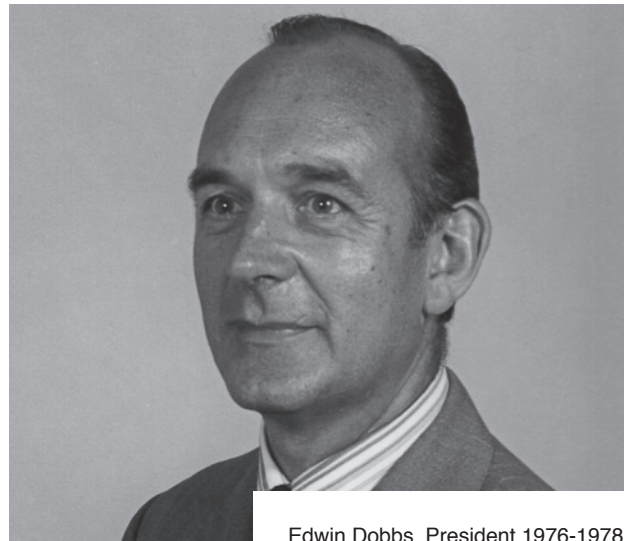
William Allen



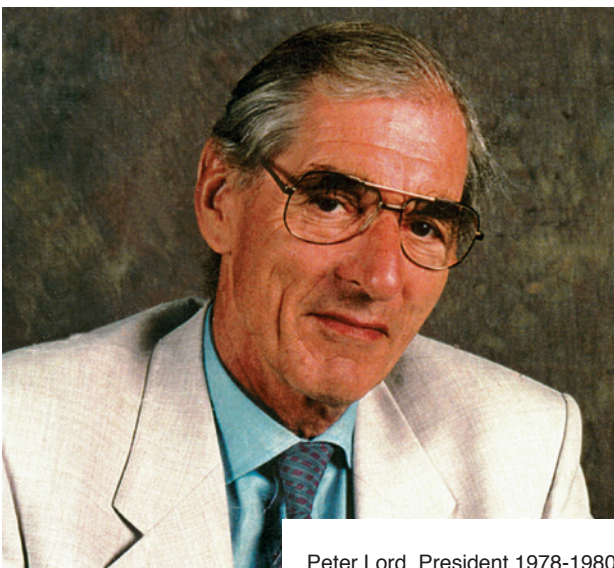
RWB Stephens (right), President 1974-1975, with Leo Beranek



Bill Allen, President 1975-1976



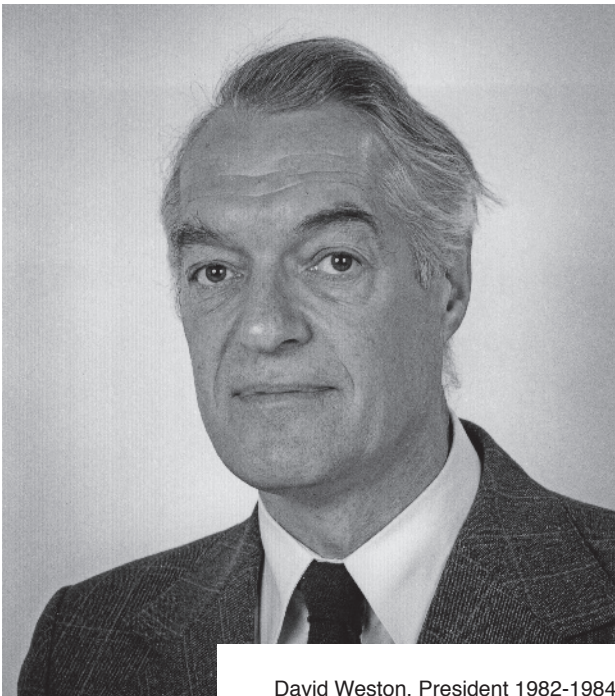
Edwin Dobbs, President 1976-1978



Peter Lord, President 1978-1980



Mrs AB Wood receives flowers from Brian Clarkson, President 1980-1982, after presenting medals at the 1980 Autumn Conference, Windermere



David Weston, President 1982-1984



Geoff Leventhall (left),
President 1984-1986, with Per Brüel



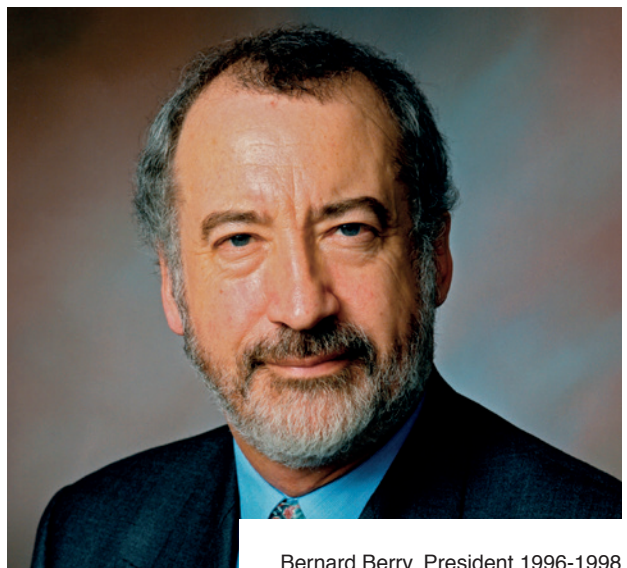
Chris Rice, President 1988-90, with Cathy Mackenzie,
Executive Secretary, at Acoustics 89



Peter Wheeler, President 1992-1994,
addresses an Institute meeting



Alex Burd (left), President 1994-1996,
presents the AB Wood Medal to MD Collins



Bernard Berry, President 1996-1998



Ian Campbell (left), President 1998-2000, hands over the President's medal to Mark Tatham, President 2000-2002



Geoff Kerry (left), President 2002-2004, with Ian Bennett, Acoustics Bulletin Editor 2001-2011



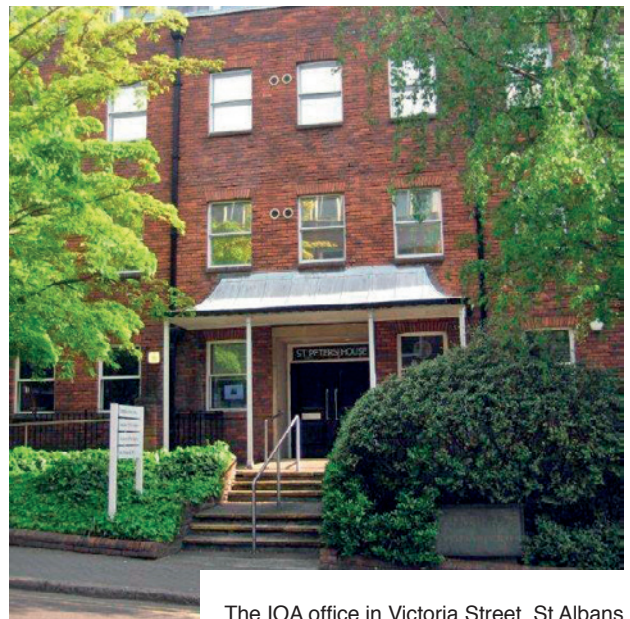
Trevor Cox (right), President 2010-2012, with Jerry Tobias at IC BEN 2011



Bridget Shield, President 2012-2014, presents an Honorary Fellowship to former Chief Executive Roy Bratby



The IOA office in Holywell Hill, St Albans



The IOA office in Victoria Street, St Albans

Forty years of the IOA

Forty years of the IOA through Council ears

Tony Jones

The Memorandum of Association establishes the name of the organisation as the Institute of Acoustics Limited, and the object as “To promote and advance the art, science and technology of acoustics in all their aspects”.

Details of the membership and governance of the Institute are set out in the Articles of Association. The affairs of the Institute of Acoustics are managed by Council, consisting of the Honorary Officers together with nine Ordinary Members. The Honorary Officers are the President, the President-elect, the Immediate Past President, the Honorary Secretary, the Honorary Treasurer and up to three Vice-presidents. The President presents the public face of the Institute and establishes the priorities for action, and chairs Council meetings, the Medals and Awards Committee, and (now) the Executive Committee. The Honorary Secretary assists in organisational matters including overseeing the arrangements for general meetings and the annual report, the preparation of Council minutes, and the preparation of citations for recipients of medals and awards. The Honorary Treasurer supervises the finances of the Institute, presenting budgets and forecasts. There can be up to three Vice-presidents: initially only one of these had a defined remit to supervise and co-ordinate groups and branches, but latterly the other two have had responsibility for international matters and the Engineering division. Collectively, Council members are trustees of the Institute of Acoustics which is a registered charity.

Council oversees several standing committees which are responsible for much of the business of the Institute. The traditional subjects covered by standing committees are Membership, Education, Publications, Meetings, and Medals and Awards. Other standing committees have been created over the years and the chairmen of all current standing committees are invited to attend and participate in discussions at Council meetings.

Much of Council’s routine work is to receive and evaluate reports from the standing committees, and to formulate new policies and initiatives. Council carries the responsibility for the financial wellbeing of the Institute and safeguarding its assets, and for executing the mandated tasks set out in the Memorandum and Articles. The latter include the preparation of an annual report and accounts, and ensuring that Council nominations and elections are held with a view to achieving a representative balance of the interests of the membership at large. The membership is given the opportunity to scrutinise and vote on Council’s actions at the Annual General Meeting. When Council wishes to make changes to the Institute’s operations entailing changes to the Articles and/or By-laws then these proposals have to be submitted to the membership either at the Annual General Meeting or at a specially-convened Extraordinary General Meeting.

Typically Council meets four times a year, and at every meeting reports are received from the President, the Honorary Treasurer, each of the standing committees, the Vice-presidents and the Chief Executive. Other topical subjects are added to the agenda. The scheduling of the standing committee meetings is such that their reports can be submitted in a timely fashion to the quarterly Council meetings. Since its formation in 1989, the Executive Committee

has convened ahead of each Council meeting to review current activities with a view to direct and expedite the Council proceedings. At every Council meeting the Membership Committee seeks approval of its recommendations for new members following its assessment of the applications received in the preceding quarter. The Education Committee is responsible for the teaching syllabuses for the Institute’s courses and for accrediting teaching centres, reports to Council on the number of candidates registering for the Diploma and the other Certificate courses, and as the academic year unfolds, reports on examination results. The Meetings Committee sets out the annual programme and reports on the progress of the organising committees and the outcomes of individual meetings. The Publications Committee’s remit has developed over the years to include electronic publications, including the website, in addition to the longstanding commitment to the production of *Acoustics Bulletin* and other printed publications. Nominations for the Institute’s range of awards are processed by the Medals and Awards Committee, which presents its recommendations to Council. Towards the year end, future budgets including the setting of the following year’s membership subscriptions are finalised and across the year end Council is involved with the preparation and authorisation of the annual report and accounts for the year just ended, as well as arranging nominations for impending Council vacancies. These activities are continuous and time-consuming, and provide the largely unreported backdrop to this account.

As will be seen in this brief history over four decades, Council has the right to form new sub-committees in response to current requirements. From time to time, unexpected events interrupt the progressive path of development and dictate the need for Council to react accordingly.

As is the case with all the Institute’s committees, the Honorary Officers and Council members carry out their duties voluntarily, receiving no remuneration for the substantial time involvement other than the satisfaction of serving the interests of the Institute. No account of the Institute’s activities could reasonably omit an appreciation for the efforts expended by all members of Council and other committees over the last forty years.

The Institute’s history is one of several overlapping phases: the early period of formation and establishment of the membership base, the long road to financial stability whilst expanding the membership and services, and an ongoing period of extending the Institute’s role and influence. The history below was narrated by a succession of Honorary Secretaries in Council minutes.

Before 1974

It is well documented that the Institute of Acoustics started life in 1974, following the amalgamation of the Acoustics Group of the Institute of Physics (IoP) and the British Acoustical Society (BAS). The IoP Acoustics Group was the longer established partner, tracing its existence back to 1947, whilst the BAS was set up in 1966 having developed from the Society of Acoustic Technology formed in 1963. This was essentially a marriage of the scientifically based and

the practitioner based acoustics fraternities and, although having some members in common, there was a potential membership of more than 1,000. A significant backdrop was the growing interest in noise following the publication in 1963 of the Report on the Problem of Noise (by the Wilson Committee), and publications by the Noise Advisory Council. The specific catalyst for the creation of the Institute of Acoustics was the need for a professional body to act as the secretariat for the Eighth International Congress on Acoustics to be held at Imperial College in July 1974.

1974-75

There was a period of negotiations between the BAS and the IoP's Acoustics Group, and a joint meetings programme took place in 1973. One of the members of both formative bodies was Dr R W B Stephens who, along with other prominent acousticians, brought about the merger of the two societies. He was chosen to serve as the first President of the Council for 1974-75. In 1974, as well as involvement with the administration of the Eighth ICA, attention was paid to constituting the Institute's committee structure and the founders were able to draw heavily on the BAS's existing setup. The Institute sought and was granted charitable status, and policies were being developed regarding groups and branches. The early Southern and North Eastern Branches were inherited from the BAS, and early groups included the existing Aerodynamic Noise Group, with Underwater Acoustics and Musical Acoustics Groups under construction. Responsibility was assumed for the award of the Rayleigh, Tyndall and A B Wood Medals. A newsletter and a careers booklet were organised, and arrangements to continue the BAS's very successful series of sixth-form lectures were in place. A committee was created for the purpose of submitting consultation comments on the Control of Pollution Act. By-laws were being drafted, the Company Seal was approved, and during the Institute's Spring Conference which covered noise sources, ultrasonics, concert hall acoustics and speech intelligibility, the first annual general meeting took place on 26 March 1975. Dr Stephens retired as the inaugural President and was awarded Honorary Membership of the fledgling Institute.

In this early period the Institute operated from an office at the IoP, which also provided a financial subsidy. Council meetings were also held at the IoP. By the end of 1974, which was a period of inflation, the running costs of the Institute were monitored by Council and the themes that were to become familiar over the coming decades, of seeking to increase membership and attracting sponsoring organisations, were voiced. At the time of the first annual report in 1975 there were about 700 full members, which although encouraging, fell rather short of the combined total of the parent organisations. It was agreed when setting up the amalgamated Institute that the professional status of members should be kept under review, and in 1975 the Membership Committee was given the task of preparing recommendations for re-grading the membership, revising registration procedures and consequently redrafting the Memorandum and Articles of Association. There were three early newsletter issues during 1974-75 and Council approved the Publications Committee's recommendation that they would be supplanted in 1976 by a quarterly publication entitled *Acoustics Bulletin*, the first issue appearing in April. Approved publications also included an acoustics yearbook, four-page summaries of papers at meetings comprising Institute Proceedings, and special volumes from time to time. The new Institute continued with the organisation of Spring and Autumn conferences, which the BAS had hitherto organised. On the international front, the Institute was affiliated with the International Commission on Acoustics (ICA), which had the objective of advancing the science of acoustics throughout the world, and the Federation of Acoustical Societies of Europe (FASE), a loose federation of national societies each with the aim of furthering acoustics in their own countries.

1976

The Institute of Acoustics was invited to join the International Institute of Noise Control Engineering (I-INCE), a subsidiary of the Institute of Noise Control Engineers, the main function of which appeared to be the organisation of the biennial Inter-Noise conferences. Council declined to join I-INCE at least for the time being, though it would offer its full co-operation with I-INCE whenever appropriate.

Council examined proposals to restructure the Institute as a professional qualifying body and agreed a timetable set up by the Membership Committee to put to an EGM its proposals for membership re-grading. Having consulted with the membership about the desirability of establishing the professional grades of Fellow and Member of the Institute of Acoustics, and following Council's approval of revised Articles of Association, the EGM on 18 August 1976 approved the revisions with transitional arrangements for the existing membership. Incidentally, the records show that only three members attended this meeting, which itself was a re-run of an inquorate meeting the previous week. There was, however, a substantial vote in favour from the numerous postal votes. From January 1977 the 117 Fellows and 276 Members became entitled to use the letters FIOA and MIOA respectively after their names. This represented a transfer of almost half of the Institute's membership to the new professional (corporate) grades. The non-corporate grades were Associate and Student. There was also a sponsor member grade.

Council provisionally agreed to a recommendation by the Education committee that the Institute should establish a Diploma in noise control, and a working group was convened to draw up a proposed syllabus and make recommendations for its organisation and administration.

Membership was sought of the Parliamentary and Scientific Committee, a non-party body formed in 1939 with the object of providing a permanent liaison between scientific bodies and Parliament so that the latter should have proper regard for the importance of scientific methods in relation to public affairs.

By the end of 1976, Council had agreed to the formation of several new groups: Musical Acoustics, Speech, Underwater Acoustics, Physical Acoustics, Building Acoustics, and Industrial Noise. All groups were offered similar new constitutions to take into account the changes in the Articles due for ratification in 1977. Council specified that AGMs of branches and groups should be held at least 30 days before the Institute's AGM.

1977

At its meeting in January Council welcomed the proposals for a Diploma in acoustics and noise control put before it by the Education Committee's working group. It was agreed that the possession of this Diploma would satisfy the academic requirements of the Institute for its corporate membership in the grade of MIOA, although experience and other factors would also be taken into account.

Support for Institute meetings prompted Council to seek a closer involvement of the groups and branches in the planning of Institute activities, by involving appropriate representation on the Meetings Committee and seeking assistance from the groups in organising sections of the spring and autumn conferences in rotation.

An analysis of the Institute's finances indicated that economy measures had become necessary to secure its future wellbeing. Reductions in the management fees from the IoP were sought, and projected savings were made by giving up some of the services during 1977. To save publication costs it was decided that no further action would be taken for the time being on the careers booklet and yearbook.

There was thought to be merit in the idea that as the Education Committee's primary activity was Diploma-related, the Diploma board should report directly to Council, and the Education Committee's other business be transferred to other committees: for example the Publications Committee would assume responsibility for educational publications.

Representatives of each group and branch were invited to attend the 7 October meeting to help Council act in the best interests of all members. One focus of this discussion was the relationship between Council, branches and groups, and the importance of the dissemination of information. A discussion of the various points arising from this open session included agreement that Council minutes would be communicated to group and branch committees; groups were invited to submit nominations for Council membership; and the Meetings Committee would apportion central and group responsibility for budgeting for group meetings when held on behalf of the whole membership. General approval was expressed for the idea of an annual open meeting of Council.

1978

Negotiations with the IoP resulted in a reduction of the requested £10,000 management fee to £7,500 for 1978, with the IOA still enjoying free office accommodation. Despite the evident concern about the need to control expenditure, Council decided not to increase membership fees, hoping that inflation would not make their financial predictions overconfident. As time would prove, this was optimistic.

It was agreed that applications for non-corporate membership grades could be approved by the chairman and secretary of the Membership Committee. The inaugural Diploma course in acoustics and noise control was run, and satisfaction was expressed about the high level of success in the first examination. There was a successful FASE conference in November, at which the FASE Council showed a great deal of interest in the Diploma. Enthusiastic members in the capital started the London evening meetings with a programme of topical subjects.

Council instructed the Membership Committee to consider membership recruitment and looked into the possibility of setting up further groups, in particular a Structural Dynamics group. The Education Committee was wound up and its various responsibilities assumed by the Diploma board and the Publications Committee. Terms of reference of the standing committees (Meetings, Membership, Publications, Diploma advisory board, Diploma examination board, Medals and Awards) were clarified and expanded. The booklet *Careers in Acoustics* was published.

Specialist group activities were generally gathering momentum, except for the Physical Acoustics Group and the Aerodynamic Noise Group, which was entering a period of dormancy. Despite two successful physical acoustics meetings a perceived lack of interest prompted several key members of the committee to give notice of their resignation and call an emergency general meeting to discuss the situation. Unfortunately, no-one other than the committee members turned up so the group was left without a chairman or honorary secretary.

1979

The service charges from the IoP rose progressively during the Institute's formative years and through economic necessity the Institute could no longer afford the secretarial services provided by the Institute of Physics. The Institute's serious financial position was exacerbated by some members' subscription defaults.

Council invited proposals from interested parties to take on the full secretariat services and, after due consideration, appointed Cathy Mackenzie Management Services (CMMS) to fulfil the function, with Cathy herself as Executive Secretary. The new headquarters office was based at, and received generous rental terms from, Heriot-Watt University in Edinburgh. As many members of the Institute will know from personal experience, this appointment was to shape the distinctive style of Institute activities over the next two decades.

The deteriorating financial situation caused Council reluctantly to decide to approve a retrospective increase in membership subscriptions for 1979 along with a request to the membership to pay the following year's subscription in advance. Final notices were issued to members in default. An EGM was convened at the Autumn Conference to discuss the Institute's financial problems. As a result of a spending review, expenditure on publications, the largest single item in the running costs of the Institute, needed to be constrained and the Proceedings which were communicated to all members would in future be restricted to pre-prints for those attending meetings. It was decided that abstracts would be printed in *Acoustics Bulletin*.

The new secretariat established its credentials by providing support for the Honorary Treasurer's task of re-establishing the Institute on a sound financial and administrative basis, and included an extensive reorganisation of the Institute's membership records.

Council approved in principle the publication of a professional register of consultants, manufacturers and agents in the field of acoustics, and also agreed that the Institute should now join I-INCE: it was invited to host the 1983 Inter-Noise conference. The year had thus seen a re-charting of the financial course of the Institute, but in order to achieve a sustainable future the fundamental need to increase member numbers remained.

1980

Council delegated a small sub-group to propose future IOA policy on regional branches and specialist groups, including reference to improvements, organisation and funding.

Being conscious of the funding issues, Council agreed that annual membership fees should in future be increased approximately in line with inflation, although retired members would enjoy reduced rates for meetings and subscriptions.

In the publications field a *Professional Register of Consultants* appeared. The Diploma continued to attract much interest with 102 successful from a field of 163 candidates. By 1980 there were 12 approved teaching centres, and a new module in vibration control was added during the year.

Council discussed the report of the working party on groups and branches and accepted the main recommendation that every effort should be made to encourage group and branch activities, with a long term aim of having an active branch within reach of every member. The sub-committee was asked to give further consideration to its recommendations, and to report back to Council during 1981. In the meantime, it was agreed to create the role of Vice-president with special responsibilities for the encouragement of branches. Despite gloomy national financial difficulties, the meetings and conference programme achieved a high level of support.

1981

Council continued to consider the development of a coherent policy regarding groups and branches with a view to bringing the Institute to its members, encouraging new members to join the Institute and having a say in the development of the Institute. A model set of rules was published, and new branches in the South West, North West and Yorkshire and Humberside were established. Council agreed that in future, branch representatives would meet to nominate a Vice-president having responsibilities for groups and branches who would have to be approved by Council.

Financial considerations remained high on Council's agenda, one of the economy measures being to hold over the business scheduled for the June meeting to the October one in order to save expenditure. The financial situation, whilst still serious, was now showing signs of improvement as a result of the steps that were taken during the previous year or so.

The meetings programme continued although there was a noticeable reduction in the number of attendees, particularly at one-day conferences. This was attributed to the national economic circumstances. *Acoustics Bulletin* continued to serve its purpose of informing the membership of Institute activities as well as carrying articles of general interest, abstracts and reports of meetings. Advertising revenue was now offsetting the cost of publication. A proposal to publish a *Journal of the Institute of Acoustics* was judged impracticable in the economic climate, although the idea was not abandoned. The Institute joined the Association of Learned and Professional Society Publishers, which facilitated the worldwide advertising of meetings.

The Diploma scheme continued to be very successful, and two new colleges were approved to run the Diploma course. Council accepted a recommendation that the Diploma advisory board should be renamed the Education Committee, and that its terms of reference should be widened to include all education related to acoustics as it related to the Institute's responsibilities and activities. These would include, for example, the sixth-form lectures which were expected to be revived during 1982.

The Noise Advisory Council met its end in 1981 as a result of government cuts. This caused much concern, and Council took upon itself the organisation of a group similar to the NAC which could study current matters of importance, keep an eye on the developing legislation and act as a scientific body to comment on proposals and standards. This new group within the Institute would invite representatives of outside bodies to meet at the 1982 Spring Conference.

It was noted that the Industrial Noise and Aerodynamic Noise Groups were showing signs of decline, whilst the London evening meetings had enjoyed another successful year of topical discussions.

1982

A constitution for the Hong Kong Branch was agreed: the Institute's first overseas branch was authorised by Council, and enjoyed its first meeting in July. The Hong Kong Polytechnic's course in noise and vibration control was accepted as meeting the standard required for corporate membership of the Institute.

Council agreed in principle to institute a named lecture to be known as the Stephens Lecture to honour the Institute's founder President who had recently celebrated his 80th birthday. Dr Stephens retired as chief examiner at the end of the 1982 session, having undertaken these duties from the inception of the Diploma in 1977.

Council requested that the Membership Committee should look into the possibility of establishing the ultimate qualification of Chartered status. It also set up a joint working party with the Association of Noise Consultants to look into the possible introduction of a post-Diploma qualification.

Council's decision in 1981 to form an advisory group to resume the functions of the defunct Noise Advisory Council was given impetus by a request from the Royal Commission on Environmental Pollution for a new report on all aspects of environmental pollution. Council accepted the advisory group's proposal to establish the "Noise Council", an independent body that would study noise problems and produce recommendations and comment on proposed noise legislation and standards. Care was to be taken that this would not be a political lobby group but would gather a well-respected and authoritative membership.

Following proposals from the Publications Committee, Council agreed amendments to the IOA publications policy with the ultimate aim that the Proceedings should constitute an archival publication of the Institute. From January 1983, the maximum length of papers would be extended to eight pages and the pagination and numbering of the papers would be re-ordered to form Parts of integrated annual Volumes.

During the year, the Institute was accepted as an Associate Member of the Council for Science and Technology Institutes (CSTI), a body of smaller eminent learned societies with the aims of publicising the role of science in society and communicating with government, industry, and other important bodies such as the Royal Society and the Engineering Council (EC).

Council was pleased to acknowledge the improved financial and organisational stability since headquarters had relocated to Edinburgh. The Membership Committee noted that the rate of increase in membership was slowing with a disturbing increase in the number of lapsed members. It was also noted that several Diploma candidates had not renewed their membership following their free membership year whilst studying.

Council approved a proposal to carry out a remuneration survey of the Institute's membership. An appointments sheet service was created for Situations Vacant and Wanted, to be mailed loose-leaf approximately monthly.

A meeting of representatives of groups and branches was held towards the end of 1982 at which it was agreed to introduce a number of measures to improve communication between the various bodies, for example to avoid clashes of meetings and to aid co-operation. The meeting was given the responsibility of choosing a Vice-president with responsibility for groups and branches, and duly nominated the incumbent which Council was delighted to confirm.

The Yorkshire and Humberside Branch held its official inaugural meeting in December, and a proposed East Midlands Branch had created enough interest at an inaugural meeting to seek formal establishment of the branch during 1983. The Industrial Noise and Aerodynamics Noise Groups, however, remained dormant.

The meetings programme in 1982 continued strongly, though with a reduced number of noise related meetings in the latter part of the year in the light of long term planning of the Inter-Noise Conference which the Institute would be hosting in Edinburgh in July 1983. Because of the organisational effort required, Council also decided that the usual Spring and Autumn conferences would not be held in 1983. The sixth-form lectures which had fallen by the wayside in recent years were successfully revived during 1982.

1983

The Advisory Group considering ways of setting up a Noise Council had now been transformed into a standing committee of Council.

There were attempts to work with National Society for Clean Air on a joint proposal to form a Noise Council, but the NSCA had decided not to co-sponsor the new body and went its own way by setting up a technical committee to deal with noise issues.

Particular attention was paid to IOA representation on British Standards Institution committees, with a view to adopting a more positive policy towards BSI matters. The remuneration survey approved in 1982 was published, and Council believed the results to be sufficiently interesting to have justified the survey taking place and agreed that the results should be published in *Acoustics Bulletin*.

Council followed up routes by which the Institute's members could achieve Chartered status, such as becoming a nominated body of the Engineering Council enabling Chartered Engineer, or applying to the Privy Council for its own Charter enabling Chartered Acoustician. A working group was formed to investigate these possibilities.

The organisation of Inter-Noise 83 dominated the year's activities, affecting the normal pattern of the meetings programme and placing a substantial burden on the Institute's administration. The effort was amply rewarded, with more than 300 papers and an attendance of around 690 delegates. This made it one of the largest I-INCE conferences ever held and certainly the largest outside the USA. Council expressed appreciation for the tremendous effort involved by the organising committee and the staff. Cathy Mackenzie was the Conference Secretary and this was a fine example of the organisational and administrative skills that she brought to bear in the interests of the Institute. Inter-Noise 83 made such a significant contribution to the prestige (and the finances) of the Institute of Acoustics that on approaching its tenth anniversary it could justifiably claim to have achieved its status as one of the world's leading acoustical organisations.

Groups and branches were generally active, with Aerodynamic Noise being subsumed by Industrial Noise. Interest was shown in the formation of a Scottish Branch and enquiries were made about forming branches in South Wales and Birmingham. Council believed that the network of branches was now reasonably well matched to the distribution of the Institute membership, though several branches were reporting poor support for their regular meetings. The developing trend of groups and branches towards the hosting of one-day meetings was welcomed as easing the task of the Meetings Committee.

The guidelines for the new Stephens Lecture formulated by the Medals and Awards Committee were approved by Council, and preparations were under way for the inaugural lecture in the series to be held in 1984. The Diploma had yet another successful year with a record number of students sitting the examinations. The Education Committee had started to consider revisions to the syllabus and was giving consideration to the development of distance learning systems.

A proposal from the Membership Committee to clarify the requirements for academic qualifications and subsequent relevant experience in order to achieve corporate membership was approved by Council.

1984

The Institute's Physical Acoustics Group had been in abeyance for some time by now, but consideration was given to reviving it as a joint venture with the Institute of Physics, and Council accepted the proposal to form a joint group. The formation of the Speech Technology Assessment Group (as a sub-group of the Speech Group), and the East Midlands Branch were both approved, and a Scottish Branch was in the process of formation.

The Privy Council had made it clear that a petition for a Charter would be premature at this early stage in the Institute's existence, so Council shelved the idea for at least 10 years. Contact with the Engineering Council was much more positive, and the Institute applied to become a nominated body to enable corporate members of the Institute with appropriate qualifications to obtain recognised status such as Chartered Engineer (CEng).

During the year the Institute contributed to the review of the Council for Science and Technology Institutes' organisational structure.

No progress was achieved in securing funding for a successor to the Noise Advisory Council, but the IOA remained convinced of the

need for such a body and continued to put forward its own thoughts through a technical committee preparing evidence for the Royal Commission on Pollution. This committee was thought likely to form the nucleus of the proposed Noise Council once its usefulness was confirmed by external support.

In order to enhance the general requirement in the Articles of Association for members to further the aims of the Institute to the best of their abilities, Council asked the Membership Committee to prepare a Code of Conduct to which all members would subscribe. Comments from the membership were sought when the provisional code and rules of conduct for members were published in the July issue of *Acoustics Bulletin*.

The Diploma continued to attract satisfactory numbers of students and the first revision of the syllabus was completed in time to be implemented in 1986. An instrumentation module was to be offered for the first time.

Despite previous experience and its earlier decision to increase subscription rates annually in line with inflation, Council decided to not increase membership subscriptions for 1985 because it was anticipated that additional revenue would be raised by other means.

The relationship between branch and group programmes and the Meetings Committee's own programme was discussed at length at a branch and group representatives' meeting in September. On the administrative front, the headquarters office was in the process of transferring the Institute's membership records, meetings paperwork and mailing lists onto new computer-based systems.

1985

An enquiry sent out with subscription renewal invitations revealed considerable interest amongst IOA members for the Engineering Council. It appeared that 200 members were already Chartered Engineers and another six or seven hundred would be interested. In order to facilitate the registration process the Institute was negotiating an affiliation with the Institution of Mechanical Engineers: CEEng status could only be conferred by a Chartered Institution. It was envisaged that the Membership Committee would have the task of ensuring that applicants possessed the relevant requirements.

The first meetings of the Physical Acoustics Group (joint with the IoP) were held under the auspices of a steering committee, as both the IOA and IOP had yet to agree a constitution. Some doubt emerged as to the level of interest amongst the membership of the Institute of Acoustics, and it proved difficult to find IOA members to serve on the committee.

Discussions with the Institution of Environmental Health Officers (IEHO) had shown interest in the two bodies forming a joint noise council and this was duly agreed. Further discussions took place with the Institute of Occupational Safety and Health (IOSH) with a view the three main bodies in the UK concerned with noise launching the new Noise Council in 1986. The first publication of the new council, on the subject of noise legislation, would be prepared in time for the launch.

An initial assessment by the Engineering Council of the Institute's application to become a nominated body indicated that some organisational changes were necessary in order to identify the main paths to registration for members eligible for Chartered status as acoustical engineers. This would include an identifiable division of the Institute with a degree of devolved authority regarding nominations, establishing criteria for training and experience for the registration grades of Chartered Engineer and Technician Engineer together with the associated guidelines.

Some minor amendments were made to the constitutions of groups and branches: local accounts would need to be audited by the Institute's accountants as part of the annual audit. Groups and branches would be asked to adopt the revised constitutions at their next AGMs. The development of a formal meetings policy was implemented with the aim of more clearly involving members in the running of events at both branch and group level. Members would be encouraged to sponsor meetings intended to meet their particular needs and interests. There was concern about the poor attendance at the Spring Conference, usually the centrepiece of the meetings calendar. The annual meeting of group and branch representatives with Council indicated that whilst groups were flourishing, some geographical branches were struggling to maintain interest from members. An improvement strategy was formulated, including

speakers on non-acoustical matters, invitations to non-members, repeat presentations at several branches, and better advertising. Council agreed to the affiliation of the University of Salford Acoustics Society to the IOA through the North West Branch. The abolition of the Greater London Council had suspended the London Evening Meetings, but the formation of a London Branch was under consideration. Sponsor member fees and benefits were revised for the first time since 1979.

There were fewer candidates for the 1985 Diploma examinations, with a consequent reduction in income. Arrangements were finalised to introduce a distance learning scheme for the Diploma, involving tutored video instruction material. This was piloted in 1986. The meetings programme included the very successful Autumn Conference on Reproduced Sound. It was planned to hold a second autumn meeting on the same subject in 1986 and, as history has proved, Reproduced Sound has become an enduring feature of the Institute's programme. The Institute was confirmed as the host of the 7th FASE Symposium to be held in Edinburgh in 1988.

1986

Following a sponsorship offer from Cirrus Research, a new Institute award was agreed for a four-year programme. The Simon Alport Prize, in memory of a young employee of Cirrus Research, would be awarded for the best published paper on the application of computers to acoustics.

The Noise Council was launched in March 1986 at the House of Lords. IOSH and the Royal Environmental Health Institute of Scotland (REHIS) joined the IOA and IEHO as the four founder members. The publication *Noise legislation - its effectiveness and control* was the launch publication, and a working group was studying "your neighbour's noise". The Institute's relevant committee was formally disbanded, and the IOA's members of the new Noise Council were asked to comment on documents submitted to the IOA. The council was organising its first conference, *Noise at work - what kind of law do we want*, to be held in London in January 1987.

Registrations for the 1986 Diploma improved over the previous year, with a welcome increase in income. Council approved proposals from the Membership Committee to simplify and update the fee structure and benefits of Sponsor Membership, so as to offer a better service to sponsors. A new Institute publication was also approved, consisting of a collected and bound source of technical literature together with details of suppliers of materials and services in the field of acoustics, to be known as *Acoustics Index*.

It was noted that the Industrial Noise Group was struggling to fill the vacancies on its committee, despite an apparent membership of 500, whilst the Hong Kong branch had organised a very successful international meeting. An *ad hoc* group of IOA members was in the process of putting together a proposal for a London Branch. This proposal was approved in principle by Council and the Scottish Branch was formally recognised. It was also agreed that the University of Southampton Acoustics Society be affiliated to the IOA via the Southern Branch. Council decided to discontinue the annual groups and branches representatives' meeting and call such a meeting only when necessary.

The constitution of the joint IOA/IoP Physical Acoustics group was formally approved by the Institute's Council, and it was noted that two members of the committee would be drawn from the IOA: the IoP had yet to agree the constitution. Council approved the formation of a new standing committee known as the Engineering Division, with its own committee with responsibility for all Engineering Council (EC) matters within the Institute. The draft terms of reference were approved.

1987

Early in this year the EC indicated some changes needed in the documentation before the IOA could be placed on the list of nominated bodies. The issues involved were considered matters that could be dealt with by the Engineering Division committee, such as the detail involved in the application forms for Chartered and Technician Engineer. The Engineering Division and Membership Committees should liaise to satisfy the EC's requirements. Proposed amendments to the IOA's membership by-laws were tabled and approved. These related to students over 25 years of age, and were agreed in principle during 1986.

There was a need to find a new editor of *Acoustics Bulletin*, but preliminary enquiries indicated that costs for a professional editor were higher than anticipated. An editorial board with less impact on the Institute's finances was set up. Annual volumes of IOA Proceedings were not selling well, despite a publicity drive during 1987, so it was decided at the end of the year to produce only meetings handbooks: these would be properly referenced as Proceedings.

There was a small increase in the number of candidates for the Diploma in 1987 over the previous year, and the Education Committee felt that more publicity was required to attract students from industry. *Acoustics Index 1987-1988* was published. It was reported towards the end of the year that sales were progressing well and the preparation of a winter update was in hand.

The London Branch was formally approved by Council, and the London Evening Meetings resumed under its jurisdiction. It was noted that the Industrial Noise Group had a new committee which was expected to revitalise its activity after the quiet period. There was discussion about group and branch accounts, trying to balance the needs of the local groups and branch committees with the central accounting and VAT requirements. The Speech Group planned the launch of its newsletter *Speakeasy*. The IoP had now approved the constitution of the Physical Acoustics Group, and Council confirmed the two IOA representatives on the PAG committee.

The Institute's finances were reasonably balanced over the previous few years, but towards the end of 1987 the Honorary Treasurer warned that whilst expenditure during the year had been much as budgeted, the income for 1987 was falling below target, largely because of considerably reduced meetings income. This proved to be the case early in 1988, when the finalised accounts showed a significant deficit of more than £9,000.

In December the Engineering Council approved the application by the IOA to become an Institution Affiliate and to be entered on the list of bodies, enabling qualified members to apply for registration as Chartered Engineers. In the IOA's case this was via the Institution of Mechanical Engineers (IMEchE), the nominated body that would be responsible for checking that the EC criteria were met. This was a successful outcome of one of the major IOA policies of recent years, and was seen as improving the standing of the profession of acoustics and providing engineering-based graduates in acoustics the same career development opportunities as those enjoyed by more classical engineering disciplines.

1988

Following on from involvement in the consultation process for the HSE Consultative Document *Prevention of damage to hearing from noise at work*, Council approved the introduction of a Certificate of Competence in workplace noise assessment, to be handled by the Education Committee.

The tenancy of the IOA's head office in Edinburgh was now about to end and the location of new headquarters was considered.

The creation of additional benefits of membership was under consideration, but this would require an increase in revenue: increased membership and increased attendance at meetings seemed the most immediately effective ways of increasing the financial base. Another aspiration was the creation of more opportunities for younger acousticians, with clearly defined routes towards corporate membership.

The formation of an Eastern Branch was under way during 1988. An inaugural meeting was held in October, and formal ratification by Council was in December. The London and the Scottish Branches in particular were thriving, but in contrast, the South West Branch was now without a committee, the Yorkshire and Humberside Branch had become dormant, and the East Midlands and North East Branches were struggling for support. It was hoped that the activities of the two university student societies would encourage new student members of the Institute.

It was decided that members should be given more information about the business conducted by Council, and the "Secretariat notes" to be published in *Acoustics Bulletin* would most usefully serve this purpose. In the event, this proved a relatively short-lived means of feedback, perhaps because of the low frequency of publication.

Early in 1988, Council had approved the membership of the Engineering Division committee, its immediate tasks being to set up the Education and Training subcommittee and the joint IOA/

IMEchE Registration committee. On 6 July the formal Affiliation Agreement with the Institution of Mechanical Engineers was signed, clearing the way for the Institute to process its own applicants. The Engineering Division committee then held its first formal meeting on 21 July 1988.

The FASE meeting *Speech 88* was held in Edinburgh in August during the Festival. This was organised by the Speech Group and proved a great success both scientifically and financially. It was noted that the Secretariat had again risen to the challenge of the administrative burdens of a major conference in addition to their normal duties.

Plans for streamlining the management of groups and branches finances were formulated. A meeting of groups and branch representatives was held in September 1988, two years after the previous one. Revised procedures for deciding subventions and handling accounts were formulated for Council's approval. It was intended that the proposals would become operational during 1989, and would significantly ease the problems. It was agreed that Institute members would automatically become members of a regional branch (rather than having to ask, as had been the case to date), with a view to gaining wider branch membership and more support at meetings.

Council approved the creation of a new, non-corporate, grade of membership, Associate Member of the Institute. This new grade entitling the member to use the abbreviation AMIOA would accommodate those who had satisfied the academic requirements of membership but had not yet acquired the necessary experience to qualify as Corporate Members. At the December 1989 meeting of Council, the draft alterations to the Articles of Association and the By-laws were approved, and arrangements were put in hand for an EGM to be held in February 1989 to consider the proposed changes. The changes were duly approved at the EGM.

Council was informed that Dr Stephens, the IOA's first President, had been admitted to a nursing home, and interest was expressed in obtaining Dr Stephens' papers as archive material. The financial report for 1988 indicated that a small surplus could be expected, but in the event, the annual accounts showed a substantial deficit. This was now the second loss-making year in a row, apparently because of a much lower meetings income than expected. This highlighted the need for better forecasting.

The Noise Council had enjoyed an active year during 1988 with operational working groups on occupational noise exposure, neighbourhood noise, motorcycle noise and entertainment noise. A working group on European issues in noise had yet to progress its agenda.

1989

The Publications Committee reported its proposals to redesign the cover of *Acoustics Bulletin* and investigated the cost implications of the change. The Certificate of Competence in Workplace Noise Assessment was making good progress, with eight of the Diploma colleges ready to present candidates for the first examination in May 1989: other centres were expected to be accredited thereafter. Two courses were held on workplace noise assessment. Meanwhile, the tenth anniversary of the Diploma was celebrated with a special one-day meeting.

In response to observations from the Institute's auditors and the difficulties in accurate financial forecasting, a special meeting of Council was held in April 1989. An Executive Committee to be chaired by the President, and consisting of the President, President-elect, Honorary Secretary and Honorary Treasurer was set up with terms of reference ratified at the June meeting. They were to provide an effective liaison between Council and the management services of the Institute, to formulate proposals for policy and action relating to the managerial and financial activities, and to take executive action on any matters considered too urgent to await the next Council meeting. These steps were expected to expedite the business of Council. The Institute's finances were now under the spotlight, and at the June meeting the liability of Council members in the event that the Institute should be trading whilst insolvent was discussed. The Honorary Treasurer was satisfied that this situation should not arise. The Executive Committee had prepared a management proposal focusing on the handling of the office move from Edinburgh on expiry of the lease there, and the need for cost savings and revenue earning activities. The new address would be a Post Office box in St Albans linked to the address of Cathy Mackenzie Management Services (CMMS) for the time being while appropriate premises were sought.

Through the year a business plan for the growth of the Institute was developed which depended on increasing the fixed level of income, partly by increasing the number of Sponsors and Members. A new Advertising Manager was appointed and the post of Exhibition Manager created to oversee facilities at exhibitions and to recruit exhibitors. Three levels of sponsor membership were now available, ranging from Key Sponsor to Subscriber. An increase in registration fees for the Diploma was approved and a new focus on achieving adequate revenue from meetings was considered vital for the Institute's financial survival.

At the October 1989 Council meeting it was decided to appoint new auditors, and an EGM during the Autumn Conference would ratify this. The financial position of the Institute was now healthier but it remained necessary to work towards a balanced budget in 1989. Head office was now established in St Albans, but measures needed to be taken to relieve the pressure on the management services. The Meetings Committee reported that it was investigating the possibility of an IOA initiative to organise a series of large meetings called Euro-Noise, possibly starting in 1991, to be held in those years that Inter-Noise was to be held in the United States. The Engineering Division reported that 130 members had requested forms to apply for Chartered Engineer status, and six applications for CEng were received by December. At that meeting Council agreed that information should be collected with the annual subscriptions to enable a new Institute publication, the *Register of Members*, to be published in 1991.

Other activities during the year included participation in Engineering Council discussions in connection with the EC Directive which outlined the acceptability across Europe of diplomas that gave rights to practise a regulated profession, and a response to the University Grants Committee which had asked the IOA to nominate acoustics assessors for the physics panel of the Research Selectivity Exercise. Noise Council working groups were active throughout the year, and these were expanded to include European affairs and noise measurements and units.

The Hong Kong Branch had experienced limited activity during recent years, but in 1989 there was considerable interest in reviving it: in December a new steering committee was formed and a programme of activities drawn up. Council adopted the idea that the IOA should have an overseas co-ordinator to improve links between the Institute and members overseas, and the terms of reference were agreed.

1990

There was a continuing focus on financial matters at Council meetings in 1990. The annual accounts for 1989 were reviewed in February and it was reassuring that these now showed a surplus: the updated budget indicated that the surplus would be maintained. To aid increased vigilance about financial issues, the Meetings Committee had prepared a budgeting form to be used when planning future meetings, and undertook to advertise Reproduced Sound 6 more widely in order to attract overseas interest. At the June meeting the Honorary Treasurer confirmed that the finances were on track against the budget, noting in particular that the Spring Conference was financially successful and other meetings had broken even. The advertising rates for *Acoustics Bulletin* were increased in order to reduce the subsidy from subscription income, and the efforts of the new Advertising Manager had provided a significant increase in revenues, giving some hope that the Bulletin would eventually be funded by advertising revenue. By October the financial forecast provided further encouragement, showing that the surplus for the year would be higher than had been budgeted, and the guideline for groups and branches on financial matters was circulated, along with timetables for annual budgeting and reporting.

At the June 1990 meeting it was noted that the Hong Kong Branch was sufficiently revitalised to be able to offer to host WESPAC 1994 (Western Pacific Region Acoustics Conference). It was also brought to Council's attention that the workload at HQ was becoming excessive, and the resulting discussion focused on the likely cost implications of additional staff.

The first cohort of CEng candidates would be taking their final interviews at the end of October and once the outcome was known attempts were to be made to streamline the process. The Diploma had now been operating successfully for many years and it was

again gratifying that respectable numbers of students were still being attracted.

There was some sad news at the October meeting of 1990 when it was noted that the Institute's founding President, Dr R W B Stephens, had died on 28 August. Council approved expenditure of up to £1,000 towards the safe keeping of Dr Stephens' papers and a donation of £500 received from the Association of Noise Consultants (ANC) following a successful joint meeting earlier in the year would be used for the same purpose. It was hoped that an archive would eventually be set up.

By the December meeting it was recognised that the national economic climate was likely to have a detrimental effect on meeting attendances and the finances of the Institute. To offset this, the Executive Committee recommended that subscriptions for 1991 should be set rather higher than the level of annual inflation, the routine benchmark for setting subscriptions, whilst also reducing the differential between the fees for Fellows and Members. Following on from the discussions initiated in 1989, it was decided to go ahead with the organisation of the Euro-Noise conference and the Meetings committee was tasked with finding a venue and planning the meeting.

Some changes were in the air regarding publications, and it was agreed that *Acoustics Bulletin* production should switch to state-of-the-art desktop publishing to improve quality and reduce costs. The membership would benefit because the number of issues would increase from four to six per year, and cost savings would be made by incorporating material previously circulated under separate cover.

The formation of an Electroacoustics Group was agreed in principle and a working party was set up. Although during 1990 the Noise Council had participated in the DOE Noise Review Working Party which published its report in October, and despite the various ongoing working groups, concern was expressed that Noise Council activities were at a low level, and appeared to lack direction.

1991

At the February meeting the satisfactory financial outcome of 1990 was discussed and a budget for 1991 based on achieving a surplus for the year despite the general economic conditions was tabled.

Seven of the eight candidates submitted to the Engineering Council were approved for the status of Chartered Engineer. Council resolved that student sessions should become an established feature of future Spring meetings, and the Meetings Committee reported that Imperial College would be the venue for Euro-Noise '92 scheduled for September. The Spring Conference would be restricted to one day so as to accommodate Euro-Noise '92 in the year's programme. It was noted that the 1991 Spring Conference would include a special session devoted to the memory of Dr R W B Stephens.

The Education Committee reported that the Certificate of Competence course in workplace noise assessment was well supported and that a working party was set up to explore the possibility of another certificate, in environmental noise measurement. Through the Underwater Acoustics Group and in collaboration with the University of Bath, the Institute published its first book, *Underwater electro-acoustic transducers*. It was suggested that a specialist group in environmental noise be set up, but this was considered unnecessary by Council as the subject was covered by the Industrial Noise Group. It was later agreed in principle that a change of name for the group would be desirable so that the interests of many of its members in more general environmental noise would be recognised.

The first issue of the *Register of Members* was well received. By June the finances were on course to meet the budget, although this would depend on the outcome of the two conferences in the autumn. Cost savings were apparently being achieved by the new production methods for *Acoustics Bulletin*. An editorial board was set up to ensure a steady supply of technical articles for the increased frequency of publication.

At the October meeting concern was expressed that the Engineering Council seemed to be promoting a strategy which would eliminate small learned societies, possibly by encouraging mergers. Council agreed that the separate identity of the Institute should be maintained. Despite earlier hopes, the costs of *Acoustics Bulletin* production were higher than anticipated but this was attributed to set-up costs: reductions in ongoing costs together with

greater advertising revenue should rectify the problem. It was agreed that members should be allowed to join as many groups and branches as they wished upon payment of the appropriate fee (the first of each being free). Sales of the underwater electroacoustics book had reached 200, with 240 needed to recoup the Institute's outlay.

At the December meeting, it was thought necessary to advise newly accepted Associates (as opposed to Associate Members) that they were not entitled to use the abbreviation AMIOA. There was further concern about the perceived lack of progress on Noise Council projects and the lack of funds. Work was in hand to develop a special interest group in environmental noise. The number of candidates taking the Diploma course continued to hold up well, and the Certificate of Competence in workplace noise assessment was well supported.

1992

Issues under discussion at Council included meeting the needs of members in the meetings programme, especially in the prevailing economic difficulties; ensuring effective communications with the membership largely by building on the new *Acoustics Bulletin* format; demonstrating that the IOA is the professional body in the UK for acoustics, for example concerning legislation, regulations and standards, and continuing to play a part in the debate concerning the future of the engineering profession.

The nomination of a new Vice-president with responsibility for groups and branches was approved subject to ratification at the forthcoming AGM. An early task was to convene a working party consisting of officers of the Industrial Noise and Building Acoustics Groups to consider whether the established group structure adequately covered environmental noise. By June the formation of an Environmental Noise Group was considered, and the membership at large was to be canvassed via *Acoustics Bulletin*. A discussion session was planned for the Euro-Noise '92 conference. In December Council agreed to the establishment of an Environmental Noise Group. Membership fees for the new group would be reduced for existing members of the Industrial Noise Group and the Building Acoustics Group.

The financial position was kept under constant review during the year, one of national recession, and financial trends over recent years were evaluated. Council was reasonably happy that the performance during 1992 remained in line with the budget, but as usual these were subject to income from the autumn conferences. In the event, there was some growth over the previous year.

A proposal from the French and German acoustical societies to collaborate in a new publication, *European Journal of Acoustics*, was considered but no need was seen for a new refereed journal. A decision on the proposal was deferred pending receipt of further information. By October, however, the European societies were planning a new pan-European acoustics journal, to be known as *Acta Acustica*. Council considered its sustainability and its fit with existing journals such as *Acustica* and *JASA*, and on balance, taking the Publications Committee's supportive position into account, it was decided that the UK should participate actively in the project from within. Following negotiations, agreement was reached among seven European acoustical societies that *Acta Acustica* would be published six times a year commencing in mid-1993. Because of concern about the reactions of the membership to the journal, including its cost, the only financial commitment would be a single contribution to start-up costs of £1,500 and a guarantee of 50 subscriptions in each of the first two years at some £33 each.

The Noise Council was reported at the June meeting as having been without a technical secretary for some time, but it was considering a response to the proposed replacement for DOE Circular 10/73 *Planning and Noise*. Later in the year the council was looking forward to improved co-operation with the Department of the Environment, and in December it was reported that publication of the guide to noise units was progressing and that a Code of Practice on noise from pop concerts would be prepared.

The Education Committee had earlier reported signs of a decline in attendance on Certificate of Competence courses. In October Council was informed that staff changes in accredited centres were beginning to leave some areas of the country without provision for the teaching of the Diploma. The committee was exploring other strategies for teaching the Diploma and was urgently considering

the use of distance learning methods: it was suggested that the Institute should develop its own distance learning package. A draft syllabus for a Certificate of Competence in environmental noise measurement was in preparation. In December Council formally asked the committee to make proposals for the organisation of the certificate, and to develop the programme and costs for a distance learning package.

The meetings programme had run well during 1992, in particular the successful Euro-Noise '92 conference in September which had attracted delegates from all member states of the European Community. Council expressed its appreciation to the organising committee and the Secretariat for having once more risen to the challenge of running a major international conference. I/INCE had approached the IOA to explore interest in bidding to host Inter-Noise 96, and it was agreed that a proposal should be prepared and submitted to I/INCE in time to be considered at the Inter-Noise 93 conference.

Other items of note during 1992 included Council's agreement to support the proposed book *Sound and the Sea*. The Membership Committee appointed a Membership Secretary based in Hong Kong to provide preliminary processing of local applications. *Acoustics Bulletin* was reported to be in a good financial condition with stability expected for the next few editions. A competition for a new logo was announced as the existing one was proving difficult to reproduce in publications: six proposals were received for consideration. The winner of the competition would later be announced in the Bulletin but it was decided to retain the old logo. Agreement was reached between the Medals and Awards Committee and Cirrus Research over the Simon Alport Prize and the restrictions on age and nationality of nominees were removed. Although the use of computers in acoustics would remain the subject area, a wider interpretation would be allowed.

Engineering Division matters were progressing well. New CEng applications were processed and rules for the Incorporated Engineer qualification formulated for submission to the Engineering Council for comment. More CEng applicants were interviewed in October. However, at the December Council meeting it transpired that the EC had written to the effect that the affiliated membership of the Institute would be withdrawn on 14 December 1992. This decision did not result from any reservations about the quality or selection procedures, but from the apparent policy of setting a minimum size for nominated institutions. On receipt of this communication the President wrote to the Engineering Council stating the IOA's intention to appeal and pointing out irregularities in the review procedure. Contingency plans were formulated for the benefit of those members who had achieved CEng status through the IOA, but reinstatement of the Institute's status was to be the main priority.

CMMS had identified more suitable premises in St Albans from which the Institute could operate. This was Agriculture House, owned by the National Farmers' Union: the owners were awaiting a more favourable economic climate before selling the property. This meant that the Institute might have to move on after a relatively short lease. Nevertheless this new home would offer more space for a library and a meeting room for the use of members, so the move was agreed.

1993

The move to Agriculture House meant that the February 1993 meeting of Council was the last to be held at the IoP's offices in London, the main venue since the Institute's formation. Council meetings would in future be held at Agriculture House, where, besides providing meeting facilities, additional space was rented to accommodate archived material, thus saving storage charges. The first meeting of the Eastern Branch was also held in February.

The appeal documentation submitted to the Engineering Council was tabled in February and the appeal hearing was to be on 4 March 1993. Although awaiting the outcome of the appeal, administrative improvements were under way in order to comply with the requirements. The system of regional membership advisers was revised and updated and the secretariat was asked to identify the changes needed to the Articles of Association. The IOA would communicate its support for the Engineering Council's study group to examine the next step towards unification of the engineering profession, and in June 1993 met the EC nomination committee against the

background of strong pressure to amalgamate institutions. The IOA's objective was to maintain its current status for registration during the period of debate while options for future involvement of the Institute were explored. Following a strenuous campaign to maintain the IOA's place in the engineering profession the EC agreed that the affiliation would be renewed for a further period. Nominated body status permitted the IOA to propose CEng candidates via the IMechE and full nominated body status permitted the award of the IEng title directly. In its review, the Engineering Council recognised the excellent track record of the Institute as a learned society but identified some administrative deficiencies in the consideration of CEng candidates which could be resolved. The Engineering Council decided to grant Institution affiliated status for two years, during which period action would be taken to address the deficiencies. One improvement would be to engage a Chartered Engineer as part-time Engineering Manager at HQ to liaise with the EC, process applications and take ideas forward for a continuing professional development (CPD) programme.

Staffing was increased: an additional staff member was engaged to carry out financial data processing and a part-time librarian would be taken on in April 1994, the Publications Committee having taken responsibility for the establishment of the Institute library.

The meetings programme ran well and included a new training course for sound system engineers held at the Reproduced Sound 9 conference. The Autumn Conference was the twentieth event the Institute had held at the Hydro Hotel, Windermere and achieved a record attendance. There was enthusiastic support at the conference for the formation of the Environmental Noise Group and steps were taken to form a committee from the volunteers. It was announced in October that I/INCE had accepted the IOA's bid to host Inter-Noise 96, and the conference would be held at the Adelphi Hotel in Liverpool.

The need for a watching brief on European activities continued, and a senior member of Council was appointed co-ordinator for external affairs. The President reported in October on a meeting of the EAA he had attended following the publication of the first issue of *Acta Acustica* and made the comment that it would be necessary to monitor and control costs very carefully. The EAA board had expressed a strong opinion that it should become involved in organising conferences, and concern was expressed in Council about the potentially overlapping roles of EAA and FASE. It was concluded that the IOA should support both organisations, and attempt to promote a dialogue. It was noted that the French Acoustical Society intended to host the next Euro-Noise conference in Lyons in 1995.

The syllabus for the Certificate of Competence in Environmental Noise Measurement was tabled and the first examinations were scheduled for June 1993. Approval was given for the academic content of the distance learning package and for the package to be used from April 1993. Over the year the Education Committee reported a steady flow of candidates for the Certificate courses and prepared publicity material in respect of the IOA's educational activities.

The Noise Council was continuing its work and from mid-July 1993 a draft code of practice on environmental noise control at concerts was available for public comment. The closing date for submissions was timed to allow inclusion of responses from the Autumn Conference. Lobby groups were showing interest in noise issues, but in this regard the Noise Council stressed its independence. Despite delays, Noise Council reports were being published, the latest being the *Code of practice on noise from organised off-road motor cycle sport*, and another on noise units was in preparation. Some administrative difficulties had arisen over funding, because the DoE funds needed to be matched in monetary terms (i.e. not counting services) which had proven difficult. However, by December contributions in kind could be counted, and the Noise Council resolved to conclude current business urgently and seek proposals for new initiatives.

Council adopted the revised Code and Rules of Conduct for Members that was drawn up by the Membership Committee with a view to clarifying interpretation while retaining the original intent. These revisions also brought the IOA into line with EC requirements. The revised code was published in *Acoustics Bulletin*.

A working party was set up to consider the role of the IOA in a formal CPD process for its members. This would also consider whether the Institute could assist in meeting the needs of other related professional bodies through its conference and meetings programmes.

It was also noted that European Directives were being launched in areas such as health and safety, machinery noise, construction products and electromagnetic compatibility.

1994

Issues for attention identified at the beginning of the year included revitalising regional branch activities, developing the Institute's library and recruiting student members. Throughout the year significant progress was achieved in branch activity, including the re-generation of branches where activities had lapsed. The South West Branch held a popular meeting in March, the Environmental Noise Group accepted the group and branch constitution of the IOA, the Southern Branch reappeared with a meeting in November, and the Midlands Branch was formed, extending its territory from that of the former East Midlands Branch, and held its first meeting in December. The relationship between the IOA and the Hong Kong Branch came under scrutiny following the formation of the Hong Kong Institute of Acoustics, and it was necessary to identify which body would represent Hong Kong on the Westpac organising committee. It was later confirmed that the Hong Kong IOA would be organising Westpac 1997.

Financial matters continued to improve, with further growth having been achieved. With effect from February, Council was to be routinely attended by invited representatives of Sponsor members.

European issues continued to be monitored closely. The European Acoustics Association (EAA) had been registered as a European Economic Interest Grouping (EEIG), and the IOA as a full member would share in the profits and losses. *Acta Acustica* was published by the EAA and from 1995 would rely on personal subscriptions. It was agreed in December that the IOA should continue to support the EAA, but the Honorary Treasurer voiced concern that some of the financial commitments were open-ended and needed to be more clearly defined. The EAA wanted to publish a list of members and Council agreed to ask IOA members in their subscription renewal invitations if they wished to be included. However, unless the cost and administrative issues could be resolved, the data would not be modified to the EAA format.

Council discussed in May the introduction of an award to acknowledge the valuable contributions made by members of the IOA that would not warrant a medal or Honorary Fellowship, and the Medals and Awards Committee was asked to consider how this might be done.

The short-term nature of the lease at Agriculture House gave rise to thoughts of purchasing a property, and the Executive Committee and the Sponsor representatives were asked to look into this. The financial considerations were discussed in October and the notion of purchasing a property was rejected for the time being. Instead, additional space would be rented at Agriculture House under the same terms as the existing lease to provide space for the library and extra offices.

The escalating printing costs for *Acoustics Bulletin* were flagged up at the May Council meeting and the advertising rates were increased to meet them. It was also agreed that there be a restriction on the number of "unpaid" pages. The Publications Committee was asked to set up a working group to examine the possibility of publishing a series of monographs or databases, and the draft of a new careers and education leaflet was approved. It was agreed that a library listing should be drawn up and made available to the membership.

The Meetings Committee reported on progress for the 1995 Spring Conference - Acoustics 95 - which would be held at the intended Inter-Noise 96 venue in order to try out the facilities: the committee was considering holding a 21st anniversary meeting during 1995. In discussion at the October Council meeting, support was expressed for the Spring Conferences to feature a wider range of topics and their financial viability was discussed. It was agreed that the 1995 Spring Conference should include a student session. Reproduced Sound 10 again featured the successful training course on acoustics for sound system engineers.

During the year, other subjects discussed at Council included the possibility of appointing a publicity officer, which was not pursued, and the lack of co-ordination and representation on BSI committees. The IOA still needed additional Sponsor support to meet its ongoing aim of financial stability. Growth in membership was steady, but subscriptions were not covering operational outgoings, so constant

attention was needed to the revenue-earning activities of meetings and education.

The Engineering Division reported that more CEng registrations were approved and others were being processed, and by the year end the IOA's first three Incorporated Engineers (IEng) were registered with the EC. Meanwhile the EC had circulated for comment its proposals for "Unification of the engineering profession".

Through 1994 the CPD working party was formulating proposals for an Institute scheme, and as the year drew to a close a full position paper was presented to Council members for their consideration.

1995

The CPD proposals were considered in detail by Council with a view to having the scheme operational by the beginning of 1996. It would be voluntary except for CEng and IEng members, who would have to meet the EC requirements, and it would support rather than replace members' usual efforts towards professional development. A lower level of self-attestation would be supplemented by a higher level of registration which would necessitate inspection and attestation by the Institute. It was proposed that a rolling total of 90 hours of CPD activity over a three-year period, subject to a minimum of 15 hours in any one year, would be appropriate. Council determined that branches and groups would be canvassed for their views and the topic would be discussed at Acoustics 95.

It was confirmed that the IOA's response to the Engineering Council's unification proposals had been sent, and the EC had reported that all 40 Institutions had signed a declaration of intent pledging support for a new body to unify the engineering profession. It was expected that the new arrangements would commence in January 1996.

A "noise forum" was set up by the Department of the Environment; this would convene several times a year to advise the DoE on matters related to environmental noise. Several bodies including lobby organisations and the Noise Council were represented, and it was agreed that the IOA should participate via the Environmental Noise Group to strengthen contacts with the Department and the other bodies. As a separate issue, the Noise Council's *Code of Practice on environmental noise control at concerts* was published following the consultation process, but a planned meeting of the Noise Council on codes of practice generally was postponed for several months.

There was a good response from members wishing to be included in the EAA membership list, and the Education Committee was negotiating with REHIS to set up a joint Certificate of Competence in environmental noise measurement. As part of the effort to secure additional sponsoring organisations, consideration was given to some form of institutional membership for local authorities with noise interests.

Possible conflicts of interest between EAA and FASE were discussed at Council. It was considered that EAA costs could be forecast with reasonable accuracy, but all member societies were at risk if the EAA board was to make a reckless decision. The impression was that the EAA was in the ascendancy and FASE was losing influence. It was concluded that the IOA should try to influence both organisations, to which end a UK nomination was made for the upcoming FASE presidency.

The Honorary Treasurer's report summarised the financial position, which was favourable, with healthy cash balances. However, it was noted that annual subscriptions were still being received for 1995 and there was evidently a need to tighten up on the timely receipt of member subscriptions. The payment of subscriptions by direct debit or by credit cards, despite the attractions of improved cash flow, was thought to be too expensive. Growing commitments in the education field and preparatory work for Inter-Noise 96 necessitated the appointment of an extra staff member. This would impact the 1995 surplus, but it was felt that the anticipated income should cover the cost, after which the post would become self-financing.

Following the IOA's renewed affiliation to the Engineering Council to 2000, it was necessary to make some changes to the Articles of Association. One of these would be that the chairman of the Engineering Division would have a place on Council by right. It was agreed that the necessary changes would be formulated and presented to members at a general meeting. It was also agreed to nominate an IOA candidate for the EC Senate. Applications for CEng and IEng registration continued at a high rate.

Acoustics 95 was considered a technical and financial success, but as a test run for Inter-Noise 96 it had identified a number of issues with the venue, the Britannia Adelphi Hotel in Liverpool. Long-term planning for Inter-Noise 96 was under way by the organising committee and the secretariat, who were assembling an impressive programme and promoting the event internationally.

The formation of a Measurement and Instrumentation Group was approved by Council following a proposal at the Spring Conference, and it was anticipated that the group would assist with the organisation of the 1995 Autumn Conference. The Hong Kong Branch ceased to exist, or was supplanted by the Hong Kong Institute of Acoustics.

Revisions to the Diploma syllabus were communicated to the teaching centres, a new centre was approved for teaching the Certificate of Competence in environmental noise measurement, and a working group was set up to review the distance learning course and its finances. Representatives on INCE committees were ratified and a request for feedback from all IOA representatives on outside committees was to be met via *Acoustics Bulletin*.

At the October Council meeting it was noted that members now held the positions of both President of FASE and Financial Controller of EAA. The latter did not in fact confer control of EAA finances but was a monitoring role. Some conflicts regarding EAA/*Acta Acustica* and FASE/*Acustica* were discussed and the Executive Committee undertook to discuss the matter with the President of FASE.

Reflecting the appointment of a new member of staff and in the light of circumstances, the Honorary Treasurer thought there might be a small deficit for the year 1995, subject to the number of registrations for the Autumn Conference and Reproduced Sound. Possible changes in the way *Acoustics Bulletin* was prepared were considered with a view to reducing the burden on the secretariat.

Having received feedback from the groups and branches, the final stages of preparing the IOA's CPD scheme were in hand, with Council members reviewing the final draft of the document setting out the ground rules. The scheme set out in the position paper was approved, although some concern was expressed about the delegation of responsibility for some activities to branch level.

A proposal to upgrade the annual R W B Stephens Lecture to Medal status was boosted with an offer by Dr Stephens' family to finance striking the die and the first three medals. A new set of conditions would be drawn up for the medal, with the first award anticipated in 1997. At Council in December there was a new item on the usual agenda, international acoustics bodies, which reflected the growing importance of this topic and anticipated the new position of Vice-president with responsibility for international liaison. Good progress was reported in the organisation of Inter-Noise 96: 783 papers were received to date and five hundred people were expected to attend.

Earlier in the year Council had agreed that it was an appropriate time to formulate a long-term business plan, to put Institute affairs on a sound basis and further expand the services available to members. The wording of a new Clause 32 in the Articles of Association would include the role of Vice-president with responsibility for the Engineering Division, subject to approval by the Charity Commission, EC and an IOA General Meeting. Additional staffing for *Acoustics Bulletin* was agreed. The financial outcome for the year was discussed, and was now expected to be a small surplus, on the basis that the extra staff member agreed at a previous meeting would now be included in the separate Inter-Noise 96 accounts.

I/INCE suggested that a European division of INCE be formed, the implication being that it would organise future Euro-Noise conferences. Council could not see sufficient support for I/INCE's suggestion, especially bearing in mind that it had been the IOA's initiative in the first place to set up the Euro-Noise conference series.

1996

The new Engineering Council was launched on 2 February 1996 and a member of the IOA was elected to serve on the EC Senate. The Charity Commission and the EC had approved the proposed change to the Institute's Article 32, effectively ensuring that the chairman of the Engineering Division would be guaranteed a place on IOA Council, and the AGM in April 1996 approved the change.

Trials began of a web page drawing on items from *Acoustics Bulletin*. Terms of reference for the proposed Vice-president with responsibility for international liaison were agreed in principle. It was

agreed that the R W B Stephens Medal would be awarded for outstanding contributions to acoustics research or education.

The financial forecast for Inter-Noise 96 indicated a respectable surplus based on 700 delegates. The secretariat's terms of reference were being considered in the light of the ever-increasing workload. *Forum Acusticum*, a triennial research-oriented conference organised by the EAA, took place in April; attendance was lower than expected, but fortunately the IOA would not bear any share of the losses for this event. Council asked the Publications Committee to draw up a budget for the purchase of library publications. It was suggested that the Yorkshire and Humberside Branch should be renamed North East Branch in an attempt to re-energise its activity. The Sponsor membership grade of Institutional Subscriber was approved.

The Environmental Noise Group was compiling a Code of Practice on noise from pubs and clubs. Views on the budget for library purchases varied, and the matter was deferred until the new arrangements for HQ were settled. The ANC, which already sponsored a prize for the best Diploma project, offered to sponsor a new prize targeted at young members for the best paper presented at an IOA meeting: this would effectively replace the Simon Alport Prize.

The attendance at Inter-Noise 96 was 915 and in technical terms the event was a resounding success, much being owed to the outstanding efforts of the organisers. The general view was that it was a memorable event which had enhanced the IOA's reputation.

From September 1996 through to the summer of 1997, the Executive Committee was convened monthly to deal with developing issues that required constant vigilance. One such issue was the protection of the IOA's influence and liability in relation to the EAA, whilst dealing with the integration of EAA and FASE which was due in May 1997. The costs and potential liabilities of participating in EAA activities had remained under close scrutiny, especially those relating to the overheads of *Acta Acustica*. The benefits to IOA members were questionable, and the publication needed a sound financial basis. Council was concerned about the EAA's viability, particularly in the light of financial difficulties that were being experienced by the French Acoustical Society (SFA).

The other immediate issue was the imminent retirement of Cathy Mackenzie, prompting discussions about the future of the Institute secretariat. A debt of gratitude for the steadfast service she and Roy Lawrence had given was expressed, and Council recognised that they had played a fundamental role over many years in bringing the Institute to its current eminence. A three-month transition to a new arrangement was planned, with the IOA employing its HQ staff directly and taking responsibility for the computer system to secure its future viability. Responsibility for executing these proposals was delegated to the Executive Committee. Contracts of employment were drawn up for staff, and a fresh agreement for the services of Cathy Mackenzie was negotiated. This enabled the Institute to retain her services as Executive Secretary for up to 12 months while a new Deputy Secretary was recruited and inducted to take over the role of Chief Executive. Approval was given by Council in December to the new arrangements for Cathy Mackenzie Management Services, which covered the role of Executive Secretary or Chief Executive together with the responsibility for new revenue-earning services and other specified duties. Additional space was rented in the HQ building for laboratory teaching facilities in order to provide for distance learning students.

1997

Discussions with the EAA board about the IOA's role in the EAA were continuing. The board wanted the IOA to buy more copies of the amalgamated journal *Acustica/Acta Acustica* so that all members would receive one as a benefit of their Institute subscriptions, as was the case in Germany and France, but the IOA resisted this on grounds of cost, this being dictated by the publishers. One possible way forward was seen as making the journal more interesting to IOA members, by adding topical matters to the existing academically-based content. The Executive Committee reported that the IOA might become an Associate Member of the EAA to reduce potential liability, and the financial ramifications of such a move were discussed by Council at its May meeting.

The new employment arrangements for staff came into effect.

Council considered the proposed Code and Rules of Conduct prepared by the Membership Committee, and after agreeing some amendments it approved their publication. The Publications Committee reported that a management board had recently been set up to monitor and control the publication of *Acoustics Bulletin*. New initiatives were explored, including educational services for schools, and a new all-Ireland Branch was under consideration. In a reversal of its recent indications the EC invited the IOA to become a nominated body in its own right, enabling the Institute to create its own Chartered Engineers. After a costs evaluation Council decided to seek nominated body status.

Whilst the terms of reference had been revised, and the new working procedures introduced at HQ, the search for a new deputy secretary was proceeding, and an interview panel drawn from the Honorary Officers selected a preferred candidate who offered many years of business management experience. Council approved the appointment of Roy Bratby as Deputy Chief Executive, and he joined the Institute on 23 June 1997.

The IOA website had been hosted by Essex University since its creation, and it was suggested that responsibility for the website should now be taken by the Publications Committee. One possible addition to the website was the new IOA library database.

By October the landlords of Agriculture House had communicated their intention to sell the building, and the IOA would soon receive six months' notice to vacate the premises. The deputy Chief Executive was given the task of finding suitable premises, preferably in or near St Albans to minimise staff relocation issues.

The integration of the new regime proceeded so well that Cathy Mackenzie sought an early release from her transitional contract, which was reluctantly granted. Tributes were again paid to her dedicated services to the Institute since her appointment in 1979. The post of Chief Executive was given to Roy Bratby and he assumed the position on 1 November 1997. Roy's strong business background together with his natural flair for people management would prove invaluable in seeing through the organisational changes set in train by Cathy's retirement. However, Cathy Mackenzie and Roy Lawrence continued to provide contracted services related to *Acoustics Bulletin* and distance learning support, as agreed in the autumn of 1997.

Since its formation in December 1995, the Business Review Committee had continued to report to Council about progress in its comprehensive review of the Terms of Reference for all Institute committees. The revisions were duly approved by Council and arrangements were made to distribute them to committee officers. Approval was given for the Certificate of Competence in sound insulation measurement. A new Irish Branch held its inaugural meeting on 10 October 1997, and the first R W B Stephens Medal was presented at the Autumn Conference.

Council was finally informed at its December meeting that the Institute had been served with the formal notice of termination of its lease at Agriculture House, to take effect on 28 May 1998. Because of the exceptionally good rental terms enjoyed to date, all three options identified for new premises would be considerably more expensive. In view of the short timescales and the then buoyant market conditions the Executive Committee was mandated to take the necessary action and seek Council's ratification at its next meeting.

The first Institutional Subscriber was recruited and a drive for more Sponsor members was in hand. The future of the Institute's website was considered with a view to agreement by mid-1998. It was noted that the ICA had revised its constitution, and would be holding its first meeting in June 1998.

1998

The Chief Executive reported in February that suitable office accommodation had been identified at 77A St Peter's Street, St Albans, and the lease was being prepared. Council decided to defer the AGM to facilitate the office relocation, and the need for an office computer system upgrade was noted. Council remained concerned that the EAA was set up as a European Economic Interest Grouping (EEIG) with joint and several liability, which potentially made the IOA vulnerable as the only member with significant assets.

The Business Review Committee had now completed its two-year programme. Although some of the anticipated remit had been overtaken by changes in operational circumstances, many of the tasks originally planned were completed including a new format

for financial reporting, a review of terms and conditions for Sponsor members, and initiatives with the Membership Committee to encourage wider membership and to minimise leakage. More detailed financial analysis of *Acoustics Bulletin* to assist the Publications Committee in improving the performance of publishing activities, and the review and updating of the Terms of Reference of all standing committees, had also been completed. Though technically no longer in existence, the Business Review Committee had agreed additionally to consider the Terms of Reference for groups and branches.

Council held its last meeting at Agriculture House in May 1998. Taking into account the cost of the office relocation, the financial forecast showed a break-even position for the year including an anticipated net income of £15,000 from meetings and a subsidy of £20,000 for *Acoustics Bulletin*.

Consideration was given to allowing groups and branches to hold funds – the Underwater Acoustics Group did so already – but historically there were management issues, and most expenses were dealt with centrally, which assisted with accounts and handling VAT. It would be necessary to amend the terms of reference if fundholding were to be allowed.

Council gave special attention to the changes in the education field over the previous few years, and felt the time was right to review the Institute's general education policy. It was noted that the trend for universities to drop traditional MSc courses could increase demand for the Institute's Diploma, particularly by distance learning, which was becoming a more accepted form of delivery in the wider educational field. Concerns about the interaction between a distance learning course and the established teaching centres were expressed but it was felt that such a system could usefully serve regions without educational centres.

In October 1998 Council held its first meeting at 77A St Peters Street. The Business Review Committee and Executive Committee had come to the conclusion that it would be inappropriate in general for groups and branch committees to hold funds, though in special cases, such as branches with large geographical areas, exceptions might be made on a case-by-case basis provided that strict controls were imposed. Group and branch committees were asked to comment on the draft revised terms of reference for groups and branches.

The financial projections for 1999 indicated a marginal surplus having taken into consideration the costs associated with the new offices, so it was agreed to increase membership subscriptions to match inflation. The office staff had now settled in and the official opening date would be 17 December 1998: the Mayor of St Albans would officiate. Difficulties in maintaining the computer system were discussed by the Executive Committee and proposals to establish a new accounting system for 1999 were approved by Council.

The chairman of the Meetings Committee suggested that it should be reorganised along the lines of a small core committee with co-ordinating role for groups and branches: they would then be encouraged to take more responsibility for running meetings. It was noted that after many years of Autumn Conferences and Reproduced Sound events at the Hydro Hotel, 1998 would see the last one. The new venue from 1999 would be in Stratford-upon-Avon. Preparations were in hand to hold a 25th anniversary meeting at the Barbican Centre in London. The Noise Council was now in the final throes of being wound up.

The possible "red tape" required as a Licensed Body awarding CEng directly was noted by Council, but the increased flexibility afforded by not having to refer to the IMechE was attractive. Development work was under way to set up an accreditation committee within the Engineering Division.

Throughout the year the *Acoustics Bulletin* management board was working towards putting the website on a more professional basis, and the preparation of the first *Buyers' Guide* as a companion to the *Register of Members*. The Membership Committee was considering the introduction of electronic application forms, and Council agreed to part-fund an annual award related to undergraduate project reports at the University of Southampton in memory of Professor E J Richards. The Certificate of Competence course in sound insulation measurements was run at BRE. The Electroacoustics Group was reconvened after a period of dormancy, and the Industrial Noise Group was in need of revitalisation. Discussions were held with the Irish Branch, which wanted control of some funds for travelling expenses.

Bill Allen, who was one of those involved in the formation of the IOA and was its President in 1975-76, died on 14 December 1998 aged 84.

On the recommendation of the Chief Executive, Council approved at its December meeting the appointment of Rayner Essex as the Institute's new auditors.

1999

This was the IOA's Silver Jubilee Year, and the Anniversary Spring Conference was themed to reflect past achievements and future aspirations, with plenary and parallel sessions involving intensive participation of specialist groups. The Institute's finances were stable, the Business Review Committee had completed a thorough review of procedures and committee business, a CPD scheme was developed and implemented, and a working party was looking at the broad range of education activities, one of the key reasons for the existence of the Institute. The Proceedings working party was drawing up specifications for papers to be presented at meetings, with a view to improving standards, and improvements in the library services were investigated. On the international scene, there was continuing dialogue with EAA and I/INCE to develop contacts and commitment to co-operation, despite the severe concerns about the constitution of the EAA.

In the wider engineering field, the Engineering Council was working towards achieving acceptance of the revised Standards and Routes to Registration (SARTOR 3) with the main routes for registration of CEng and IEng now defined to include academic qualifications, training and experience (known as initial professional development) and a professional review to confirm competence and assess commitment. The EC believed that more work was needed to raise the profile and status of engineering and to encourage aspiring IEng candidates in particular.

The *Good Practice Guide on the Control of Noise from Pubs and Clubs* was in its final stages, involving feedback from members using the draft in practice. Material from the Hope Bagenal Archive was offered to the IOA library and subsequently received.

An important Code of Conduct case was discussed at the March Council meeting. The case was brought by an Institute member against an Honorary Officer and concerned actions taken in the course of his duties as an officer of the IOA. In view of the special circumstances, a tribunal was set up to consider the case, and it concluded that the member's professional reputation had not been damaged. Council approved the tribunal's report and instructed the Honorary Secretary to prepare a summary for *Acoustics Bulletin*. This case highlighted the need to review the Institute's own actions and those of its officers, employees and volunteers, so the Membership Committee was tasked with extending the scope of the Institute's Code of Conduct appropriately.

Other matters dealt with at the March meeting included the draft accounts for 1998, which showed the Institute had managed to achieve a satisfactory surplus even with the additional costs over the previous year. A new investment account was to be opened to maximise returns on the IOA's funds. The high quality of *Acoustics Bulletin* and the growing financial contributions from advertising were noted. The terms of CMMS's editorial services for the Bulletin and Register for 1999 were agreed, as were those for the Advertising Manager. A paper setting out the future of IOA Proceedings was approved. This established A4 as the standard page format and updated the guides for presenters and meeting organisers.

It was decided to publish the names of lapsed members in *Acoustics Bulletin*, as it appeared many had simply gone away and lost contact. In order to increase membership numbers, successful examinees of Certificate courses would be offered Associateship for an "extended year". It was noted that the traditional Spring Conference format, providing a platform for academic researchers and students, was fading – although there had been particular reasons for the style alterations in recent years. The Anniversary Spring Conference attracted more than 200 delegates and there was a record attendance at the AGM, held during the conference.

The status of the CPD sub-committee was discussed. Although under its jurisdiction, the Executive Committee felt the subject to be sufficiently important to elevate it to standing committee status as the Professional Development Committee and this was agreed by Council. The draft terms of reference for the Professional

Development Committee were discussed and approved in June. It was reported that about 100 members had enrolled in the scheme for 1999, which was rather disappointing, so the new committee was given the task of preparing a revised strategy to improve uptake.

Council established the Institute's policy of aiming to maintain a financial reserve of 150% of annual membership subscriptions, and the Engineering Division reported that it had completed its preparations for the EC audit on 30 June 1999. This subsequently proved successful and the Engineering Manager dealt with the necessary corrective actions.

The EAA secretariat was now established at the IOA HQ offices and activity was expected to increase around the time of the next General Assembly. The operation of EAA from the UK was likely to involve VAT registration, and perhaps a change in status, to avoid possible retrospective liability from the previous arrangements on mainland Europe. Later in the year, discussions with the EAA indicated its willingness to change its constitution, and progress was made regarding the liabilities associated with *Acustica/Acta Acustica*. This allowed the IOA to continue to support the EAA, but I/INCE was formulating plans for INCE Europe and possible conflicts of interest were identified.

The second issue of the *Buyers' Guide* was in preparation, and the E J Richards Prize for best final year student at ISVR (co-sponsored by ISVR and IOA) was to be awarded for the academic year 1999/2000. Meanwhile, concern was growing about the escalating printing costs of *Acoustics Bulletin*. It was agreed that CMMS's contract would be extended for six months whilst new arrangements were put in hand, and a working group under the Publications Committee chairman was established to find a way forward. One immediate saving was the use of a standard blue for the cover of the Bulletin, but advertising revenue was considered to be excellent.

The Education Review working group was reporting back to Council through the year, its object being to expand the Institute's influence in unifying and setting standards for education in the field of acoustics. In October Council approved its report for implementation by the Education Committee. Among other things, this included the appointment of a professional Education Manager. This was seen as a continuation of the process of structural change since the Institute took direct control of central management, wherein professionals would implement Council's policies in the interests of the IOA's members.

The Professional Development Committee's new strategy was discussed and approved. The Engineering Division proposed an Engineering Technician Grade, for consideration by the Membership Committee. A new constitution for the Meetings Committee was discussed, which once finalised was expected to be in place for 2001.

2000

The themes underlying Council's aspirations would be built on the reorganisation and consolidation process of recent years, continuing the drive for new members, developing education activities, and improving the scope of meetings and publications to disseminate the Institute's activities.

In January 2000, the Publications Review working group reported to a special session of Council. The review was necessary to control the escalating costs of printing and address delays in publication, as well as considering the wider aspects of *Acoustics Bulletin*. The composition of a proposed volunteer Editorial Board was discussed, as was the level of subsidy, the need to meet deadlines, and possible incentives to attract articles. The report was agreed with some minor amendments, with the additional consideration of interim mailings related to advertising, and ensuring liaison with the Meetings Committee about publication dates.

An outcome of the meeting of group and branch chairmen and secretaries held in February was that each of the branches should have someone on their committee responsible for membership matters. They would be advised of enquiries so that they could liaise with potential members.

The new auditors attended the March Council meeting to explain the presentation of the accounts which were prepared using the IOA's new proprietary accounting system. The surplus for 1999 had shown a steady improvement, and Council reaffirmed the policy that reserves should be held at a level to ensure that liabilities would be covered in the event of a winding-up. The target of 150% of

the annual membership subscriptions was considered appropriate, though not yet achieved, was still considered appropriate.

Council approved revised terms of reference for the Meetings Committee, and agreed the appointment of the committee officers. The Meetings Committee was considering a pricing strategy for attending meetings, including charges and student rates.

The Professional Development Committee was working on new proposals to promote and oversee professional development. The IOA's pilot CPD scheme had been running since 1997 with about a 10% take-up. Participants paid a registration fee, certificates of attendance for meetings were issued, with a suggested target of 30 hours per annum CPD activities, and records were sent to regional representatives for assessment. A review of the scheme's operation indicated the need for change. The committee's new scheme would expect members to formulate a flexible personal action plan to include both technical and non-technical aspects, and styled to encourage participation. The scheme would be free of charge, with participation being included in the membership subscription. Whilst attendance certificates would still be issued, the plan would be goal-oriented rather than based on hours or points. Forms and guides were prepared and the committee would seek to review a small number of records annually to monitor the scheme.

At the June Council meeting it was expected that the Institute would receive a substantial licensing period following the Engineering Council's audit follow-up visit in August. The new CPD scheme was being publicised.

Further concern was expressed about the joint and several liability arising from membership of the EAA under its EEIG constitution because of the guarantees to the publishers of *Acta Acustica*, although proposals to publish in CD-ROM format were likely to reduce the liability. The Immediate Past President would be representing the IOA at a meeting on 8 July 2000 and he was granted full discretion to negotiate on the Institute's behalf. The ongoing issue of joint and several liability of EAA member societies reached a critical point later in the year. After several years of concern about the growing financial risk, particularly as the IOA had the greatest financial reserves of any member society, the IOA had suggested re-constituting the body as a UK company limited by guarantee. Whilst the EAA board felt that a change was appropriate, another form of European association with limited liability was preferred by other societies. The IOA was also coming under pressure to take the CD version of *Acta Acustica* for all its membership, and this would mean a subscription increase to cover the £10 per capita cost: Council was concerned that the fairly academic nature of the journal would be likely to make it unattractive to many IOA members. It was felt that the Institute had been very patient over the liability issue, so the President would write to EAA stating that the IOA would not commit to subscribing to *Acta Acustica* and setting a deadline of 31 October 2000 for the EAA to commit to reconstitute itself with suitably limited liability for its member societies, otherwise the IOA would give due notice of resignation. With no such commitment from the EAA the IOA gave on 7 November one year's notice of termination of its membership. Council hoped that this action would prompt a suitable re-constitution so that the IOA would feel able to withdraw its resignation. It turned out in December that it was likely that the EAA would reconstitute itself as an Association under Spanish law which would entail a maximum liability of one year's membership subscription. This might permit the IOA to consider rejoining.

On the Chief Examiner's advice it was agreed to arrange to meet Engineering & Physical Sciences Research Council (EPSRC) managers with a view to trying to focus their attention on acoustics as an identifiable research subject area, rather than its current dispersion among other disparate subjects. An EPSRC theme day on an acoustical topic was planned. Following on from the discussions at the previous Council meeting, the President and Chief Examiner had held a successful meeting in September with EPSRC, at which the latter indicated its willingness to consolidate the approach to acoustics and build on its funding base for the subject area. EPSRC would be willing to support a theme day on acoustics. Council approved setting up a Research Co-ordination Committee under the Chief Examiner's chairmanship to examine the flow of information about the subject of acoustics both within and outside the Institute, and to look into a more co-ordinated approach by IOA members to EPSRC and other funding authorities.

CMMS declined to accept the new terms for publications work beyond 30 June, so in view of the short timescale, the Honorary Secretary was authorised to seek CMMS's agreement to an extension of their current terms for a further six months while alternative arrangements were put in hand. The Publications Committee expended considerable efforts to make arrangements for the production of *Acoustics Bulletin* after the current contract and approval was given for the appointment of a new production and printing contractor. The new-style *Acoustics Bulletin* would appear in the new year and arrangements were in hand to appoint an editor. The *Register of Members* and *Buyers' Guide* would be dealt with in due course. The end of CMMS's 20-year association with the Institute was now approaching and a vote of thanks to Cathy Mackenzie and Roy Lawrence was recorded.

Council approved the revised Code of Conduct, which would be published in *Acoustics Bulletin* and take effect in 2001. The Engineering Division had continued to work on introduction of SARTOR 3 procedures.

The EPSRC Theme Day on *Acoustics and its applications* was planned for the 2002 Spring Conference 2002. In view of the importance of the subject, Council agreed to establish a Research Co-ordination Committee as a full standing committee, with its terms of reference to be published.

The appointment of an Education Manager was approved, to take effect in January 2001, early priorities being to improve quality control procedures. The Education Committee wished to prepare new and revised modules for the distance learning course for the Diploma, and sought approval for a £12,000 budget to remunerate the authors. This proposal would be considered by the Executive Committee and Council, once the budget proposals were updated.

Educational initiatives were discussed, including sixth-form lectures, primary school talks, audio-visual resources, list of members willing to give educational talks, and media contacts. Regional meetings to promote the new CPD scheme were planned for 2001. The Education Committee had highlighted the need to update the Diploma's distance learning modules, and was formulating budgetary requirements. The appointment of a new editor of *Acoustics Bulletin* was ratified. The Library Working Group was likely to reconvene early in 2001 to consider the way forward, and the introduction of web-based services was put forward as a matter for future consideration.

2001

The year was expected to witness the consolidation of several projects which were taking shape over the past few years in the Institute's main areas of strength: continued integration of professional, engineering and academic interests, expansion of the educational programme, and further publications and meetings ventures.

It was confirmed in March that the EAA had decided that its future status would be as an association registered in Spain; Council agreed to join the new Association once it was set up, subject to legal checks. The Membership Committee advised that the recently approved Code of Conduct needed further revision to align with recent changes in the Engineering Council's own code, and the Membership Committee's proposals were approved. The updated code was to be publicised in *Acoustics Bulletin*.

Some representations were made to the Meetings Committee to upgrade the academic status of meetings; whilst the committee would consider it, the reintroduction of non-remunerative meetings was a retrograde step. The Executive Committee recommended the invitation of a young members' representative to Council for the year between the next two AGMs.

Updated terms of reference were discussed and approved for the Engineering Division, Meetings Committee and Publications Committee, and those for the newly-established Research Co-ordination Committee were approved. The Professional Development Committee had received a welcome response of nearly 500 from a membership survey. The Chief Executive sought feedback from Council on a first draft of a document *Marketing the Institute of Acoustics*.

Later in the year, the Education Committee's proposed rewrite of the distance learning modules was approved and a £5,000 budget allocated to start the process. The Institute's application to join the reconstituted EAA was approved and its membership of the former

EEIG was to be formally terminated in December. The IOA was still running the secretariat of the EAA, but this would be terminated in August when the duties were transferred to the new Spanish secretariat. The need for the IOA to establish a pension scheme for its employees was brought to Council's attention, and a Stakeholder Pension Scheme was set up to comply with legislative requirements, but in the event there was no interest from staff.

Council was pleased to note the generally strong level of branch and group activities. However, despite having organised successful meetings over many years the Speech Group was now in decline so attempts would be made to resuscitate it. The Electroacoustics Group initiated its Peter Barnett Memorial Lecture and Award to mark the death the previous year of a stalwart of the group.

At the December Council meeting, the working group on electronic publishing became a sub-group of the Publications Committee, with a comprehensive website to be implemented in 2003 and other electronic publications developed. Following earlier concern that there was a need to distinguish better between Associate Member and Associate, it was proposed to rename the latter grade Affiliate. A Technician grade was also proposed. Council asked the Membership Committee to formulate an amendment to the By-laws for approval.

The introduction of a new Distinguished Service Award to recognise outstanding contributions to the life of the IOA was approved, and the first would be presented at the Spring Conference in 2002.

2002

The last few years had witnessed a transformation of the Institute's business approach. Key management appointments were made and activities were more closely managed. Educational services continued at the high standard established from the outset, as did the popular meetings and conference programmes. A group and branch representatives' meeting was held in February, and proved a useful exchange of views, identifying a need for a better flow of information both ways between HQ and the groups and branches.

The greater involvement of young members was confirmed as a priority for the future wellbeing of the Institute. In the light of the useful feedback received during the first year of a Young Members' representative at Council, the idea was extended for another year.

A financial analysis of meetings had shown that one-day meetings were more profitable than residential conferences, so the Meetings Committee was now considering the introduction of more of them. The recent death of the Advertising Manager, Keith Rose, would cause delay in publishing the next issue of the *Buyers' Guide*, as he had been in the process of preparing it. The Medals and Awards Committee proposed a new Engineering Medal, and Council asked for detailed proposals. Following observations received about the marketing initiative, Council set up a Strategic Development Group to identify and implement key initiatives in the continuing development of the Institute. A draft methodology for the approval of codes of practice and guidance notes was tabled and comments sought.

The successful EPSRC Theme Day, *past, present and future acoustics*, which was held in conjunction with the Spring Conference, proved a useful tool for the Institute by bringing together the acoustics practitioner and research communities and consolidating the acoustics funding policy. Despite some concern about the proposed name change of the Industrial Noise Group to Noise and Vibration Engineering Group, it was hoped that new members would be attracted by the wider scope of activities. The group would be involved in organising the 2003 Spring Conference.

The Publications Committee reported that a new Advertising Manager had been appointed. Following discussion of draft proposals at the previous meeting, the Membership Committee had revised their proposed changes to By-laws and these were duly approved. The new Technician and Affiliate grades would be presented to the membership at a general meeting in 2003.

Council agreed to the President's proposal to develop a strategy under the broad heading *The future of the profession* to address the perceived shortage of trained acousticians, raise the profile of acoustics at all levels in the community and provide a better understanding of acousticians within society.

At the Council meeting later the same year, the financial forecast reflected a healthy position although better forecasting was requested. The draft accounts were considered healthy, but the upcoming rent review suggested that a contingency element in the

new subscription rates would be appropriate. Increased subscription rates were approved, though a reduction in the rate for the new Technician grade was agreed in order to encourage take-up. A note on the structure of Council was prepared for *Acoustics Bulletin*, to encourage nominations from the membership. Council learned that the ANC was prepared to donate funds to *The future of the profession* initiative. It donated £5,000 to assist with the setting up of an archive to house the papers of prominent UK acousticians, and Council agreed to match this and set up an Archive Fund.

The Professional Development Committee's main task of starting up the new scheme had been completed, so Council re-integrated it with the Membership Committee. That committee would be taking on a more strategic role in setting standards, providing guidance for those seeking admission or upgrade, and setting a framework for the maintenance of competence through CPD. The committee's terms of reference were extended to suit.

Following a request from the Electroacoustics Group, Council agreed to adopt the Peter Barnett Memorial Award as an Institute Award. Some controversial elements were resolved in the draft *Good Practice Guide on the Control of Noise from Pubs and Clubs* and it was approved for publication, although a controversial annex was left for comment by the membership.

2003

The future of the profession was a developing theme, and feedback suggested there was a continuing need to raise the profession's profile. There was a perception that greater public awareness was necessary about the value added by acousticians to society through sound reproduction, medical physics, architecture and building design, environmental protection, defence, speech and hearing, and underwater detection. There was also concern that qualified acousticians seem to be in short supply. The Medals and Awards Committee tabled proposals for a new Award for Promoting Acoustics to the Public, which met with approval. Responding to the President's initiative on the future of the profession, the ANC was in the process of setting up a website covering careers in acoustics, and Council approved the proposal to invite young IOA members to supply cameos of their careers.

On 15 May 2003, an EGM approved modifications to the Memorandum and Articles of Association and the By-laws, allowing the introduction and renaming of the Technician and Affiliate grades respectively.

At the July Council meeting the invitation of ANC representatives to relevant Institute committees was discussed. One example was the Education Committee, on which the views of employers would be particularly useful. It was also noted that the ANC website for careers in acoustics went live on 3 May 2003 and included cameos of IOA members. The transition to publication of the IOA's Proceedings on CD-ROM was noted as having been accomplished over the last year or so.

Council approved new terms of reference for the Membership Committee covering its expanded remit for professional development, and the requirements for the new grade of Technician member. In view of some difficulties that were experienced in finding suitable candidates for the UK recipient of the A B Wood Medal in alternate years, it was decided to include for consideration other European acousticians. There was a discussion about the need to co-ordinate the feedback from IOA members who serve on BSI committees. The Archive was likely to move to the University of Southampton Library, and it was noted that INCE Europe had now been accepted as a member of I/INCE.

An open discussion on strategic development took place in December, based on a steering paper from the Strategic Development Group. This highlighted a risk of reduced membership over the next decade owing to the ageing of existing members and a need for better promotion of the Institute to the outside world. The timescale of the demographic change provided some leeway, but nevertheless it was thought prudent to take action as soon as possible. Council determined that a factual basis was needed for the development of a firm strategy and that the first step would be to establish the views of the Institute's membership and others using a carefully constructed questionnaire. This would be developed by the Strategic Development Group and the Executive Committee. Council also agreed to resource research upon which to base a

strategy, and tasked the Strategic Development Group to undertake a scoping exercise for its development. Possible changes to the Articles of Association to allow payments for certain activities carried out by Trustees (Council members) had been discussed in recent meetings. Such payments were not directly related to Council or committee service, but to established remuneration typically for teaching and examination duties. The changes were intended to allow members who received such remuneration to be considered for positions on Council. Other possibilities considered were to separate the roles of trusteeship and Council membership. The President-elect was tasked with preparing proposals for the changes to the Articles to cover educational activities and at the same time to reduce the period of tenure of Ordinary Members of Council to achieve wider engagement of Institute members at the highest level.

The IOA was in a healthy financial condition, with income from high attendances at meetings and increased demand for the Diploma course. The accounts for 2002 had shown a significant increase in reserves and another good year was expected for 2003. Whilst the surplus would not be quite as high as 2002, some strategic expenditure had been made to upgrade the computer system. Branch activity was reported as generally good, though there was continuing concern over revitalising the Speech Group, for which a new chairman was actively sought, and activity was sluggish at the Yorkshire and Humberside Branch. It was observed that of the 19 meetings in the forward plan, 12 were on environmental noise and building acoustics, reflecting the popularity of these subject areas.

During the year Council approved the new IOA Engineering Medal. This would be a biennial award in recognition of outstanding contributions to acoustical engineering, open to engineers of any age in any field. Candidates must be registered as CEng, IEng or Eng Tech. The first award of this new medal would be at the Spring Conference in 2004.

2004

The last two years had seen a period when the Institute's standing and activities were further strengthened. Although much progress has been made Council was aware of the need to look to the future and safeguard the Institute's development in a continually changing environment. Financial stability was allowing expenditure on strategic resources to be considered.

Feedback was received from the biennial forum for an exchange of ideas and information of groups and branches representatives held in February, providing input to the strategic development discussion. This suggested that groups and branches were broadly happy with the current level of service provided by the IOA given its size and resources although more could be done to enhance the image of the Institute in the eyes of other professions.

The Publications Committee, now incorporating the *Acoustics Bulletin* Board of Management, presented its proposals to upgrade the Institute's website and Council approved a budget of £10,000 to appoint a development contractor. The Research Co-ordination Committee proposed amendments to the Code of Conduct to include reference to members engaged in acoustical research, and this was referred to the Membership Committee for comment. Council agreed that new day rates for meetings should be revised annually in the light of prevailing circumstances, and approved a Memorandum of Agreement with the University of Southampton Library for the loan of IOA archive material.

The updated proposal for the new Award for Promoting Acoustics to the Public was approved by Council, with the detailed terms of reference to be finalised. Industrial Acoustics Company (IAC), an Institute sponsor, inquired about creating a Young Person's Award for Innovation in Acoustical Engineering, which fitted well with the IOA's drive to engage with and attract young members. Council approved its proposal and delegated the detailed arrangements to the Medals and Awards Committee in conjunction with the Engineering Division.

Council approved a proposal from the Executive Committee that student membership should be free in order to encourage participation by young members. This would incur the loss of existing student fees but the change was expected to pay for itself over time through increased long-term membership. Publicity material for the IAC Young Person's Award was prepared and Council approved the judging panel. A proposal from the Meetings Committee for a reduced

scale of attendance fees for speakers was approved. A revised Code of Conduct was approved with minor amendments: this would be published in *Acoustics Bulletin* and would take effect in January 2005. Council approved putting the *Buyers' Guide* on the web site. The five-yearly rent review for HQ offices was negotiated by the Chief Executive, assisted by a professional valuer, and the renewal terms were approved.

In connection with the planned 30th anniversary dinner at the Autumn Conference in October 2004, the President proposed that Dr Leo Beranek, then in his 90th year, should be invited as a guest speaker at the dinner, and would be awarded an Honorary Fellowship.

At the October Council meeting good progress was reported with the development of the new website, and its launch was expected in December 2004 and publicised in *Acoustics Bulletin*. A major revision of the modular structure of the Diploma was planned for 2005, and seven specialist modules would be reduced to four. Distance learning continued to be successful, with 28 students at three centres. Consideration was given to the reintroduction of the Sound Insulation Measurement certificate course in conjunction with the ANC.

The licence renewal audit by the Engineering Council, now known as ECUK, took place on 27 September 2004 and the Institute was granted a further five-year licence to award CEng and IEng independently to qualifying members. The President thanked the Strategic Development Group for its work, and said that from now on the Executive Committee would implement and progress strategic development, calling on the assistance of others as necessary. The Executive Committee had affirmed some key points, which were approved by Council:

- the IOA should remain independent
- the IOA should consider offering secretariat services to other organisations
- the IOA should remain in the St Albans area,
- the successful part-time posts of Education and Engineering Managers should be considered a model to provide professional support for other activities.

Following Council deliberations at previous meetings, the President had discussed the proposed changes to Clause 4 of the Memorandum and Article 34 with the Charity Commission, the first covering the issue of payments made to trustees for specific education-related services and the second to reduce the term of office of Ordinary Members of Council. The Charity Commission had expressed satisfaction with the wording that was presented to Council, and Council duly approved the resolution to proceed with the changes. These would be submitted for approval by the membership at the AGM in 2005. There was much discussion about encouraging young members, and the President proposed that long-term membership too should be acknowledged. Council agreed to issue a Silver Membership certificate to those who had been members for 25 years or more, and once the first batch was completed the certificates would be issued annually for qualifying members.

At the December meeting, confirmation was received that the new web site had been launched, and the final terms of the Award for Promoting Acoustics to the Public were agreed. The financial statements showed further improvements in the projected surplus for 2004. There was growing demand for the Diploma and short courses, and the meetings programme had performed well, including the very well attended "update workshops" on the EU Physical Agents (Noise) Directive held with the support of HSE. The qualifying rules for free student membership still required clarification but the process would commence in January 2005.

The Executive Committee prepared a job description for a new post of Publicity and Information Manager with a target for appointment within six months. By the October meeting, 50 applications were received for the post, to be shortlisted for interview by the Chief Executive and the President. The Institute's first Publicity and Information Manager would commence duties in January 2005.

During the year Roy Bratby had decided it was time to retire, so finding his replacement was added to the other strategic issues in hand which included identifying further headquarters activities requiring staffing resources and establishing the basis of a targeted membership drive. The search for a new chairman of the Speech Group was ongoing, and the formation of a Young Members' Group was considered.

2005

Council's recent focus was to enhance the Institute's image and to improve communications with the outside world and within the Institute. Major achievements included the development of the new website, unveiled in December 2004, and the appointment from January 2005 of a Publicity and Information Manager.

The annual accounts for 2004 demonstrated very strong growth in the annual surplus. Current bank balances were the highest ever and confidence was expressed that the longstanding reserves target was now in sight. The Institute was investigating setting up a professional indemnity insurance scheme for consulting members. The Publications Committee reported that there had been a positive response to the new website and past issues of *Acoustics Bulletin* were being uploaded. Co-operation was encouraged with other societies including the Institute of Sound and Communication Engineers, British Society of Audiologists, Institute of Air Quality Management, and Institute of Physics, via the schools outreach programme *Lab in a lorry*.

The date for receipt of all medal nominations was set at 31 January annually, in order to rationalise them: the dates were previously staggered through the year. Council also resolved that there would be an academic bias to Spring Conferences in alternate years, in order to maintain interest from researchers and students.

The AGM was held on 19 April and passed two special resolutions relating to service on Council. Members receiving remuneration for providing educational services would no longer be compelled to relinquish it if elected, and in order to encourage wider participation a maximum period of continuous service of six years was set for Ordinary Members.

The Charity Commission approved the changes to the Memorandum of Association agreed at the AGM. The meetings programme was popular and financially sound, and the Meetings committee had prepared guidance for meetings organisers. Council approved revised terms of reference for both Meetings and Publications Committees. A specially formed judging panel was looking at the nominations for the Award for Promoting Acoustics to the Public, and the Medals and Awards Committee was processing nominations for the Young Person's Award for Innovation in Acoustical Engineering. These awards would be presented at Reproduced Sound 21 and the Autumn Conference, respectively.

The new website had been operational since late 2004 and feedback suggested it was becoming a popular information source. Prominence was being given there and in other organisations' publications to news and press releases about Institute events and services. Council believed that the IOA could play a part in co-ordinating and expanding the existing activities of some members in introducing acoustics to schools, and this would be investigated by the Publicity and Information Manager, for whose use approval was given for the purchase of a software package (Goldmine).

Strong demand for professional courses was reported by the Education Committee. This year, in conjunction with REHIS, the IOA was offering a new Certificate of Proficiency in Antisocial Behaviour etc (Scotland) Act 2004 Noise Measurements. Scottish local authorities sent officers on these courses so that they could be authorised to enforce this legislation. The Diploma restructuring was proceeding and established courses were running well, though there was some concern about lack of tutors.

At the October Council meeting, the reports from the standing committees continued to show a high level of interest in all Institute activities. The Publications Committee had been carrying out a tender process for a new contractor to produce *Acoustics Bulletin* and Council approved the award of a one-year contract for the 2006 issues, and subject to a performance review thereafter.

A new Central Branch to serve members in the Bedfordshire, Buckinghamshire and Hertfordshire had earlier been welcomed in principle, and by July an *ad hoc* committee had been formed. The formal request to create the branch under the IOA's terms of reference was duly presented and approved at the October Council meeting.

The 2005-06 *Register of Members* was despatched to members, and it was agreed to include a question via the strategic development questionnaire as to whether members preferred this to remain a printed publication. The style of the Silver Certificate was approved and it was expected these would be circulated at the turn of the year.

Roy Bratby confirmed his retirement from the post of Chief

Executive and the process of finding his successor had begun. A new post of part-time membership manager was also under consideration by the Executive Committee.

BSI committee representation and feedback had been under discussion at several meetings, and Council was minded to utilise the IOA group network to improve the co-ordination of representation on BSI and other external committees. This was to be discussed at the biennial meeting of chairmen and secretaries of the regional branch and specialist groups due that November. The main outcomes of that meeting were that greater use of the website should be encouraged, and minutes of committee meetings should be sent to HQ which in turn would provide membership details to groups and branches. Better liaison with other societies was encouraged.

Internationally, it was noted that I/INCE was forming a new study group on *Implementation of a global noise policy* and that INCE Europe was to hold a conference on wind turbine noise in Berlin in October. Council agreed to support EAA's SCHOLA initiative to prepare a Europe-wide listing of courses and thesis projects in acoustics, but elected not to support the EAA's desire for mandatory distribution of the *Acta Acustica* CD-ROM to all members.

At the December Council meeting it was noted that CPD forms would soon be available on the website. Improving the Institute's engagement with younger members having been a Council priority throughout the year, a representative to be invited to attend Council had been selected when a new interdisciplinary group for young members was discussed in general terms. The Young Members' representative was co-opted after the AGM. Council now benefited from her constructive criticisms. One suggestion was the creation of a student group to be responsible for arranging its own meetings and to act as a point of contact between students and the Institute. Other issues affecting young members included a general nervousness about participating at meetings, the advantages to be gained from interaction between younger and older members, and the benefits of having more young members on committees. Changes were made to the Institute's national, regional and specialist committee structures. The Executive Committee's proposal to amend the terms of reference for groups and branches was agreed to the effect that all committees would have a Young Members' representative (two in the case of Council, with overlapping two-year tenures).

Planning of the Spring Conference 2006 had proceeded throughout the year, with the aim of attracting input from both the academic and practitioner bases of the Institute and with a focus on contributions from young members and students. *Futures in acoustics: today's research - tomorrow's careers* would be a showcase for research and employment opportunities across the spectrum of acoustical disciplines. Student fees would be as low as possible to encourage participation, and abstracts for the conference would be prepared in CD-ROM as well as paper form. Arrangements were on course for this to be one of the biggest national conferences the Institute had organised, with several parallel sessions to be held over the two days.

During 2005 the content of the members' questionnaire was refined by the Executive Committee and the Chief Executive and discussed at some length by Council. The final questionnaire was approved by Council for issue in January 2006. The job description for a Membership Manager was drafted. The financial position was very healthy and the Honorary Treasurer expected that the reserves target would be achieved at year end, so Council's attention could turn to budgeting for additional activities.

Involvement in the consultation process with Government and other bodies was growing. During 2005 the Institute participated in the Department for Environment, Food and Rural Affairs' (Defra) consultation on PPS24 *Planning and Noise* as well as in making a case for noise as a special study subject for the Royal Commission on Environmental Pollution's 27th report, in the draft Scottish management guide, in the guidance and regulations for the Clean Neighbourhoods and Environment Act 2005 and in the ODPM's draft code for sustainable homes.

2006

As 2006 began the Institute had achieved two new milestones: passing the threshold of 2,500 individual members, with the highest net growth in membership for some years, and the most successful financial year ever. This meant that the policy on monetary reserves established by Council in 1999 was finally achieved. As had become

customary the auditors were present to discuss the accounts with Council in March. The surplus for 2005 was £124,407, which was the highest ever achieved and resulted in the longstanding reserves target of 150% of membership subscriptions being met (subscription income was £258,449 and the reserves stood at £417,994). Council agreed to consider putting some monies from future surpluses to improving resources and services.

The members' questionnaire was posted on the website and it was expected that the feedback from members would advance the Institute's progress towards a raised profile, increased influence, better engagement with younger members, enhanced membership services and improved HQ resources. The Executive Committee, with Roy Bratby's involvement, had been processing the candidates for the Chief Executive's post. The candidate selected was Kevin Macan-Lind, who offered an entrepreneurial background in marketing as well as experience of committees and working groups. He attended Council in March as Chief Executive designate. Roy Bratby was congratulated by Council on his work for the Institute, and Council confirmed that he would work alongside his successor until the AGM in May 2006 when he would formally retire.

The Education Committee reported continued strong interest in ASBA (Certificate of Proficiency in Anti-Social Behaviour etc (Scotland) Act - Noise Measurements) and workplace noise certificate courses and the Diploma, and restructuring the latter was postponed for a year. The committee was looking into setting up a competence course in sound transmission measurement in buildings, and increased fees for tutors and examiners were considered. The Meetings Committee reported that the Spring Conference was the best-attended for many years with over 200 delegates. The Engineering Division expressed satisfaction with the flow of applicants for engineering registration. Council approved some amendments to the terms of the Young Person's Award for Innovation in Acoustical Engineering, and amendments to the Institute's Diversity Policy were agreed. The new Central Branch held its first meeting on 7 March.

At the Spring Conference the President spoke appreciatively of Roy Bratby's nine years at the helm, where his tireless work on behalf of the Institute and his excellent management abilities earned the high regard of all the Institute's committees, the membership at large and the staff. The professional indemnity insurance scheme was agreed in June: this would be an additional membership service designed to meet the requirements of members who undertook relatively small amounts of consultancy work.

Following the decision at the previous Council meeting a formal bid to host Euro-Noise 2009 was submitted in May, the intention being to hold the meeting in Edinburgh. There had been two other bids from European Societies, and a full proposal was required by 1 October 2006.

Since contact was established a few years previously, EPSRC had sponsored two high level mathematics courses for acousticians. The Research Co-ordination Committee confirmed that EPSRC had agreed to fund a third summer school to support mathematics for acoustics research for 2007. However, the Education Committee reported that there was a record number of appeals about the Diploma course, notably on the vibration and noise control engineering modules. The Medals and Awards Committee felt unable to approve the nomination for the A B Wood Medal 2006. Despite increased applications it was felt that none of the applicants reached the required standard for the Award for Promoting Acoustics to the Public this year.

The detailed analysis of the members' questionnaire was published in the September/October *Acoustics Bulletin* and was discussed by Council. Members seemed to be happy that the Institute was doing a good job, but there were some constructive suggestions. There was a general feeling that the IOA should be more influential and write detailed responses to draft government documents. The Institute had in fact been doing this for many years, though there were sometimes difficulties in expressing the single view of an organisation with such a diverse membership. Council noted that the Institute was holding a one-day meeting in September on the Institute's response to Defra's draft guidance on the Noise Act, and such meetings and workshops would make the Institute's consultation activities more widely known. There was apparently a significant interest in routes to Chartered Scientist and Chartered

Environmental status, but Council felt it would be prudent to ascertain the true level of interest first, in view of the cost and administrative burdens of setting them up.

The new Membership Manager with a remit to manage and implement membership development and set priorities to maximise growth was appointed. An early task was to provide new member benefits, and discounts on car parking, rental cars, intercontinental hotels and health clubs had been negotiated by the end of the year. The Publicity and Information Manager was working on a new e-newsletter to plug the information gaps between bi-monthly issues of *Acoustics Bulletin*.

The appeals of Diploma results were dismissed by December as they were based solely on dissatisfaction with outcomes. Previous concern about the charges for advertising job vacancies were referred to the Advertising Manager who reported that only three complaints were received in 2006 about the cost of advertising. The annual revenue from advertising job vacancies was about £25,000 so there could be a significant impact if the rates were reduced.

Over a period, it had become evident that the number of complaints regarding members' professional behaviour was increasing. These were taken seriously and were investigated by the Membership Committee, a time-consuming task for its volunteer members. It might be a sign of a more litigious society or a consequence of greater publicity for the Code of Conduct. Fortunately, most of the complaints were not upheld.

A strong level of group and branch activity was reported, and the long-standing attempts to revitalise the Speech Group were finally bearing fruit. There was continued strong demand for educational courses and the meetings programme through the year, with successful international co-operation including the Building Acoustics Group's conference in Copenhagen (jointly with the Danish Acoustical Society) and the Underwater Acoustics Group's conference in Lerici, Italy. The Engineering Division reported a record flow of candidates for engineering registration.

2007

The Institute started 2007 in a strong position with the annual surplus well over £100,000. Whilst this was not as high as the previous year the difference was explained by the overlap of Chief Executives. The EAA selected the IOA to host Euro-Noise 2009 in Edinburgh. After several years of dormancy the Speech Group was now reformed as the Speech and Hearing Group and the first meeting was planned. Recent efforts to attract more students into science and engineering were starting to bear fruit, with more students joining the profession. The usual discussions of the accounts and annual report took place in March. Proposals were made to restructure the Education Committee: it was noted that demand for the ASBA course had peaked whilst interest in the Diploma remained strong. The University of Southampton Library had made no charge for housing the Acoustics Archive, so Council started to consider the reallocation of the ANC's £5,000 donation and to initiate discussions with the ANC.

Material for the Acoustic Ambassadors initiative was developed in order that members could present a talk and experimental project in schools. The scheme was to be piloted near St Albans, starting with Tring School, and would then be rolled out nationwide. This was part of a broader science and technology promotion project organised by STEM (Science, Technology, Engineering and Mathematics) co-ordinated locally by Setpoint, a charity funded by the Department of Trade and Industry (DTI).

Standing committee reports in June included the Research Co-ordination Committee's concern that IOA members were not being particularly successful in obtaining EPSRC awards in acoustics, and it was thought beneficial to invite the principal investigators for EPSRC proposals to attend the Spring Conference 2008. A new survey of acoustics-related research would be conducted on the web site. The Education Committee considered that developing Quality Assurance Procedures would be an important task over the next year. It was agreed that the Medals and Awards Committee would henceforth assume the responsibility for deciding the Award for Promoting Acoustics to the Public, having been managed by a special panel for the first few years. The Membership Committee acknowledged the appointment of the new Membership and Publications Manager. The meetings programme continued to be varied and successful,

including a one-day meeting to formulate the IOA's response to the Department for Communities and Local Government on the proposals to provide permitted development rights for micro-generation technologies including wind turbines. Council approved a set of notes for meetings organisers prepared by the Meetings Committee and noted that Reproduced Sound - RS25 - was planned for Edinburgh immediately after the Euro-Noise 2009 conference. Some group and branch committees needed to be reminded that they should recruit a Young Members' representative.

There was general satisfaction that publicity for the IOA was running well and co-operating with other bodies. On the other hand, it was still difficult to tell who represented the IOA on Standards committees. There was a slow take-up of the professional indemnity insurance scheme, with some difficulties experienced by the scheme organisers in identifying the sectors in which members using the scheme were active.

In September Council agreed with the Membership Committee that the Code of Conduct should be published on the public part of the website, but the procedures would only appear in the members' section. This arose out of concern that too much publicity for the code might encourage complaints. The guidelines for requirements for Fellow were modified to require a letter from the main sponsor (FIOA or HonFIOA) who should know the candidate personally. The new Membership Manager introduced "starter packs" for new members and improved the annual membership renewal form.

Despite the success of the Institute's website over the last three years, the Publications Committee reported that some difficulties were now being experienced with the website supplier in terms of flexibility and costs. A new website supplier was suggested but Council balked at the cost and asked for a revised report. However, it welcomed the idea of the planned regular international column in *Acoustics Bulletin* to raise awareness. The Meetings Committee reported that it hoped to include a careers forum at the Spring Conference in 2008, along the lines of the successful one held in 2006. The Honorary Treasurer observed that the surplus for conferences was starting to decline but this was counterbalanced by the reducing deficit on publications. Following discussions with the ANC, it was now planned to use the ANC's donation for the archive fund to set up a working group to produce a guidance document on motorsport noise.

The IOA had responded to the consultation on reforming the planning process for major infrastructure schemes, particularly noting the lack of reference to noise issues. A draft set of IEMA/IOA guidelines on Environmental Impact Assessment was considered but needed more work. The possibility of offering Chartered Scientist status was considered but found too expensive for the anticipated benefits.

There was a record number of registrations for the Diploma but completions were fewer because some students delayed their projects by as much as twelve months. At the December Council meeting, the Education Committee's proposals for a revised Diploma were agreed, and consideration was given to restructuring the Education Committee to allow it to devote more time to its strategic role. A putative document called *A school-leaver qualification in acoustics* was thought to be of sufficient interest to be discussed with schools. A Part E course organised by Acoustics Associates was to be accepted as a qualification for Technician grade membership, but it was stressed that this did not constitute formal IOA accreditation of the course.

An EAA initiative for a new regional conference to be jointly hosted by neighbouring EAA member societies was announced: the IOA and Belgian Acoustical Society were thought to be likely contenders for the first event in 2010. New awards had been established by the EAA, and these would be taken into consideration by the Medals and Awards Committee.

Council approved a proposal to establish a network in the area of sustainable acoustics, and agreed that an article should appear in *Acoustics Bulletin*. The Publicity Manager continued to raise awareness of the IOA and establish links with other bodies. A second Acoustics Ambassadors outing was planned. RS23 was very successful and attracted a large number of students. The Engineering Council's mid-term surveillance visit took place on 2 October and the Institute was highly praised.

On financial matters, Council was conscious that despite a good

range of meetings through the year, the surplus was lower than over the previous three years. This was partly the result of lower attendances, but the Meetings Committee was asked to review trends in order to assist with planning and costing the future meetings programme. The Honorary Treasurer sought active budgeting from all areas of activity rather than placing too much reliance on the previous year's data. As an administrative measure, Council agreed that the staff salary review date should be set as 1 January to match the financial year. There were six editions of the e-newsletter, providing a valuable addition to the publications portfolio. It was particularly pleasing to re-engage with schools through the Acoustics Ambassadors scheme, which was intended to make schoolchildren more aware of the varied careers available in acoustics, addressing Council's concern that too few students were taking acoustics degrees and entering the profession.

2008

Membership was at an all-time high, which was seen as an incentive to develop the Institute's services further, starting with the update of the website. The review of the annual accounts for 2007 highlighted a membership increase of 4% but a lower increase in subscription income, prompting a review of debtors. The balance of reserves had continued to increase, and some concern was expressed in the light of the IOA's charitable status that this exceeded the stated reserves policy. A reserve of £100,000 was set aside for charitable objectives by making awards from the interest generated. A note to the accounts to this effect would state this as future policy. New trustees would be made aware of their obligations under charity law and company law. For reasons lost in the mists of time, Article 2 of the Articles of Association restricted the membership of the Institute to 3,000. This limit would be reached imminently so Council resolved to ask the AGM to remove the Article and the limit. The free student membership had since its inception been limited to second-year students on recognised courses, in order to restrict the administrative burden arising from potential student dropout after the first year of a course. Having sought Membership Committee's advice, Council agreed to extend the offer of free short-term membership to first year students on selected university courses.

A target of £1,000 surplus per meeting, based on 14 meetings per year, was agreed by the Meetings Committee. Council approved a limited scheme of free short-term membership to conference speakers from overseas, in the hope that they would then renew it. The meeting organised jointly with RIBA by the Building Acoustics Group on exploring ways of improving soundscapes in buildings was a good example of developing relations with other professional institutes. Branch and group activity generally continued at a satisfactory level, although the Southern Branch had seen little activity over the past year. Following several years of dormancy, the Speech and Hearing Group held a successful one-day meeting in London. The network of Young Members' representatives was now complete and it was suggested that they be invited to attend the groups and branches meeting scheduled for April 2008.

The draft contract for the preparation of distance learning guidance notes was prepared and distributed, and the new terms of reference for the Education Committee's strategic role were approved by Council, along with those for its sub-committees and examiners.

June saw the Institute's finances in good shape, although committee expenses were on the increase. Council discussed the reserves policy and agreed to ask the Charity Commission for advice. The grants fund had been set up in order to deliver the corporate social responsibility and wider charitable aims of the Institute. The Executive Committee would allocate funds for suggested beneficiaries on merit.

So as to encourage new members to attend conferences, a 50% discount would be offered for the first conference attended in the first year of membership. This would be reviewed in two years' time. Council agreed to remove the 21 year minimum age for TechIOA, subject to a By-laws amendment. Online membership forms were to be used for Student and Affiliate grades to speed up the application process.

The Seventh International Auditorium Conference in Oslo, organised jointly with the Norwegian Acoustical Society, was scheduled for the Autumn, and joint meetings with the Belgians and the French were under consideration for 2010 and 2012. The Engineering

Division reported continuing demand for registrations. The usual ambitious meetings programme was maintained during 2008, and considerable effort was being put into organising Euro-Noise 2009, due to take place on 26 to 28 October 2009.

More consultation responses were prepared, but the decreasing timescales necessitated requests directed to the specialist groups, the response to be approved by Executive Committee. There was concern that the IOA was sometimes omitted from the list of consultees, resulting in short timescales. The Secretary of State for Defra would be asked to involve the IOA in the future development of noise policy.

In the absence of any proposals for the Grants Fund, a working group was set up to administer the awards. A two-year subscription to the Barbour Index was taken to enable the IOA's guidance documents and Codes of Practice to be available on line. Draft sustainability and environmental policies were introduced. The online system for recording and authenticating professional experience supported by the EC was implemented. Progress with the CPD scheme was reviewed and it was felt necessary to be more proactive in promoting CPD. A working group was formed to consider an update of the Code of Practice on noise from concerts.

The Young Members' representatives from all committees held a meeting in July and proposed a Young Members' Group: this was formed in January 2009. There was also a suggestion of an annual cross-disciplinary meeting specifically for young members.

An offer to host IC BEN 2011 (International Commission on the Biological Effects of Noise) in London, prepared at short notice, was accepted. The Institute would be financially responsible for the conference. EAA grants for young researchers were awarded to appropriate European students to attend EAA-sponsored conferences and this may apply to Euro-Noise 2009, although few IOA members were also EAA members. The UK was not on the SCHOLA website, so it was agreed that the Institute should add courses and relevant research opportunities.

By December the financial position was still healthy, and the auditors advised an increase in the reserves policy to 250% of subscriptions, implying a reserves target of £700,000. Leaflets for Noise Action Week 2009 in co-operation with Environmental Protection UK would be sponsored to the extent of £1,000, this being an appropriate charitable activity for the Grants Fund once fully operational. The IOA was invited to participate in the *Big Bang* event for schools at the Queen Elizabeth Hall on 4 to 6 March 2009: this was a good "fit" with the Institute's support for liaison with schools and colleges, and up to £5,000 would be spent on a stand at the event.

Earlier in the year the HQ premises landlord served notice to terminate the Institute's lease in March 2009, but by mid-September 2008 the proposed redevelopment was abandoned and a new 10-year lease was negotiated with only a small rent increase.

The first year of the Diploma with the new style syllabus began in September 2008, with four optional specialist modules, a separate laboratory module and an enhanced project. A record number of distance learning candidates had registered partly because of the newly-accredited centre in Dublin. Since 2004 the IOA had tried to ensure that the Diploma met QCA/NQF guidelines for postgraduate courses.

2009

At the beginning of the year the Institute again anticipated satisfactory financial results despite the poor economic conditions resulting from bankers' greed. A review of the accounts and annual report in March confirmed that on Charity Commission guidance the reserves policy would be 250% of annual subscriptions, the fund to be known as the Charitable Fund. Looking ahead, £2,000 would be made available that year for the Fund, with applications to be sought through *Acoustics Bulletin*.

The current Government guidance on the acoustical design of schools is set out in BB93 which is being considered for revision. A BB93 review forum was held jointly with the ANC in February and this identified issues for a joint response to the proposed revision. The IEMA guidelines were still under discussion, but representation on a CIBSE school design group would go ahead. The status of the Diploma was discussed in depth. Legal opinion confirmed that the description of the Diploma was "a professional course for graduates" and there was no reference to a postgraduate diploma in the

handbook. The Institute was considered to be on safe ground in the event of a complaint.

It was noted that the attendance at the previous two autumn conferences had been low albeit with a good number of exhibitors. The viability of the autumn conferences was discussed, but Council decided to go ahead with the proposed programme with HQ playing a more active role. The theme of the Spring Conference was *Environmental noise management in a sustainable society*. The EAA confirmed that 20 grants would be offered to young researchers to attend Euro-Noise 2009, 10 being for western Europeans.

By the June meeting the effects of the national economic downturn were on Council's collective mind and it was agreed not to increase membership fees for 2010. Members over 70 would benefit from a 50% reduction in subscriptions regardless of membership status, to be reviewed after one year.

The Education Committee was considering the possibility of a joint MSc with the Chinese but Council requested a more detailed analysis including budgetary and risk assessments. The committee also raised the possibility of setting up a Diploma hardship fund, but Council felt this was unnecessary. Nevertheless the Education Manager and President were given the authority to waive registration fees for no more than three "local" students.

It was resolved that from 2010 the organisation of the Autumn Conference would alternate between the Environmental Noise Group and the Building Acoustics Group. There was a discussion about conference content, noting that some autumn conferences had lacked substance compared with the plentiful talks and demonstrations at Reproduced Sound. "Show-stopper" presentations were thought to be one way of increasing participation, and perhaps academic and industrial content within meetings could be combined. By early April 550 abstracts had been submitted for Euro-Noise 2009 and it was confirmed that the Young Members' Group was organising an event therein. The first round of noise mapping and development of noise action plans would just be complete by the conference date.

The President met the Minister for Sustainable Development and Energy Innovation on 2 April to investigate the ways in which the IOA might increase the contribution it made in shaping proposals for the management of noise in the UK: interest was expressed in the formulation of Defra's Noise Action Plans. Defra indicated its readiness to fund some data collection before forming a new body to oversee the development of a code for environmental noise control at concerts, and a contract was placed later in the year. Within the IOA, the Building Acoustics and Environmental Noise Groups supported a review of the *Good Practice Guide on the Control of Noise from Pubs and Clubs*, as further research on attitudes to noise from pubs and clubs would be beneficial.

Council confirmed that only Sponsor members could use the IOA logo and reminded members about the correct use of titles and abbreviations. A proposal to develop master classes was reviewed by the Membership Committee. Consideration was given to the formation of a pool of members willing to help prepare responses to consultations to relieve the burden on the relevant interest groups.

Council agreed to change the name of the Yorkshire and Humberside Branch to the Yorkshire and North East Branch to stimulate membership. The meetings and events held by the branch network were seen as being particularly important in the prevailing difficult financial circumstances, as employers were becoming less willing to finance formal training for their employees. A Welsh Branch was born, out of the desire to provide a focus for the members in Wales and to provide a role for the IOA in shaping the development of Welsh noise policy: this was seen as increasingly divergent from the policy in England.

In September, the financial forecast predicted a loss on publications, although this took into account £15,000 of expenditure on the website. Committee costs had risen, with more participants and a proportionally greater number of expense claims. Euro-Noise 2009 was expected to provide a substantial surplus.

Although the terms of reference for the Young Members' Group were agreed, an unfortunate casualty of this period of economic difficulty was the Young Acousticians' Seminar which should have taken place in July. A Senior Members' Group was being formed, and the preparation of an IOA history was a possible project for this group. After some delays the long-anticipated new website went live and precipitated several compliments about its appearance and functionality.

The large number of consultations received prompted a suggestion for a "consultation tsar" who would have responsibility to check them and advise the Executive Committee. There were 18 draft action plans for airports in England, Noise Action Plans for agglomerations and major roads and major railways in England, and the Irish Building Regulations. The Education Committee was looking at setting up a competence scheme in building acoustics measurement, and the possibility of a short course in electroacoustics was also in mind, a subject no longer in the Diploma syllabus.

Internationally, the EAA proposed a new membership fee of €15 including a subscription to *Acta Acustica*. Council's view was that IOA members in general did not want the journal, and opposed the proposal. An agreement on co-operation with the International Institute of Acoustics and Vibration (IIAV) was signed.

At the December Council meeting, the financial forecast showed a reduced surplus, with a meetings surplus of £6,000 plus £7,500 from Euro-Noise 2009. The latter figure was much lower than earlier forecasts, highlighting the need for improved budgeting for all meetings, especially large conferences. Euro-Noise 2009 accounts would not be available until March 2010, but the conference was a major success for the 728 delegates and for the Institute's reputation. RS25 had seen 106 delegates. The IOA's annual income was now in excess of £500,000 so the Charity Commission would require the maintenance of a risk register, addressed in the annual accounts and report.

It was another successful year for CEng applications. The five-yearly ECUK review was successfully completed on 11 November, and a further five-year unrestricted licence was awarded. CPD was the subject of renewed discussion: a more robust scheme was needed, closely linked to the education and training offered by the IOA and to Institute conferences and meetings. The CPD team and Executive Committee would review current practice and prepare a draft five-year plan for Council by June 2010.

2010

At the March Council meeting, the annual accounts for 2009 were discussed: the Euro-Noise 2009 costs including the EAA levy had not all yet been billed, so Council agreed to include an accrual for these outstanding items. The accounts would consequently show a loss. The Honorary Treasurer also explained some of the unusual expenditure during the previous year, including redecorating the offices (£12,000) and developing the website (£20,000). This was the first financial loss in 20 years, but the Institute remained in good financial health owing to the reserves that had been built up. Differences between the management accounts and the annual accounts were highlighted, the costs in the former having shown only the actual expenditure during the year, thus not properly accounting for late outgoings. Council instructed the Chief Executive to implement improved budgeting procedures.

Negotiations with EAA reached a resolution with an increase in fees, but corporate members would benefit from reduced EAA meeting fees and free online access to *Acta Acustica*. This episode demonstrated that the IOA should have a more prominent position in EAA governance and identify a candidate for the EAA Board.

The formation of a Senior Members' Group was approved, and its aims and objectives were being formulated. The Welsh Branch held its inaugural committee meeting on 27 January 2010. Co-operation with Environmental Protection UK and the Noise Abatement Society was ongoing, and the IOA sponsored a John Connell Award for one year. The June Council meeting clarified that awards from the Charitable Fund were made *ad hoc* and paid from interest on a ring-fenced fund. Interest rate reductions meant less money was available: the fund stood at £4,000, half of which was already allocated to the John Connell Awards. It was later agreed that the IOA would continue to sponsor the awards to the same level.

After the initial enthusiasm waned, some criticisms of the website emerged, including lack of flexibility and secure areas. The Chief Executive voiced his disappointment with the supplier: the costs had been £20,000 to set up the website and ongoing maintenance was £10,000 a year.

The income from meetings had declined from former levels and was now at a break-even level although one meeting had lost £5,000. Formal agreement was now to be given for a meeting, based on a financial analysis. The Meetings Committee complained that its mandate was to provide a wide range of meetings, but did not include

financial considerations, so a review was needed. The committee believed head office should make the financial decision in consultation with the Executive Committee. The 50% reduction in new member rates for meetings registration fees was extended beyond the initial two-year trial.

The bi-monthly e-newsletter was now considered over-long, some even questioning whether it was necessary. Council thought it served a useful purpose, but it should become shorter and more frequent, to maintain topicality.

With the Charity Commission requirement in mind, a Risk Register was adopted. The method of electing Ordinary Members to Council was discussed, and the Executive Committee expressed a desire for a wider range of nominations. Council agreed not to present its customary slate of nominees, and to encourage more participation in the election through increased publicity.

Council was concerned about the frequency of staff changes at HQ over the year, and determined that the retention of key staff was the responsibility of the Chief Executive, who would report perceived problems to the Executive Committee. Eventually an improvement notice was served on the Chief Executive.

2011

The audited accounts for 2010 showed a better outcome than was forecast. Meetings income declined as expected, but education and publications made a strong showing. Increasing committee costs were causing concern so a limit on travel costs without prior approval was introduced. The forecasts for 2011 showed reducing income with increasing administration and overhead costs: detailed budgets were requested from the Chief Executive.

The five year Strategic Plan was published in the March/April edition of *Acoustics Bulletin*. The main points were:

- Influencing the acoustical agenda
- Developing tomorrow's professionals
- Maintaining standards and improving the skills of members
- Delivering excellent services to members and stakeholders through efficient management and effective financial planning.

The Meetings Committee reconsidered its strategy, and recommended the Autumn Conference as the main annual event (to be organised by specialist groups), with Spring Conferences arranged by academics as and when required. Proceedings of meetings were discussed at Council: some meetings did not now generate formal proceedings and there was a case for a more uniform record of the papers presented. Because CD-ROMs were regarded as non-sustainable, other electronic methods should be considered by the Meetings and Publications Committees.

The new Building Regulations in Scotland involved the use of competent testers, so a scheme to establish competence was approved. Co-operation with the ANC continued, with the current work on the acoustical design of schools to be published if the BB93 revision was not brought in by Government.

In June there were further discussions about the decreasing trend of meetings income: even the well-attended meeting in Dublin made a loss. Council asked the Meetings Committee to consider limiting any author's discount to the day a paper is presented. The Meetings Committee repeated its view that decisions about the viability of a meeting should reside with HQ, not them. One-day meetings were more likely to be financially successful and conferences needed to be broad in scope to increase the number of delegates. Austerity measures were biting hard, and too many IOA events lost money, even the high-quality RS27. Organising committees, the Meetings Committee and office staff would have to collaborate more closely, and cheaper venues and shorter conferences were to become the norm.

The permitted number of Honorary Fellows was increased from 2% to approximately 2.5% of the total membership in order that awards could still be made to worthy candidates. Executive Committee sought to amend Article 62 so that the principal means of serving formal notices about general meetings, and voting, should be electronic. The Membership Committee was becoming overloaded with increasing numbers of Code of Conduct cases, so the creation of a special sub-committee was discussed. The age limits for membership grades were replaced by reference to years of experience. The AGM held on 4 August 2011 rejected Council's motion to change to electronic communications, and objected to the increased limit for Honorary Fellows because the wording was imprecise.

The proposed joint IEMA/IOA guidelines on Environmental Impact Assessment were first presented by IEMA to the IOA as a draft in 2007, but during 2009 Council decided that the document was not worth pursuing further. Nevertheless, subsequent drafts were presented: Council still had reservations and thought the document needed further revision with new terms of reference, so a six-month deadline for completion was set.

It became clear that Euro-Noise 2009 had made a loss, and in general the use of high-cost meeting venues and outsourced services such as audio-visual contractors was a particular problem. The forthcoming joint conference with the French Acoustical Society might be too scientifically based to attract much IOA support. The Honorary Treasurer's report showed a forecast deficit of some £40,000. However, the tenth Congress on Noise as a Public Health Problem, organised by the IOA on behalf of IC BEN and held in London, attracted some 250 delegates from around the world and was regarded as successful. By the end of the year the IOA was represented on the boards of EAA, IIAV and ICA.

Despite having signed a 10-year lease only two years before, the HQ landlord decided to redevelop the site, and sought release from the contract. The Chief Executive negotiated a compensation package and identified a promising building, St Peter's House, in Victoria Street, St Albans, and Council instructed him to negotiate a lease.

Five years had elapsed since a membership questionnaire, and Council decided another was due. There was some discussion about lobbying that had occurred in Council elections and the possible skewed representation that may have resulted.

Consultation activity continued as negotiations with the Department of Energy and Climate Change took place about guidance on wind farm noise; the IOA's direct involvement was a positive step forward in line with objective 1 of the business plan. Noise remained a serious issue in the Department for Communities and Local Government's simplified planning guidance, and the debate about BB93 rumbled on, with ministerial guidance expected soon.

The STEM Ambassadors scheme had gained momentum and another £1,000 was allocated for school demonstrations. The cost of the latest web site redevelopment was now estimated at £20,000. There was still disquiet about the amount of acoustical research carried out by non-members. Planning was under way for two international meetings, the eleventh International Conference on underwater acoustics ECUA 2012 in Edinburgh and the joint meeting with the French Acoustical Society *Planning for acoustics 2012* in Nantes.

2012

The 2011 accounts showed a hefty deficit, reflecting among many factors the losses sustained by the meetings programme, the increases in committee expenses and non-recoverable VAT, and the reduction in Diploma student numbers. However, the lease for the new offices at St Peter's House to which the Institute had moved, included a rent-free period which would provide a breathing space to reduce a structural deficit significantly. Despite the cost, the Scottish accreditation scheme would continue.

Terms of reference for a staffing committee were agreed. Council resolved that the prescriptive references to age limits for member grades shown in the By-laws would be removed and replaced by references to experience or guidance. It was also proposed to remove from the Code of Conduct Rule A.1.3 which required any member asked by a client for an opinion on the work of another member to ensure the latter was aware of his or her involvement. The operating budget was discussed at length in July, and a number of apparent discrepancies identified, but budgeting of meetings was now back under control.

The BBC programme *Bang goes the theory* featured sound at its live show in Birmingham during March. EPSRC now required publicly-funded work to be published in open access media, making it difficult to publish in established journals. A successful meeting on wind turbine noise was organised by the Welsh Branch in January, following which a report was received by Council from the wind turbine noise working group. The report was later published in *Acoustics Bulletin* for comment by the membership at large. The Government's Planning Policy Framework (with no significant noise content) was introduced in March.

The member survey achieved a 37% response rate and there were many positive comments about IOA services. Constructive

suggestions for improvements would be used to inform future activities and strategy, and there was strong satisfaction with *Acoustics Bulletin*, but the website was surprisingly unimportant to members. Continuing development problems meant another year's delay to the new(est) website.

A special meeting of Council was convened on 5 September to discuss the position of Chief Executive. Kevin Macan-Lind resigned so Roy Bratby was appointed in an acting capacity until a new Chief Executive could be found. By the date of the scheduled Council meeting, financial problems were reported to be under control and a healthy surplus was forecast for 2012. The design contractors for *Acoustics Bulletin* went into liquidation and printing costs and contracts were reviewed whilst a new contractor was found.

NESCOT, one of the longest-established teaching centres, cancelled its Diploma course because of staff and financial reviews. The Musical Acoustics Group, inactive for a good while, found new committee members to revitalise it.

Following several years of draft revisions, the replacement for BB93 finally saw the light of day in the form of the Department for Education's *Acoustic performance standards for the priority schools building programme*. The document was largely the work of IOA and ANC members, and a three-month consultation period was anticipated: the IOA's building acoustics conference in November included a session to consider the document. A second document giving a methodology and worked examples would be the subject of further co-operation with the ANC.

Revised wording of the proposals to change Article 62 to permit the use of e-mail to serve formal notices to members, and for an Article 3 change to the number of Honorary Fellows, were put to an EGM on 6 November 2012: the meeting approved the proposed changes.

Council appointed Allan Chesney as Chief Executive effective 1 January 2013. Allan has an engineering background, followed by service in the RAF Regiment where he reached the rank of Squadron Leader, and was then involved in adult learning services and national advisory policy groups. One of his first tasks was to initiate a tender process for a new publishing contractor for *Acoustics Bulletin*. The website development suffered further delays and work was halted pending a review by the new Chief Executive and the President-elect.

The Honorary Treasurer was able to confirm the expected return to a healthy surplus for 2012. A fixed staff salary increase would apply for January 2013 but future reviews would be performance related. An invoice from the Noise Abatement Society relating to the John Connell Awards was larger than expected, and was queried. Proposals for Charity Fund beneficiaries were sought. A budget of £15,000 for a history booklet to commemorate the IOA's 40th anniversary was approved, and this would be funded from general reserves as a special publication for members.

The possibility of an ethics committee for researchers was discussed and referred to the Research Co-ordination Committee. A new Sustainable Acoustics Group was proposed and what would become known as the Sustainable Design Task Force was to be arranged to set up a meeting. The biennial groups and branches meeting had a CPD thread running through most of the discussion. A meeting to discuss strategy between Council and the chairmen of other committees was planned for shortly before the Council meeting in March.

Because the Publicity Officer was able to deal with consultation co-ordination a volunteer "consultation tsar" was no longer thought necessary. It was agreed to liaise with ANC and CIEH to organise a development team for planning guidance on noise.

Council recorded the sad news that Professor Peter Lord had died in early December. Professor Lord, President of the IOA between 1978 and 1980, was a very influential figure in acoustics and was closely involved in the creation of the Institute.

2013

With a new Chief Executive and the resolution of recent financial difficulties, the Institute could now look forward to a new era as the national economy recovered. Indeed, with the focus on implementing strategic objectives, 2013 looked set to herald an exciting time for the IOA. It was confirmed that 2012 had seen a healthy financial surplus. Budgeting policies were agreed, most notably that committees would be responsible for reporting the overseeing and management

of their budgets to Council, with assistance from designated members of staff. Committees would now compile annual budgets for their respective areas for Council approval each December. If this required a group or branch treasurer in each case, a revision of their terms of reference might be needed. The reserves policy, originally 150% and latterly 250% of annual membership subscriptions, was replaced with a fixed minimum reserve of £390,000 and a target reserve of £615,000 (for reference, annual membership subscriptions currently amounted to over £360,000). For the sake of expediency, spending limits of up to £25,000 were suspended for various combinations of Executive Committee and Chief Executive authorisation.

It was agreed to continue with the sponsorship of the John Connell Award for Technology, though the President undertook to discuss with the Noise Abatement Society the possibility of switching to the Innovation Award to achieve better promotion of the IOA. A proposal to create a Peter Lord Memorial Award was agreed in principle, and this would be related to a project team for an example of outstanding acoustical design. The President contacted Professor Lord's widow to seek her approval, which was forthcoming, and the Building Acoustics Group was asked to prepare detailed proposals.

Up to £5,000 would be spent on publication costs for the guidance document *Acoustic design of schools* by the joint IOA/ANC working group. The 2013 *Register of Members* would be the last paper edition, future editions being web-based, and meeting notices and calls for papers would henceforth only be sent by electronic means. Council approved the Chief Executive's budget of £100,000 to upgrade IT systems, which would expedite the provision of key financial data and include a new website with an improved members' area and online booking facilities. The President-elect chaired a small working group to oversee the project.

The possibility of an overseas branch was discussed following an approach from members in the Middle East. The Construction Skills Certificate Scheme was informed that the IOA considered all its members eligible for CSCS cards. Presentations at meetings would always be published but a formal written paper, whilst encouraged, would not be mandatory. The IOA's *Good Practice Guide to the application of ETSU-R-97 for the assessment of wind turbine noise* was launched on 21 May 2013. The Code and Rules of Conduct were updated with effect from 1 March. After a lull in activity, the Southern Branch resumed its meeting programme in January 2013 and the Musical Acoustics Group held a meeting in July.

A day-long strategy meeting was held in early March with 30 members of Council, committees and others representing all grades of membership. Eleven priorities were agreed with each having a project manager selected by the Executive Committee. The IT upgrade currently under way was a driving force.

The priorities identified were:

1. A clear, shared understanding of how the IOA worked was essential
2. A clear and effective development framework, with proactive membership development, was necessary
3. Acoustics-related study and career pathways should be widely recognised
4. Policymakers needed to recognise that acoustics played a role in relevant decision-making processes
5. Other professionals should recognise the significance of acoustics in their own roles
6. Information must be disseminated efficiently and effectively
7. Good practice should be widely recognised and implemented
8. A clear and well-promoted system of financial support was required that was open to the public
9. Quality standards should be improved
10. Meetings and events must be well-structured and effective
11. A diverse, engaged and thriving student membership was essential.

One particular initiative from the strategy meeting was the setting up of a Diversity Working Group, especially relating to issues affecting women members and others with childcare or similar commitments.

At the June Council meeting the Honorary Treasurer reported that the financial position was better than budget for this stage of the year, with all meetings so far in 2013 having made a surplus. It was expected that the reserves would remain well above the target of £615,000 at the year end. Free student membership was extended, under the umbrella of a student affiliate membership scheme. This would include STEM,

architecture and music technology courses, and part of the student offer would include the creation of a student acoustics magazine in electronic format for which a budget of up to £10,000 was agreed for its creation and the publication and distribution of the first two editions. A licence for webinars at a cost of £566 for one year was approved, in order to evaluate the use of on-line presentations as a CPD tool for members. A contractor was chosen to deliver the new website and supporting database. Stage 1 implementation of the web portal, membership, CPD, events and a voting system would be complete by October 2013, with the *Buyers' Guide*, online library and education provision by summer 2014. Budgets for each phase within the £100,000 total allocation were approved. As part of "promoting the acoustics agenda", Council approved a £12,000 budget for a year's trial of a parliamentary watch service.

The IOA *Good Practice Guide to the application of ETSU-R-97 for the assessment and rating of wind turbine noise* was launched on 21 May. Despite vigorous press promotion it received disappointing press coverage. It also led to some disquiet among IOA members about the Institute's role and the guide's technical content. Council, however, was satisfied that the remit was for a guide to technical matters relating to the application of ETSU-R-97 and the document was never intended to cover every possible issue or set noise limits.

The Meetings Committee reported that the 2013 Spring Conference was well attended: 168 delegates took part in a multi-group meeting with all the specialist groups represented in seven parallel sessions. This was intended as a trial platform for the 40th anniversary conference to be held in the autumn of 2014, for which arrangements were in hand.

The EAA published a new journal, *Acoustics in Practice*, in July 2013. This was geared to topical subjects for practitioners in acoustics and vibration, including consultancies, manufacturers, policy makers and regulators. There were ongoing discussions about the status of the Physical Acoustics Group; the IOP seemed unaware that it was set up as a joint group of both institutes but for some time there had been no IOA members on the committee.

By September the financial statement indicated that the operating surplus would be £38,000 before the additional strategic investments planned for 2013, leading to an operating loss of £37,000. Nevertheless the reserves would remain above the £615,000 reserves target. Up to £5,000 was allocated for a 24 page 40th anniversary booklet, *The sound of science*. A provisional booking was made for the 40th anniversary event at the NEC Birmingham, subject to further investigation. Proposals were invited from branches, who could each spend up to £1,000 on a 40th anniversary event. Members would be encouraged to pay subscriptions on time by means of sanctions restricting their access to the website. *Acoustics Bulletin* will become available in a page-turning pdf format, and the membership canvassed after a few issues with a view to ceasing to print a paper version: this will save printing and postage costs. Paper versions might still be available but a subscription discount would encourage take-up of the electronic version.

The Noise Abatement Society suspended the John Connell Awards and intended to publish a book of case studies: the IOA was invited to co-sponsor the book at the same cost. Council thought the proposed book too technical.

The President signed the Royal Academy of Engineering Diversity Concordat, intended to demonstrate commitment to equal opportunities, taking action to increase diversity in the engineering professions by collecting relevant information and developing an action plan to address any inequalities. An important part of the commitment was to monitor membership statistics, so the membership renewal form would include an optional request for personal data. This would help track any changes to the demographic make-up of the membership and aid future planning.

Draft regulations about the acoustic design of schools appeared in October 2013 and a meeting was held to help the IOA contribute to the consultation process. The revision of BS 4142 was imminent and an IOA meeting thereon was planned. The Research Co-ordination Committee collected information for onward submission to the Research Councils with a view to ensuring UK-based acoustics research was properly supported. Feedback from a Defra stakeholders meeting perceived the skills base in local authorities to be low, and said that some noise reports were of poor quality. Further information was requested from Defra via the IOA's representation.

New terms of reference were drafted for all committees, better to

define their responsibilities and authority, with a view to more efficient decision making. The new Honorary Secretary was tasked with reviewing the roles of honorary officers and Council members, along with the Memorandum and Articles of Association. Careers information on the web site was updated and a target set to deliver at least one article a month on the IOA student blog. There remained a need to collate a list of IOA representation on BSI committees. The new Student Affiliate Membership scheme was launched along with the first issue of the student magazine *Sound Bites*. The new website would mean that *Acoustics Bulletin* was available to students without printing and distribution costs, and it was agreed to expand the student membership to include students not in work and all Diploma students whether in work or not.

By December a £29,000 surplus was anticipated for the year, on the basis that the second payment of £24,000 for the website would by then have been invoiced. The targeted £1,000 surplus for each meeting had been met throughout the year. Next year a £49,000 surplus was projected subject to a wide tolerance for the sake of flexibility.

The Institute agreed to sponsor a proposed film *In pursuit of silence* as this would be of some value, but the level of sponsorship to be a partner, believed to be around £10,000, would be negotiated. Revised or additional budgets were agreed by Council including the history project (£18,000), Peter Lord Award (£1,000), and sustainability project (£1,500) which would reduce the 2014 budget surplus. The last-mentioned would be followed by a further £6,000 to develop CPD materials. It was agreed that the task force should have a representative on all relevant committees to ensure that sustainability informed all IOA activities. The Vice-president (international) became the IOA representative on the board of I/INCE. The Engineering Manager indicated his intention to retire during 2014, so his role and that of the education manager were linked to the upgrading of IT support for education.

On a freedom of information issue with the wind farm working group's report, the Information Commissioner ruled in the IOA's favour. To prevent similar issues in future the IOA would develop an open access policy to all the research considered.

Over the past two or three years, the activity of STEM Acoustics Ambassadors in schools had been progressing well, with the development of a pro-active demonstration *You're banned*. This was a hypothetical design exercise to identify and budget for acoustical treatment to a garage used as a music studio, in order to avoid complaints from neighbours or parents (hence the name). The Institute purchased demonstration equipment to support the programme of acoustics workshops, twelve of which were successfully delivered during the year, including a showcase event at Imperial War Museum, Duxford.

In a footnote to the year, the audited 2013 accounts involved significant changes from the projections presented to Council in December 2013. Firstly, the website did not go live until January 2014, meaning the invoice was included in the 2014 accounts. Secondly, the auditors made adjustments including the effects of deferred income from enrolment fees for Diploma students, reallocation of the rent-free period for the office, timing of bank interest, and the treatment of the website, IT systems and staff training as capital rather than revenue expenditure. These changes substantially increased the annual surplus for 2013 to £111,642, with a corresponding increase in reserves, but the next three years' accounts would be affected by depreciation of the capitalised items over the period.

2014

The new website finally went live on 1 January.

As the Institute of Acoustics entered its 40th anniversary year, there was cause for some satisfaction about the progress made. The Institute has steadily grown in size and professional standing, having passed through the phases of formation, creation and expansion of its membership base and the development of an impressive range of services. It has established its own professional staff base, achieved financial stability, and extended its role and influence nationally and internationally. From this secure base, the Institute can support new initiatives in furtherance of its professional and charitable objectives. None of this would have been possible without the sterling efforts of all those volunteer members who gave freely of their time and expertise.

Whilst there is never room for complacency, the founding fathers' vision of a strong, independent professional body to represent the diverse field of acoustics has indeed been realised.

Head office

Geoff Kerry

The term “IOA head office” is a really a misnomer. There is only one office, and no regional offices, but everyone refers to it as such. The sole office has been located in several different places, with St Albans being its home city for the past 25 years. At inauguration, with the secretariat provided by the Institute of Physics (IoP) it was only natural that the “head office” should be located at the IoP headquarters, then at 47 Belgrave Square, London SW1. It remained there until 1979 when Cathy Mackenzie took over as Institute secretary and established an office for the new secretariat at Heriot-Watt University in Edinburgh. However, meetings (of Council in particular) were still held at Belgrave Square. In those days many of Council’s committees were also held in the morning, with Council starting at 2pm, following a tray lunch which looked rather like some of the pre-packed lunches served on aircraft. The Membership Committee was one that met in the morning and this required Cathy to transport the relevant records down from Edinburgh. Together with the Council papers this required a rather large suitcase.

The financial crisis in 1989 coupled with the impending closure of the office accommodation on the Heriot-Watt campus, pending a move of the university to the current Riccarton campus, caused the Secretary and the Council to take a hard look at the situation and this resulted in the move of the secretariat to St Albans. Initially Cathy worked from home as she looked for suitable premises and eventually settled on a small suite of offices on London Road, St Albans. But both the Institute’s membership and its activities were growing rapidly, and the need to house additional staff and to find

extra storage space became a priority, but office accommodation had always been at a premium in St Albans so when the opportunity came to lease the top floor in Agriculture House on Holywell Hill, the home of the National Farmers’ Union’s Hertfordshire Branch, it was seized quickly, especially as it came with the offer of the use of the board room for Council and other meetings. At the time both the President and Honorary Treasurer were on separate business trips to Europe and took some tracking down in order to get approval for the deal, eventually ratified by Council. The secretariat quickly adjusted to its new premises towards the end of 1992 and the Institute soon settled down there with room to establish both a library and a meeting room for the use of members. After a year or so the Institute was offered, and took over, even more space from the “Farmers” but even then the accommodation was insufficient to meet the requirements of the rapidly expanding activities, especially for the storage of materials. Immediately before to the 1996 Inter-Noise conference the assistant secretary, Roy Lawrence, rented space in a barn at a farm near St Albans. As noted elsewhere by Roy Bratby, the “Farmers” building was on a short lease and in 1998 the inevitable happened: it became necessary to vacate and find some new premises. Number 77A St Peter’s Street proved to be a good convenient choice, and although initially on a 10-year lease it was to provide a home for the Institute office for the next 15 years. Pending re-development of the site the lease was terminated in 2012, and the “head office” moved to its current home in St Peter’s House in Victoria Street, St Albans.

The Institute in Edinburgh, 1979 to 1988

By Cathy Mackenzie

This report is reproduced from *Acoustics Bulletin*

It is now nearly nine years since the Institute moved its headquarters from London to Edinburgh. As a large proportion of the membership have joined in that time, readers may be interested to know something of the background to the move and to reflect upon some of the changes that have taken place in this time.

The Institute started life in 1974 through an amalgamation of the Acoustics Group of the Institute of Physics and the British Acoustical Society which was primarily designed to facilitate the organization of the 8th International Congress on Acoustics in London in June of that year. The Institute was formerly run from an office within, and with staff and facilities subsidised by, the Institute of Physics. The service charges levied by the Institute of Physics progressively rose over a period of a few years towards an economic figure and that fact in combination with the decision not to raise membership fees in step with the current levels of inflation created a considerable financial problem in the summer of 1979. Council took the decision that the Institute could no longer afford a presence in Belgrave Square and invited proposals from interested groups or individuals to provide a full secretarial office service.

The decision

Honorary officers visited several interested groups, throughout the UK and after due consideration accepted a proposal from myself backed by a generous offer of support facilities from Heriot-Watt University. The proposal was that, with a background of a degree in Business Administration and a post graduate degree in Acoustics, I should form a management company called Cathy Mackenzie Management Services and take on all the aspects of the organisation of the Institute. The management company would employ such staff as was necessary from time to time, this freeing the Institute of the usual statutory obligations in respect of employment legislation. To cover this activity, CMMS is voted a total fee by Council each year based on University Administrative Scales and I think it is fair to say that this arrangement has proved a broadly satisfactory one all round.

As a combined result of the hard work of Dr H G Leventhall who was the Hon. Treasurer at that time, the generous rental terms which covered a number of additional facilities offered by the Heriot-Watt University administration and the readiness of many Institute members to agree to a retrospective increase in membership fees, the immediate financial problems were overcome.

One of my first actions upon setting up the Institute office was to collect together Institute activities which had hitherto been handled in ad hoc arrangements at various other centres within the UK. These included meetings organization, the sale of publications and the administration of the Institute Diploma that had been set up in 1977. It has not, however included the publication of *Acoustics Bulletin*, which has been and still is under the care of an editor, who is paid a fee for each edition.

Three phases

Looking back over the nine years that the Institute has been run from the Edinburgh office, I am aware that many changes have taken place in both substance and style in the Institute’s way of life and that amidst these changes three overlapping phases of development can be discerned. The first was the initial period mentioned above during which the Institute’s immediate financial situation stabilised. The second stage was an expansion of existing activities which coincided with a steady increase in membership from the 700s in 1978 to approximately 1,500 in 1987. The Institute became a professional society during that time and in terms of its numerical strength, benefited from the manpower and training implications of such measures as the Control of Pollution Act 1974 and the Noise Insulation Regulations.

The third phase has been characterised by a reaching outwards to establish contact with other individuals and organisations involved in some way with acoustics. The annual Reproduced Sound conference in November in Windermere is of importance here as it brings together more delegates from outside the Institute, such as television sound engineers, public address engineers,

electronic music enthusiasts and so forth, than from within. The part the Institute is playing in forming the Noise Council as a successor to the Noise Advisory Council, in collaboration with the Institution of Environmental Health Officers, the Royal Environmental Health Institute of Scotland and the Institution of Occupational Safety and Health, is another example.

During the last nine years there has been a gradual but significant change in the pattern of attendance at conferences organised by the Institute. The number of delegates attending the annual Spring Conferences reached a peak at Cambridge in 1978 and since then the number of members attending in relation to the size of the membership has tended to fall. This is probably a reflection of economic pressures.

The visible face of the Institute's lifestyle is carried by its various publications such as conference notices, statutory notices, meetings handbooks and the like. During the last nine years a more or less uniform house-style has emerged with a characteristic coloured band being frequently used to identify notices from the Institute. The Institute's literature is mostly printed in Liverpool with the benefit of both lower costs and short lead times.

The Institute's Diploma has shown a steady growth, confounding predictions based on an assumed backlog of potential students. A distance learning scheme has also been developed in collaboration with Heriot-Watt University.

Other developments

Among other developments that have occurred during the past nine years, I would highlight the hosting of Inter-Noise '83 at Edinburgh, which attracted nearly 700 delegates making it one of the largest in that series. Additionally there has been the acceptance of the Institute Code of Conduct and the establishment of the Proceedings of the Institute of Acoustics in its current referenced form. The publication earlier this year of the first issue of *Acoustics Index*, a general reference manual on all matters acoustical, was a major event and especially so for an Institute of this size. The negotiations with companies and individuals as potential advertisers in the *Index* highlighted the fact that the Institute is not yet widely known among many involved with the subject. This suggests that more work may have to be done to extend the Institute's influence on national noise policy, for example.

The affairs of the Institute are of course regulated by the honorary

officers and Council, mainly through its Standing Committees. On a day-to-day basis, however, there can be no doubt that the responsibility for the good conduct of the Institute's affairs lies with me and in some ways this is no little burden. In common with the experience of many other learned societies of similar size to the Institute, the financial health of the Institute is an ever present matter for concern. When the office moved to Edinburgh the total cash flow that year was in the region of £7,000 whilst in 1986 it was £190,000. A large contributor to the Institute's income account has been the revenue derived from conferences and meetings and this is essentially haphazard in nature and the seemingly erratic nature of the Institute's year-end results can be traced in the main to that fact. For example, in 1983 the Institute benefited from the fees of delegates attending Inter-Noise '83 and in 1984 from the sale of considerable number of copies of the Inter-Noise '83 proceedings. In 1986 there was a considerable surplus from an exceptional year as far as meetings were concerned: the two Windermere conferences, Reproduced Sound 2 and Speech Research, were especially profitable in that respect. And the last lines on the Institute's balance sheets mirror this pattern perfectly. As a consequence it is no easy matter to advise the Hon. Treasurer on setting membership and meetings fees at a level that is acceptable to the Institute and to individual members.

The good organisation of the Institute relies heavily, of course, on the voluntary efforts of many members of Council, of its standing committees and of the group and branch committees. For this reason it is clearly important to maintain a good flow of members willing to serve on these bodies. This is doubly so because, for perfectly understandable reasons, members of these committees may find their circumstances change so they are unable to maintain their initial level of active commitment.

The future

For the future, I look forward to FASE '88, to be held in Edinburgh during the Festival, not only as an obvious source of helpful revenue but also so that we may again demonstrate our willingness to play a part in the affairs of acoustics at an international level.

From the point of view of its organisational development, it is my view that the Institute is now approaching a satisfactory steady state placing the emphasis on consolidation and extending the influence of the Institute to cover some of the many involved with acoustics who are presently outside its membership.

The view from the hot seat

Roy Bratby

Little did I know what lay ahead of me when in April 1997 I applied for the position of Deputy Chief Executive at the Institute of Acoustics. The rest is history!

At that time the Institute leased premises from the NFU in Agriculture House, Holywell Hill, St Albans, and Cathy Mackenzie Management Services administered the Institute until I was appointed Chief Executive on 1 November 1997. I am not an acoustician so when I mentioned this to the then President Bernard Berry at my interview, he responded by saying that what was needed was a manager, and that is what the job entailed – management.

Shortly after my arrival on 23 June 1997, I was reading through some of the files in order to gain a feel for the organisation and how it functioned, when I discovered that we occupied the premises in Holywell Hill on a rolling six-month lease. Until then nobody had mentioned this to me! The inevitable letter duly arrived and I commenced the search for an alternative at a time when office accommodation in St Albans was in extremely short supply. I located suitable premises at 77A St Peter's Street, but at a rental considerably more than we had been paying. After much thought Council took a leap of faith and proceeded. The negotiations were protracted, but eventually the terms of a 10-year lease were agreed and the move took place at the end of May 1998.

One or two of the other key matters I managed were: the installation of a new computerised accounting system; two upgrades of the computer system; a change in the format of *Acoustics Bulletin*;

a redesign of the published *Register of Members*; two versions of the *Buyers' Guide*; finding and engaging new printers for these publications; a website redesign; the setting up of an acoustics archive at Southampton University, and a survey of the membership.

None of these would have been achieved without the help and co-operation of the team at head office. Of the original team, Linda Canty, Joanne Steadman and Sue Omasta remained and were joined by Hansa Parmar, Judy Edrich and Pat Slade.

During my time Peter Wheeler was appointed Engineering Manager together with the newly created position of Education Manager, and Ian Bennett was appointed Editor of *Acoustics Bulletin*.

I served under six Presidents: in chronological order they were Bernard Berry, Ian Campbell, Mark Tatham, Geoff Kerry, Tony Jones and Colin English. Whilst all had different styles and varying priorities and interests, each gave their unstinted attention to the affairs of the Institute and I always enjoyed their full support.

One of the most pleasant sides of the job was the travel – I was fortunate to attend various meetings and conferences, not only in the UK, but also abroad in Fort Lauderdale, Rome, Nice, Lyon and lastly Copenhagen, where we held an extremely successful Auditorium Acoustics conference based on the Opera House.

Like everyone else, I remember fondly the Autumn Conferences and Reproduced Sound at Windermere, Stratford-upon-Avon and Oxford, as well the 25th Anniversary meeting held in the Barbican in London.

For me personally they were nine fulfilling years:

- Turnover increased by more than 50% to over £750,000
- Membership increased to more than 2,600
- Demand for our educational courses increased
- Following two successful audits of the Engineering Division, ably guided by Peter Wheeler, we were authorised to award Chartered Engineer and Incorporated Engineer statuses in our own right
- The target set by Council in 1999 for our financial reserves was achieved
- My last year's financial results were the best in the Institute's history.

I originally planned to retire at the end of 2002 to have more time to myself. However, as Council was having difficulty in finding a suitable replacement, I offered to remain in post for up to three years and eventually retired in 2006.

However, in September 2012 I received a telephone call from the then President, Bridget Shield, inviting me to come back as Acting Chief Executive to "mind the shop" for one day a week, until a new Chief Executive could be found. This turned out to be three days a week for four months! It proved to be a most enjoyable time and in 2013 I was delighted to learn that Council wished to award me an Honorary Fellowship.

The Association of Noise Consultants

Sue Bird

Whilst the ANC is a separate institution and not part of the IOA there has been a close relationship maintained over the years in order to tackle problems of mutual interest.

The Association of Noise Consultants (ANC) was set up in 1973, a year before the inauguration of the Institute of Acoustics. At this time the British Acoustical Society and the Acoustics Group of the Institute of Physics and the Physical Society, as it then was, were working towards the establishment of the Institute of Acoustics, and they acted as learned societies representing individuals who were working in the many branches of acoustics and noise control in the UK. However, some working in consultancy wanted an association to represent their organisations and the work they did, more like the National Council of Acoustical Consultants (NCAC) in the USA, and so the ANC was born.

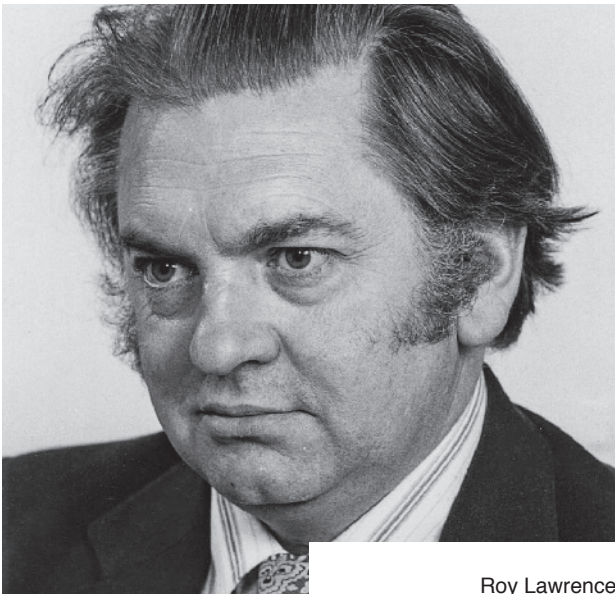
The ANC is a trade association which was set up as an unincorporated association, where commercial organisations become members not just by paying their subscriptions, but also by applying and being assessed on their technical competence. This requires them to submit reports and undergo interviews, and not all applicants are approved. One of the ANC's objectives has always been to raise the general quality of acoustical consultancy, and all members have to confirm that at least half of their consulting staff are Corporate Members of the IOA.

The members of the ANC are consulting organisations. Initially the number of members was low – just eight to start with – and this

increased slowly over the years so that on its 25th anniversary in 1998 there were approximately 50 members. In 2003, the ANC set up its Pre-completion Testing Registration Scheme to register members who measure sound insulation between dwellings as set out in the Building Regulations Part E, and this scheme was approved by the Office of the Deputy Prime Minister. Membership grew very quickly following this, until at October 2013 there were 116 members of the ANC employing about 800 consulting staff. In 2005 the structure of the organisation was changed so that it now became a company limited by guarantee.

Since its inception, the ANC has provided a forum for consultants to discuss subjects specific to their profession, and meetings have been held every two months to facilitate this. In addition, the Association organises conferences (sometimes in partnership with the IOA), and during the last 15 years it has produced guidelines on noise measurement and written books on vibration and environmental noise measurement. It also holds a huge database of results from all the pre-completion testing carried out by its members. All these activities help to raise the quality of consultancy, as does its annual award of a prize for the best IOA Diploma project, and one for the best technical project from a member organisation. These prizes also raise the profile of the profession.

The ANC supplies technical and commercial help for its members and provides professional development for those employed by its members. Its contacts with the IOA ensure that information and assistance flow both ways between the organisations.



Roy Lawrence



Delegates at Acoustics 82 at the University of Surrey



Dennis Baylis (centre), IOA Advertising Manager, with Geoff Kerry (right) at the 2003 Autumn Conference at Oxford



Acoustics 86 at the University of Salford



Inter-Noise 83

The Institute's finances

The Treasurer and the Institute's finances

Martin Lester

Rupert Thornely-Taylor was the Institute's first Honorary Treasurer and he guided it through the first five years up to 1979. Rupert's personal recollections of this period appear elsewhere.

At the Institute's incorporation in 1974 arising from the British Acoustical Society as a daughter society of the Institution of Mechanical Engineers, and from the Acoustics Group of the Institute of Physics (IoP), it began life as a daughter society of the Institute of Physics. During this phase there were benefits in being associated with the IoP such as economies of scale and use of publishing facilities, and these were particularly important when *Acoustics Bulletin* was first published in April 1976 (before this there had been IOA newsletters) and when the IOA started the Diploma course in 1978 (which even during its first year turned in a surplus of £800).

As time passed, the work provided by the IoP on behalf of the IOA became increasingly more costly, and despite decisions to increase subscription fees in an attempt to counterbalance the rises, in 1979 the IOA severed its ties and made a move to Edinburgh, where secretarial and administrative services were provided by Cathy Mackenzie. The position of Honorary Treasurer was taken on by Geoff Leventhall at a time when the financial situation had deteriorated. An earlier decision not to increase subscription fees above the inflation rate had to be abandoned and Council requested a retrospective increase be applied, but also indicated that those who wished to pay the 1980 fee could do so at the revised 1979 rate. Corporate member rates were £18 in 1979, and increased to £21 in 1980. In 1981 the rates were again increased up to £25 for corporate members. With the gift of hindsight, it can be seen that the need for such increases (partly the result of the rate of inflation at the time) had its roots in an earlier decision not to increase subscription fees annually, even in line with inflation. Subsequent financial records show that a subscription increase below inflation has always been followed by an overspend the following year, albeit sometimes with extenuating circumstances, and this highlights the need to consider decisions on subscription levels very carefully. In 1981 the reins of Honorary Treasurer were passed to Roy Lawrence, who held the post until 1985 and during this time there was a gradual improvement in the financial situation.

In 1983 Council discussed the need for some form of finance and general purposes committee to deal with the increasing scale of the IOA's finances, but it was agreed that this could be best serviced by the appointment of an Assistant Treasurer. There is no evidence that this happened.

From the incorporation of the IOA, regional branches held their own bank accounts with subventions from IOA central accounts. In 1984 it became a requirement that groups and branches submit their records for audit at the end of each financial year. In 1985 the subvention system ceased and annual sums were agreed for group and branch activities. Branch bank accounts ceased to be allowed once it became necessary to submit VAT records in a timely manner to avoid potential fines, and all accounting was handled by head office. Following complaints from some groups and branches in 1987 the Hon Treasurer and Vice-president (groups and branches) were given the task of writing a position paper for Council on group and branch funding. This was completed after discussions with group and branch treasurers and a proposal

was approved by Council in October 1998. This acknowledged that groups and branches should be given an element of financial responsibility, to which end a basic subvention, to be decided and approved by Council, was to be allocated each year. Groups and branches would be given the opportunity of challenging the figure if they thought it insufficient to cover their plans, but in so doing they would have to submit budgets to Council for approval. However all accounts would still be administered at head office. Although this procedure was embedded in the groups' and branches' terms of reference it never really got very far off the ground in most, largely because of the actions and controls that had to be brought in as a result of the deteriorating financial position.

At the AGM in 1985 Ralph Harrison become Honorary Treasurer, but resigned before the December Council meeting that year for personal reasons and was replaced by Geoff Jackson. All seemed to be well during 1988, but once the audited accounts appeared, the small expected surplus turned into a rather large deficit, and the auditors felt it necessary to issue a warning about the Institute's continued financial viability. This led to the President, Chris Rice, taking immediate action. He formed an Executive Committee which met at least monthly to conduct a wide review of the IOA's financial operations, and this was behind the decision to move the head office from Edinburgh (where the lease on offices in the old Heriot-Watt University buildings was coming to an end), to a small office in St Albans. The move was completed by mid-July 1989, and early support in St Albans was provided by new staff members Linda Canty and Sue Omasta, who are still members of the head office team, Linda as office manager and event organiser and Sue as publications administrator. The cost savings included a reduction in the direct support required from Cathy Mackenzie Management Services, which resulted in committee chairmen assuming greater responsibility for their activities within the Institute, the Honorary Secretary taking and producing the minutes of Council meetings, and the appointment of a member of Meetings Committee to oversee each conference or similar event. It was expected that there should be a small surplus, or at least a break-even, as a result, and in fact the resulting surplus of just over £8,000 was more or less the saving anticipated by the move from Edinburgh to St Albans. Additional effort was put in, principally by Dudley Wallis, to obtain additional income by reorganising the sponsor member structure, and this resulted in the introduction of both the key sponsor and sponsor grades. The introduction of an exhibition manager in the person of Andy Watson also led to increased income because more exhibitors were attending meetings and conferences.

By February 1990 the finances of the IOA had settled down and a small office space was taken at 75 London Road, St Albans. By June 1990 Geoff Kerry had taken over as Honorary Treasurer, and he continued in the role until 1998 (including a one-year co-opted period between 1992 and 1993, when Council could not find another volunteer). The financial position had stabilised and the workload at head office was becoming such that additional staff were considered necessary. By October 1990 it was considered that a financial assistant was needed to code financial data onto the computer, as this was taking a significant amount of the Secretary's time. Even though the economy was in recession during the early 1990s the control of costs and the giving of their own time

by members of Council and committees kept the IOA viable. During these years, the end-of-year surplus was noted in Council minutes to be very dependent on the November meetings held in Windermere. Even in the fortieth year of the IOA, it is still the case that an individual meeting can significantly affect the end-of-year financial position.

By May 1993 the head office had moved to Agriculture House, 5 Holywell Hill, St Albans, and it was agreed that with the general financial outlook looking good the Secretary could (eventually) employ somebody to carry out financial data processing.

By 1995 the financial situation permitted a further member of staff to be taken on to assist with general secretarial duties, particularly with the imminent running of the Inter-Noise 96 conference in Liverpool. One impact of the extraordinary costs involved with Inter-Noise 96 was that during 1995 all associated costs were removed from the normal operating accounts and carried over to the following year, with any outgoings in 1995 being taken from the reserves. Another consequence of Inter-Noise 96 was the decision to accept credit cards for payment, albeit in the first instance for the conference only. The possibility of using credit cards for all member transactions had been explored several years earlier but at the time the charge levied by Barclays on each transaction was considered too high. A reduction in those charges early in 1996 meant that Council could extend the acceptance of cards to subscriptions as well.

The increasing involvement of the IOA with the recently formed European Acoustics Assembly (EAA) caused some concern when it became apparent that the EAA's founding fathers had given insufficient attention to the funding arrangements. The Hon Treasurer alerted Council on several occasions and Ian Campbell, at the time carrying out a strategic review of the Institute's activities, also raised concerns that the EAA was constitutionally an EEIG (European Economic Interest Grouping) so joint and several liability existed, meaning the IOA, the only member with significant assets, was particularly vulnerable. Senior members of the Council were dispatched to EAA meetings on several occasions to try to resolve the issue: on one occasion the refusal of the national acoustical societies of France and Germany to accede to an IOA request to cut overhead costs led the IOA to consider becoming an associate member to avoid the financial liability. The eventual satisfactory outcome for the IOA is described elsewhere.

During the latter part of 1996 there was a change in the secretariat of the IOA, whereby those previously employed by Cathy Mackenzie Management Services were taken on as direct employees of the IOA in 1 January 1997. Cathy Mackenzie agreed to continue in her role as Secretary so as to provide support during a handover period. Roy Bratby was appointed Deputy Chief Executive in June 1997 and then Chief Executive when Cathy retired at the end of October 1997. One of his first tasks was to find a replacement home for the IOA, as the lease at Agriculture House was not to be extended. Roy's recollections of this episode appear elsewhere, but the move to 77A St Peter's Street occurred in the summer of 1998.

In 1998 the role of Honorary Treasurer was taken on by Keith Broughton, who remained in post until 2007 (with a one-year honorary advisory role between the AGMs in 2000 and 2001). It appears from Council minutes that from around the end of the century the practice of presenting a budget for the year ahead appears to have been discontinued, with the accounts being presented on a current-year versus previous four-year basis. This was probably because the finances were now being summarised by the Chief Executive rather than the Honorary Treasurer.

In order for the IOA to continue to grow and to understand its financial income and outgoings better, a new accounting system became operational in January 1999. Also at this time new auditors were appointed, and the firm, Rayner Essex, still audits the IOA in its 40th anniversary year.

Between 1999 and 2004 there seem to have been no major concerns in the finances of the IOA, and the reserves grew at a reasonable rate. Looking back, in June 1999 the Council minutes noted a discussion on the reserves policy of the IOA: at the time this was on the basis of *aiming for a reserve equal to 150% of annual membership income*. By the end of 2005, following a healthy surplus for the year, the 150% figure was nearly reached and the President (Tony Jones) commented that it was timely to prepare more detailed budgets in general. By 2005 the Charities Commission had noted that the IOA accounts did not refer to a reserves policy, and this was corrected for year ending 2005 and thereafter. The initial reserves policy to *build free reserves equivalent to 18 months'*

worth of membership subscriptions, was changed in 2008 to *build free reserves equivalent to 30 months' worth of membership subscriptions*. This appears to have held true until 2013 when it was reviewed in the light of what was believed to be a notional worst-case scenario for the IOA. This was predicated on reduced membership, with no meetings taking place, and a need to operate the Diploma for a two year period, so the policy became *target reserves are based on continuing operations for one year having had a 25% reduction in membership and having sufficient funds to ensure Diploma students' courses are maintained for two years*.

In early 2006 Kevin Macan-Lind was in place as Chief Executive as successor to Roy Bratby, with Roy continuing in an advisory role for around a six-month period. Financially both 2005 and 2006 were exceptional years owing to the highly successful Auditorium Acoustics conference held in Copenhagen and the equally successful Underwater Acoustics conference held in Lerici, Italy. These, together with the other meetings and educational activities, led to a very healthy surplus.

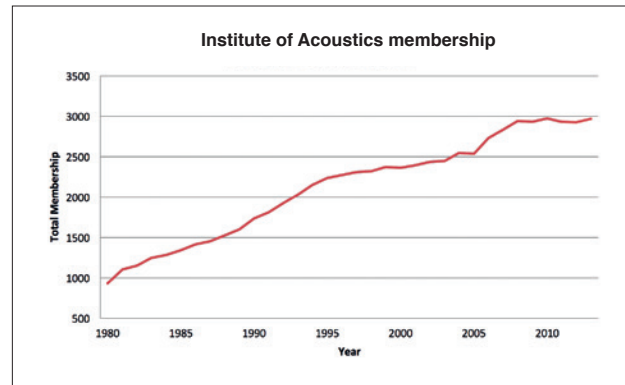
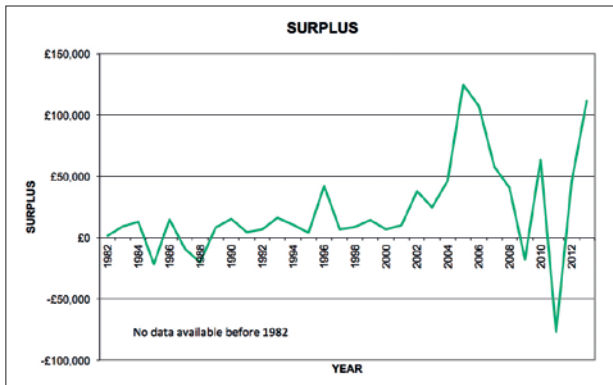
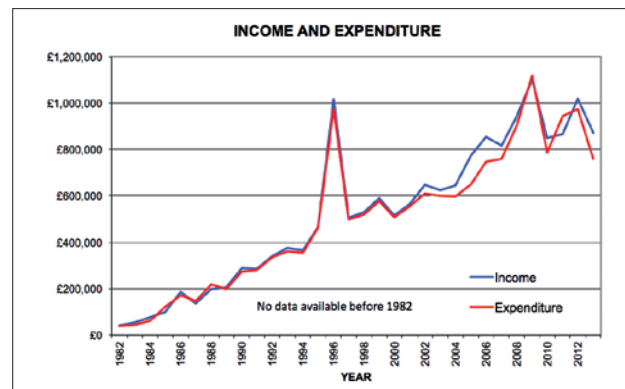
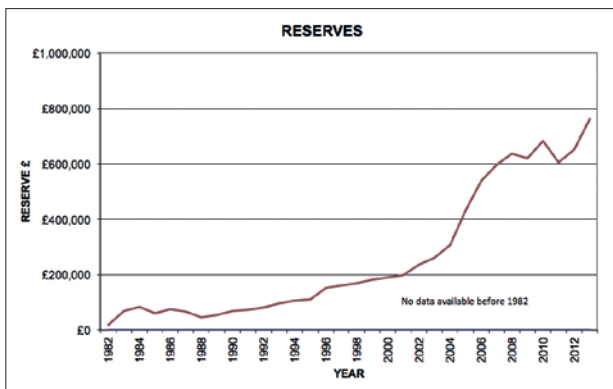
In 2007 Alistair Somerville took over as Honorary Treasurer. The annual surplus was still quite reasonable during these years, albeit down on the bumper years of 2005 and 2006. However 2007 saw some poorly performing meetings with a net expenditure of more than £21,000 for the year, while educational services showed nearly £36,000 less income than the previous year. This was mainly due to a change in the dates on which students were invoiced, but there was also an apparently significant reduction in membership subscriptions. During his time in office Alistair started to introduce the principle of a beginning-of-year budget against which to match progress throughout the year. Unfortunately this did not come to fruition before his term was completed in 2009.

The next Honorary Treasurer, appointed in 2009, was Martin Lester. Whilst it was the major conference of the year, Euronoise 2009 was identified as a separate item in the accounting system. It still formed part of the accounts, and was therefore considered to skew the reported figures whilst it was "live". The Honorary Treasurer excluded Euronoise from the financial reports to Council in order to help them see the underlying trend. Whilst it was a well-attended conference with very positive feedback from the delegates, it nevertheless made a loss for the IOA. There were other one-off costs which contributed to the annual deficit suffered for the first time since 1988, and as a result the Chief Executive was tasked with producing a more robust budgeting system, especially for large conferences.

In 2010 the Honorary Treasurer provided more detailed reporting of finances to Council, and steps were taken towards the presentation of a budget against which to compare the actual income and expenditure. Another deficit was suffered in 2011, predominantly the result of two large conferences (Auditorium Acoustics in Dublin and ICBEN in London). The Chief Executive was again asked to produce a more robust budgeting system for conferences, although Council appreciated that there were other factors such as the offset timing of invoicing the Diploma students from previous years, and there were also significant costs associated with website design. Head office moved from St Peter's Street to St Peter's House in Victoria Street in 2012, and this incurred further costs. During the year the Chief Executive, Kevin Macan-Lind, resigned and former Chief Executive Roy Bratby stood in until Allan Chesney took up the permanent post in January 2013. Although all this inhibited somewhat the smooth operation of the IOA's finances, the annual returns were again in surplus for 2012 and 2013, the latter in particular looking very positive. Partially as a result of the significant expenses associated with the new website, which are being factored-in over a number of years, the annual accounts will be affected for some time. Since his appointment, Allan Chesney has implemented a more detailed and structured budgeting system aimed at making everyone involved, even those at branch level, responsible for the costs of their section of the IOA, and has guided Council into producing a rigorous strategy for the future.

In terms of the hard facts of the finances, the financial records for the early years of the IOA can no longer be found, and it is only from 1982 that the financial reports within the Director's Report and Financial Statements for the IOA are available. The graphs provide information on reserves, income, membership and expenditure, and the resulting surplus in the years for which data are available.

Council is aware that the Institute is entering a new phase of its history when it must be more commercially aware, particularly regarding its income, in order that to remain capable of implementing the proposals that have come from the Council strategy meeting held in March 2013.



What financial crisis?

Chris Rice

The near financial collapse of the Institute in 1989 was an event which went largely unnoticed by the general membership. The report of the auditors for 1988 advised that an adverse financial situation prevailed, and that alternative accounting systems and procedures needed to be put in place: this was a process in which they would be prepared to assist. Council took the view that since the procedures had been in use, and previously unquestioned, over many years of assumed proficient monitoring of the accounts, the best interests of the Institute had not been served, and the offer of further help was declined.

Notwithstanding the role played by the auditors, who were subsequently relieved of their duties, as President I put it to Council that an Executive Committee should be set up to act as a buffer between headquarters staff and Council, with terms of reference to address and take action on those matters which were of grave importance to the Institute and which required urgent attention. The financial crisis of 1989 was the first such matter to be referred.

The nature of the crisis was as follows. The trading deficit for the year 1988 was £20,000, which represented about 10% of turnover. Assets were assigned at £85,000 (of which only £40,000 was cash held at the bank), with the combined uncertainty of debtors (£33,000) and unrealisable stock (£12,000) totalling £45,000. Hence with creditor liabilities at £47,000 another year of deficit could have left the Institute insolvent. Compare this situation with the 2012 financial statement of the Institute in which assets were £854,000 (of which £780,000 was cash held at the bank). The uncertainty of debtors was £75,000 and creditor liabilities were £202,000.

Back in 1988 the Institute was only viable because of the loyal and totally undervalued efforts of Cathy Mackenzie and Roy Lawrence, who were working day and night at the Institute's headquarters in Edinburgh. Without them there would have been no Institute: they kept the show on the road. The resulting personal strain coupled with the financial situation was so serious that the *modus operandi* could not be allowed to continue. Radical change was needed.

The Executive Committee met on several occasions and it was during these meetings that the support offered by the non-academic members was most helpful, not least that given by Dudley Wallis (Cirrus Research), who, in confidence to the President, offered to underwrite any failed attempt to rectify a short-term deficit in the financial situation, should this arise. This gave added confidence to our deliberations and allowed us to make the significant changes needed to the way in which the Institute would be run in future.

The view was taken that financial support for the *Acoustics Bulletin* and for groups and branches should not be reduced, neither should a request for a *per-capita* membership levy be made. Members were entitled to receive something for their membership fees, which were normally scheduled to increase in line with the annual rate of inflation. Furthermore financial support for the headquarters staff needed to be better provisioned.

The details of the actions taken are not matters for individual report, but may be summarised in the overall context of how they influenced where the Institute now finds itself. Crucial was the relocation and reorganisation of headquarters staff from Edinburgh to St Albans, and the magnificent role played in that by Cathy Mackenzie and Roy Lawrence. Subordinate to these savings was the introduction of the Associate Member grade, and the encouragement of younger acousticians to join their professional Institute. This also led to a membership drive including support for key sponsors and sponsors together with commercial subscribers. Expansion of the Diploma programmes and sharper control of the meetings programmes all provided the additional income so desperately needed, over and above the funding provided by membership fees, which have always been insufficient by themselves to fund the running of the Institute.

In retrospect I believe these actions provided the foundation for the start of a new era in the history of the Institute, which today is so successful in providing a professional base for acousticians.

The role of finance and industrial collaboration

Dudley Wallis

In 1989 the Institute was in what the then secretary Cathy Mackenzie later called the “starvation phase” of its history. For some years, although membership had been growing we had been operating at a real loss, and in the simplest terms our outgoings exceeded our income. Furthermore some senior academics chose to take the view that the Institute was there only to improve acoustic knowledge and such sordid matters as finance should have little or no part to play in our operations.

Commercial companies saw matters in a different light, especially the newer ones who were formed in response to the noise limits set in the 1969 USA Walsh-Healey Act. These companies were all small and without making profit they would not survive. Unfortunately they appeared to be considered nuisances rather than assets to be utilised: as a result none was encouraged to be involved with our governance.

Matters came to a head when the then auditors qualified the 1988 annual accounts by pointing out that not only were the accounting and management information systems “ineffective”, but the Institute had incurred a significant deficit. They further outlined the legal duties and responsibilities of the directors of a Limited Company (whether limited by shares, or as in the case of the Institute, by guarantee). A company limited by guarantee must have directors who may be given some other title, such as committee member, management committee etc, but whatever titles they hold, if they are in day-to-day control of the company, in law they are Institute directors. Their powers depend on the Articles of the Institute but they have very wide powers of management, just as in a company limited by shares. These powers are conferred on the directors collectively when they are sitting as a board and passing resolutions for the management of the company. They may, of course, set up sub-committees etc and delegate powers to them, and they may give particular directors special responsibilities, such as treasurer, membership secretary etc. However, at the end of the day the Institute, and hence the director's responsibilities, are still delimited by the Companies Act and various Inland Revenue rules.

This meant that the directors, collectively and individually, could even be financially responsible if the Institute in vulgar parlance “went broke” because of some failure on their part. This news concentrated minds wonderfully in 1989 and the incoming president Chris Rice convened a small sub-group, eventually to become the Executive committee, to propose ways of resolving the various issues.

Most important was the re-organisation of the accounting and management information systems. Second it was vital to increase the revenue streams in order to make a profit. This was not easy because annual subscriptions were mainly consumed by the need to mail and keep members informed on Institute matters, leaving no surplus as a safeguard against rainy days. Besides simply increasing turnover a continuous income stream was needed. Even then some members fought against the idea of a “profit” as being at variance with the academic aims of the Institute, but by re-naming it a “recovery” and pointing out that a loss would not allow us to carry out our main function,

most were won over and a policy document was produced detailing various routes to financial equilibrium.

One of the main new concepts was the introduction of the sponsor scheme with two main grades; these were key sponsors and sponsors. By paying a fee, sponsors could become more closely aligned with the Institute and as well as making a substantial financial contribution. The grade of sponsor was to be open to any company operating in the UK that had significant activity in acoustics. Application to be a sponsor would be vetted by the Membership Committee in the same way as for personal membership. While this did not mean that the Institute “endorsed” sponsors, it certainly provided an additional veneer of academic respectability by encouraging them to present papers at conferences and to exhibit at the accompanying exhibition. It was initially envisaged that about a score of companies might apply, and the final number was indeed around 20.

Key sponsors were to be “by invitation only” and limited to four at most, subsequently changed to three. They were chosen as the three most professional instrumentation manufacturers operating in the UK, namely Brüel & Kjaer, Casella CEL and Cirrus Research. These three were also the largest acoustical instrument manufacturers operating in the UK and all three had staff engineers on the various BSI and IEC working groups, and had previously published papers at Inter-Noise, ICA or ASA. Of these three, Brüel & Kjaer and Cirrus Research have continued as key sponsors to the present day. The cost to each company was not insignificant, but in return, they had access to the Institute and to get value for their money they were encouraged to attend meetings. In other words the Institute was selling them a fixed-cost service.

The sponsor scheme meant that no longer would the Institute risk significant losses at one-day conferences, as the Sponsors' annual fees would provide a fixed income. Furthermore, it was proposed that at every conference ‘fixed costs’ would be covered by the exhibitors, so that the Institute was no longer wholly dependent on delegate fees.

Another significant natural extension to the sponsor scheme was to formalise advertising in *Acoustics Bulletin*, and this was done by appointing an advertising manager. The sponsors themselves formed a natural pool from which to canvass for advertising, and they in turn could suggest their competitors as potential sources of income. The advertising manager would sell space in the Bulletin, as unless the space was being actively sold it would not be filled.

These changes in governance from parish council to professional management marked a step change in the role which industrial companies played in the activities of the Institute, which in retrospect was an achievement well worthwhile. Today, even the smallest companies are treated seriously and encouraged to become involved in Institute affairs and indeed since those earlier days many smaller companies have published papers at conferences. All these changes mean that we are now well funded, with income exceeding expenditure and holding a sensible strategic reserve. To paraphrase Mr Micawber, the result is happiness, instead of the misery of 1989.

Sponsor members

Dudley Wallis

The sponsor scheme remains firmly in place with the process and package almost unchanged since 1989 when two grades were established, Key Sponsor and Sponsor. The former was by invitation of Council. Unfortunately the number of Key Sponsors, which had remained constant for many years, recently reduced from three to two, with Brüel and Kjaer and Cirrus Research – two of the original Key Sponsors – remaining.

The IOA sponsor scheme is open to firms, organisations or individuals engaged in or having an interest in acoustics and whose support can advance the aims and objects of the Institute. A sub-set of the sponsor member grade is the institutional subscriber which is a grade of membership directed

primarily towards institutional departments, such as local authority environmental health departments and educational establishments involved in acoustics, who wish to keep informed of the Institute's activities.

The number of sponsors and sponsoring organisations stands currently stands in excess of 40, representing a broad spectrum of disciplines from academia through consultancy, manufacturing and supply, all of which promote the Institute through their marketing and active corporate membership.

The needs and interests of all the sponsor organisations are represented on Council by the Key Sponsors who attend, by invitation, on a two-year cycle.

Recollections of the first Treasurer

Rupert Thornely-Taylor

One of the constituent parts of the Institute was of course the British Acoustical Society, which was administered as a daughter Society of the Institution of Mechanical Engineers. The IOA therefore found itself in a not unfamiliar situation on incorporation: it was a daughter Society of the Institute of Physics (IoP). This was a mixed blessing. There were economies of scale in that the administrative establishment of the IoP was available including its account-keeping resources, and the treasurer's task was quite high-level. We also made use of the impressive building at 47 Belgrave Square, at that time the headquarters of the IoP. When *Acoustics Bulletin* was founded, the publishing resources of the IoP were readily available. A disadvantage, however, was that the opportunities to negotiate the size of the bill we received each year were limited. Those were the years of phenomenal inflation peaking at 26%, so all costs each year were expected to be very much greater than the year before. Membership fees obviously had to go up frequently too, and there was pressure to keep these as reasonable as possible.

It was in a year when the size of the proposed increase in the annual administration cost from the IoP was particularly daunting that an alternative, ostensibly cheaper, proposal came in from the Heriot-Watt University and we parted company with the IoP.

The early 1970s were times of considerable activity on the noise front. In the days of the British Acoustical Society and the Acoustics Group of the Institute of Physics and the Physical Society, those organisations were mainly devoted to the science of acoustics. Noise (environmental and occupational) as a discipline within acoustics was only beginning to emerge. The creation of the Noise Advisory Council by Anthony Crosland in the last days of the Labour administration, picked up and developed by Peter Walker, the first UK Secretary of State for the Environment, and the gestation of what became the Control of Pollution Act 1974 and its associated advisory circular 2/76 were happening soon after the United States EPA's Noise Control Act was passed by Congress in 1972. I was in Washington on a Churchill Fellowship at the time, and there was a real feeling of excitement the day the Act was passed. The Health and Safety at Work etc Act was enacted in 1974, a couple of years after the appearance of the Code of Practice for reducing the exposure of employed persons to Noise. Yet the term "noise consultant" was hardly known, and subscription income to the IOA from practitioners in the field of noise, who are particularly numerous today, was small. Such practitioners as did exist were those acoustics professionals in education or architectural/building acoustics whose subject area extended to noise.

Standing Committees

Geoff Kerry

As stated by Tony Jones in chapter two, Council conducts much of its business through standing committees. The Articles of Association in fact allow Council to delegate any of their powers to sub-committees consisting of “such Member or Members that they think fit”. In practice the sub-committees are constrained to act within guidelines set down by Council and normally report the activities and decisions emanating from their deliberations to Council for ratification. Experience and the previous chapter indicate that recommendations do not always go through “on the nod” without at least some debate, and sometimes prolonged debate. It is the power to appoint a committee of one that allows the Honorary Treasurer and the Vice-president Groups and Branches, and the Vice-president International a degree of freedom in dealing with matters allocated to their jurisdiction. In most instances important decisions are passed to Council for approval and for some time now the Honorary Treasurer has worked very closely with the Chief Executive to compile budgets and ongoing accounts. Membership of committees is open to all corporate members. Initially committees were chaired by members of Council itself but largely in order to distribute the administrative workload of the Institute amongst more members, Council now generally appoints standing committee chairs for their knowledge and experience. Membership of each individual committee is governed by the specific rules and requirements of that committee, but with few exceptions, when seeking new members, committee chairs have always in mind Council’s over-riding wish that each committee is comprised of members who amongst themselves represent as wide a spectrum as possible of the Institute’s membership.

Five of Council’s standing committees were in place at the IOA’s inauguration in 1974, having been established during British Acoustical Society days. They are Education, Medals and Awards, Meetings, Membership and Publications. With the exception of Education they have served Council continuously over the first 40 years of the Institute’s existence. The Education Committee, initially responsible for providing advice on careers and formulating the early series of sixth-form lectures, was disbanded in 1977 when its own sub-committee, the Diploma Advisory board, was given a wider role: the remainder of Education Committee’s tasks were handed to Publications Committee. It was, however, reformed in 1981 and has continued to this day to oversee all aspects of education in the Institute through its many sub-committees including the Diploma Advisory and its Examination board, the Diploma distance learning tutors working group, the committees and their examination boards for the Certificates of Competence in Workplace Noise Assessment, Environmental Noise and Building Acoustics, and the Certificate of Proficiency in Antisocial Behaviour (Scotland) (ASBA), and, up to 1999, the Continuing Professional Development (CPD) committee.

To the five standing committees were added the Engineering Division Committee in 1986 and the Research Co-ordination Committee in 2000. The Executive Committee was formed in 1989 in with a remit to provide an effective liaison between

Council and the management services of the Institute, to formulate proposals for policy and action relating to the managerial and financial activities, and to take executive action on any matters considered too urgent to await the next Council meeting. In effect it took over and extended the role of the *ad hoc* Finance Committee formed in 1985 to assist the Honorary Treasurer.

There have been several other Council sub-committees formed as and when and for as long as required. Examples are the Legislative Committee (1975), the CPD Committee, which having been elevated to full standing committee status in 1999 to inaugurate the CPD scheme was re-designated in 2003 once its prime task had been completed, this time as a sub-committee of Membership Committee, and a number of committees that were, in effect, working groups such as the Business Review Committee (1995 to 1998), the Strategy Committee (2001 to 2004) and the current History working group formed in 2011 to produce this volume on the first 40 years’ history and to ensure that the Institute’s documents and records were archived in a manner suitable for future use.

The Noise Council proposed in 1982 and launched in 1986 was something of an exception. An advisory group was formed in 1981 following the demise of the Government-sponsored Noise Advisory Council to advise IOA Council on how best to ensure that its work continued. Following discussions with several organisations the Institute in conjunction with the Institute of Environmental Health Officers (IEHO, now the Chartered Institute of Environmental Health, CIEH) and the Royal Society for Environmental Health in Scotland, and the Institute of Occupational Safety & Hygiene (IOSH), agreed to set up the Noise Council. Although as far as Council was concerned it was apparently treated as a sub-committee with the IOA delegate reporting at each Council meeting, it was in fact a separately funded and administered body.

The current nine specialist groups, 11 regional branches and the Young and Senior Members’ Groups are all constituted under the same clause in the Articles as the standing committees and are therefore effectively sub-committees of Council reporting to it through the Vice-president, Groups and Branches. The bi-annual meetings held since 1985 provide a ready means for assembling and disseminating important information and experiences. Before that date, group and branch representatives had been invited to a regular annual open meetings of Council.

The following chapters are individual histories of the standing committees and the groups and branches compiled from the records and from individual reminiscences.

Education Committee

Bob Peters and Keith Attenborough

Early years (1974 to 1982)

As has been mentioned previously, the IOA was formed on 1 January 1974 as a result of amalgamation between the British Acoustical Society and the Acoustics Group of the Institute of Physics, but the first meeting of the newly formed IOA Education Committee was held on 17 December 1973 at 1 Birdcage Walk, London SW1. Present were Mr A N Burd (in the chair), Dr J Blitz, Mr R P Itter, Mr I J King, Dr S Rusby and Dr R W B Stephens. Mr R A Jones was in attendance and apologies were recorded from Mr W A Allen, Dr B K Gazey, Mr B Smith and Mr K Worrall.

The minutes of the first meeting begin with the chairman welcoming Messrs King, Jones and Blitz to the committee. In doing so he stated that there was now a need to reform the committee in view of it now being under the aegis of the Institute of Acoustics. He had asked Professor Dobbs to become chairman, but he had declined. Mr Burd would therefore continue for a further year and would then resign from the committee. Meanwhile there would be representatives from each of the founding bodies of the Institute, who would be Messrs Blitz, Mackinnon, Worrall, Rusby and Smith. He then explained the reasons for the setting up of the committee and the work it had done.

The business of this first meeting reflected the ongoing work of the previous committee:

- Programme of sixth form lectures
- Short courses in acoustics and noise control held at Newcastle and Ewell Colleges
- Report of meeting on education in acoustics
- Possibility of reprint of education and careers in *Acoustics Bulletin* booklet
- Continuation of the schools Project competition organised by the Acoustics group (of IoP) in 1974. A list of projects which had been submitted included: Environmental noise on a school site; Wood resonance in a violin body; Jet noise from whistling kettles; Growth of auditory sensation; An underwater ranging system; Attenuation of ultrasonic waves by paper; C_p/C_v for carbon dioxide.

Some of the early meetings of the committee dealt with other matters such as: survey of technician training needs in acoustics, refresher courses for teachers, IOA display boards (for sixth form lectures?) and a lecture on acoustics for personnel in industry.

At the tenth meeting of the committee, on 5 February 1976, it was reported that a favourable report had been received from Council to a committee proposal to set up a working party to set up IOA Diploma in Acoustics and Noise Control, a proposal which had initially come from Membership Committee. The Diploma advisory board was set up and the first Diploma course started in September 1977: the first set of examinations took place in June 1978 and were sat by 56 students from four centres.

The setting up of the course, which is still going strong nearly 40 years later, was within four years of its first meeting already an outstanding and lasting achievement, and is a great tribute to the hard work and vision of those early members of the committee.

On 8 May 1978 the committee was abolished at the suggestion of the President, Peter Lord, in order to make saving on meetings and expenses. Its responsibilities were to be shared between other committees:

- a. Education and careers publications to Publications Committee.,
- b. Diploma in acoustics and noise control to the advisory board for the Diploma
- c. Sixth-form lectures to Meetings Committee in collaboration with Education group of the Institute of Physics.

About three years later in 1981, Council accepted the recommendation from the Diploma advisory board that it be renamed the Education Committee, and its terms of reference widened to encompass all matters of education related to acoustics as they relevant to IOA responsibilities and activities.

The first Diploma Chief Examiner, Dr R W B Stephens, retired after the 1982 examinations. The final round of sixth-form lectures was

held in 1982 with lectures from Peter Lord and Peter Wells in Cardiff, Surrey and Derby. Over the years the programme of sixth-form lectures had been delivered to more than 550 sixth-formers. The list of lecture titles delivered includes: The sounds of musical instruments, Explosion and combustion – the basis of road transportation noise, Sound in the North Sea, Looking inside the human body with ultrasonics, Noise – the greatest pollutant, Decibels, Mums and music, Sonar mapping of the sea bed, Noise in industry, The bells of York Minster, Noise and hearing, The silent world, Acoustics in medicine, Building acoustics, Infrasonics, Architectural acoustics, Industrial noise and its problems, Ultrasonic diagnosis, and Acoustics and music.

Middle years (1982 to 2000)

For the next couple of decades the business of the committee was almost entirely taken up with the organisation and administration of the Diploma course, which rapidly expanded, seeing at its height more than 250 students per year from 12 centres taking the examinations. This period also saw the development and introduction of the five-day Certificate of Competence courses in workplace noise assessment (1989), measurement of environmental noise (1993), and management of hand-arm vibration. Distance learning was also introduced initially at Heriot-Watt University (HWU, via a series of video lectures) and at Cornwall College (assorted distance learning media), then by the IOA using the HWU videos under licence, and finally by the IOA's own system of distance learning notes, supported by a programme of tutorial and laboratory sessions.

The minutes and annual reports from Council and from the committee over this period list details such as: accreditation of centres (and their re-accreditation after five-year periods), appointment of examiners, review of syllabuses, introduction of continuous assessment, introduction of Certificate courses, numbers of candidates taking the courses each year, and pass rates.

These minutes and reports fail to give any sense of the passionate debates that sometimes occurred on matters educational, such as the content of syllabus and of examination questions, the range and content of practical and laboratory work and of projects, the introduction of distance learning, the quality of the distance learning notes, and the introduction of the IOA's own distance learning scheme whereby the Institute became both provider and validator of the Diploma course.

Recent years (2000 to 2014)

In addition to the day-to-day management of the Institute's Diploma and Certificate courses the current era has seen attention devoted to aspects of quality control, and to the educational standard of the Diploma course and its place within the national educational framework of higher education courses, and in particular its post-graduate status. A major restructuring of the Diploma course was begun in about 2000 which culminated in the introduction of the revised Diploma in 2008. A restructuring of the committee has been carried out, with the aim of separating (in part) the running of the Diploma from other educational initiatives, such as the Acoustic Ambassadors scheme for schools. A separate tutors' and examiners' meeting makes recommendations to the committee.

Impetus to all of the activities was provided by the appointment of an Education Manager in 2001, a post first filled by Peter Wheeler and then by Keith Attenborough.

The chronology right indicates some of the landmarks and events.

Chronology	
1977	First Diploma course starts
1978	First Diploma examinations
1982	Reintroduction of the sixth-form lectures
1983	Investigation at the request of ANC into some form of post- Diploma qualification
1984	Dr B J Smith resigns after six years as chairman to be succeeded by Dr R Lawrence The IOA's computer is used for first time to process exam registrations, results, statistics and the notification letters to candidates Last set of sixth form lectures by Peter Lord and Peter Wells at Cardiff Surrey Derby
1985	First revision of the syllabus, first re-approval of centres for another five years Arrangement for a distance learning scheme using videos (initially at HWU)
1986	Professor Large resigns after a short term as Chief Examiner, and Geoff Leventhall returns John Bowsher is appointed Deputy Chief Examiner
1988	John Bowsher to CE, Geoff Charles as Deputy CE. Development of Certificate of Competence in workplace noise assessment (CCWNA) is introduced
1989	Tenth anniversary of the Diploma, with a special one-day meeting to celebrate There are now 13 centres The first students gain a Diploma by distance learning The first CCWNA courses are held
1990	Introduction of CCWNA by self-accreditation
1991	The development of a Certificate of Competence in environmental noise is considered for the first time
1992	Work starts on the development of an IOA distance learning course in response to the retirement of several Diploma teachers
1993	The first courses in the Certificate of Competence in environmental noise (CCEN) are held in June and November, with 56 students The first IOA revised distance learning course begins in time for the 1994 examinations
1994	Sub-committee of the Education Committee established to set up a Continuing Professional Development scheme
1995	CPD scheme is finalised ready to come into operation in January 1996
1996	Plans launched for a Certificate of Competence in the measurement of sound transmission in buildings (CCMSTB) with a planned start in 1998
1998	Pilot course for the CCMSTB is taken by four candidates at BRE (a joint effort by Bob Peters and BRE) The Certificate of Competence in environmental noise is renamed the Certificate of Competence in environmental noise measurement (CCENM)
1999	CCWNA course syllabus is revised and a training course is held for tutors A CCENM syllabus revision is initiated Plans to develop a Certificate of competence in the management of hand-arm vibration are initiated Four tutor groups are set up for the IOA distance learning course for 1999 -2000 An education review is initiated by Council including twelve recommendations, one of which is the appointment of an Education Manager Mike Fillery takes over the chairmanship of Education Committee from Bob Peters
2000	Peter Wheeler is appointed as the first Education Manager effective January 2001 More emphasis is to be given to quality assurance of the IOA's education provision and courses are to be brought into alignment with National Credit Accumulation and Transfer Scheme (CATS). Bob Peters becomes Project Examiner and John Walker becomes Deputy Chief Examiner in place of the retiring John Bowsher The Certificate of Competence in the management of hand-arm vibration (CCMHAV) is first presented A decision is taken to revise the Diploma structure with the introduction of an environmental noise module, and the first issue of a Diploma handbook to students.
2001	Revised syllabus for GPA introduced (revisions for specialist modules to be next year)
2002	Coursework assignments are introduced in specialist modules: these were previously only in the GPA module
2003	Guidelines on special needs for disabled students in examinations are under consideration A five-day course on advanced mathematics for acousticians is held at ISVR in July and attended by about 50 PhD students and other researchers Responsibility for the IOA CPD scheme is transferred to Membership committee NB - The 2003 mathematics for acoustics summer school was supported by EPSRC as one of three pilot schools. Two others (also EPS-RC-supported) have been held, at Salford (2005) and ISVR (again).
2004	Major revision of modular structure of Diploma initiated, to be implemented in 2006/2007 with aim of complying with the needs of the national higher education framework and maintaining the postgraduate status of the Diploma David Saunders takes over chair from Mike Fillery
2005	Two short courses (with examinations) are held to support the introduction of legislation on anti-social behaviour in Scotland Certificate of Competence in workplace noise assessment becomes the Certificate of competence in workplace noise risk assessment
2006	Much work on structural re-organisation of Diploma to meet the needs of the national Higher Education Quality Framework, including the upgrading the quality of the Diploma projects Structural review of Education committee to be undertaken which will allow the committee to have a more strategic role with management of the Diploma and certificate courses to be dealt with by sub-committees
2007	Acoustic Ambassadors scheme piloted in schools in Hertfordshire prior to being launched nationwide in an attempt to encourage students to study acoustics Keith Attenborough becomes Education Manager following retirement of Peter Wheeler from the post The task of completing the major re-structuring of the Diploma is almost complete
2008	Revised Diploma course started in September 2008: revised GPA module, new Laboratory work module, four specialist modules (reduced from seven), enhanced Project module Working party set up to consider a new short course in building acoustics, and possible IOA involvement in a short course in underwater acoustics First meeting of revised re-structured Education committee held in October. David Saunders resigns as chairman, to be replaced by Simon Kahn
2011	Education committee recommends that the new Diploma course be awarded 90 credits in the national scheme credit rating scheme for Higher level courses.

Engineering Division Committee

Peter Wheeler

Institution-affiliated status, with the Institution of Mechanical Engineers (IMEchE), was granted to the IOA by the Engineering Council in 1987 and the Engineering division was formed. In 1989, when Chris Rice was President, Brian Clarkson, Peter Lord and Peter Wheeler developed the process for guidance and support for registration, appointing Dennis Playle, a local retired engineer, as manager of the Engineering division. Frank Shaw, a retired Rolls-Royce engineer, acted as the IMechE liaison officer, taking part in all interviews. When Dennis Playle retired in 1999, Peter Wheeler, who had recently completed his period as President and had retired from his post as Pro-vice Chancellor of the University of Salford, took over from Dennis Playle as Engineering Division manager on a part-time basis, and continues in this role today.

In 1995 the Institute was granted nominated-body status additionally for IEng registration. In 2000, the Institute was audited by the Engineering Council and was granted a further four-year period as a nominated body. In 2004 the Engineering Council granted the Institute a five-year licence to award CEng and IEng registration in its own right and the affiliation agreement with IMechE for CEng was terminated.

The work of the Engineering Division is overseen by a standing committee of Council whose chairman is a Vice-president

of the Institute. The purpose of the committee is to promote engineering within the Institute and advise Council on all engineering matters, to put forward members for registration in the Engineering Council Register, and to act as a forum for co-ordinating the activities of the Institute of particular interest to engineering. The Engineering Council may appoint a liaison officer, who is also a member of the committee.

Professional engineering is important as a sector within the IOA and acoustics engineers have an important role to play within the field of engineering with its increasing interests in the environment, human-machine interaction and safety. The IOA believes that professional acoustics engineers are now recognised by industry and society in their own right as valued specialists and that it is in all parties' interests that they be recognised within the engineering profession by Engineering Council registration.

Although its small size limits the scale of contribution which IOA can make to the wide spectrum of professional activities associated with the Engineering Council and the other engineering institutions, the opportunity to be involved in such initiatives is highly valued. Wherever specialist contributions are needed, the Institute takes a proactive role.

Medals and Awards Committee

Bridget Shield

Since the Institute was formed in 1974 it has presented a range of medals, awards and certificates to honour people who have advanced the study and knowledge of acoustics both in the UK and internationally. The contributions which are recognised by the Institute in this way can relate to the study, teaching or practice of acoustics. Over the years awards have been introduced to acknowledge achievement in a particular branch of acoustics, and to remember and celebrate individuals who have played an important role in the history of the Institute and of acoustics in general.

The first medals to be awarded, the A B Wood Medal, the Rayleigh Medal and the Tyndall Medal (originally known as the Silver Medal) were inherited from the Institute of Physics and the British Acoustical Society. Since its foundation in 1974 the Institute has, in addition, introduced several major awards: the R W B Stephens Medal (1984) and its associated invitation lecture; the Simon Alport Prize (1986 to 1995), the Peter Barnett Memorial Award (2001), the Engineering Medal (2004), the Award for Promoting Acoustics to the Public (2005), the Young Person's Award for Innovation in Acoustical Engineering (2005) and, most recently, the Peter Lord Award (2014). Honorary Fellowships have also been awarded throughout the IOA's history to recognise exceptional services to acoustics or a related science, or to the Institute itself.

The Institute also recognises outstanding service to the Institute through its awards for distinguished service to the Institute. Students of acoustics and related areas are also eligible for various student prizes, as described below.

The awards are decided each year by the Medals and Awards Committee consisting of the Executive (President, Immediate Past President, President-elect, Honorary Treasurer and Honorary Secretary) and the three Vice-presidents (groups and branches, international, engineering). Originally decisions regarding awards were made throughout the year but in more recently the committee has met annually in February to decide the awards for that year.

At the outset Council decided that each medal would be accompanied by a citation. Award recipients also receive a certificate. The citations are published in *Acoustics Bulletin*. Some of the major award winners are invited to give a lecture when they receive their award, and this usually happens at one of the larger meetings such as the Spring or Autumn conference.

In the early years of the Institute the medal lectures were published in a special volume of Proceedings. It was also proposed in 1975 that a yearbook should be produced to contain details of all medal lectures and any other noteworthy lectures given at Institute meetings during the year and not published elsewhere. However, this practice does not seem to have been continued and medal lectures are now included in the proceedings of the relevant meetings.

The following sections briefly describe the various awards, broadly in chronological order of their introduction. A list of all recipients of the major awards is included in the appendices starting on page 124.

A B Wood Medal

Dr Albert Beaumont Wood (1890-1964) was a distinguished underwater acoustics specialist who worked with Rutherford, among others, developing the use of sonar in defence. Among his many achievements during a long career at the Admiralty Research Laboratories he designed the first directional hydrophone. Dr Wood was a



founder member of the Institute of Physics (IoP) and was instrumental in setting up the Institute of Physics' acoustics group.

Following his death, his friends on both sides of the Atlantic decided to set up in his memory an award for significant contributions in underwater acoustics. The award was initially administered by the IoP, and was to be awarded in alternate years to scientists from the United Kingdom and the United States of America. The first award was made in 1970 to the UK underwater acoustics specialist B S McCartney; the first American to receive the medal, in 1971, was Robert Apfel.

Administration of the A B Wood Medal passed to the Institute of Acoustics when it was formed in 1974. In 1975 the terms of the award were rephrased as follows: "The award shall be made annually for

distinguished work in the application of acoustics, preference being given to candidates connected with the sea. The award to be made alternately to a citizen of the United Kingdom and of the United States of America who would preferably be under thirty-five years of age in the year of the award."

In 2004 it was decided to extend potential recipients of the medal in even years to people working in the European Union, as well as the UK, and Canadian acousticians were conjoined with their US colleagues. It is usual for the Underwater Acoustics Group to select the recipient of the UK and European award, while the Acoustical Society of America is asked to nominate North American candidates.

In addition to the silver gilt medal, the winner receives an honorarium which over the past 40 years has increased from £25 to £250. It is the only major IOA award which has a monetary prize attached.

Rayleigh Medal

The Rayleigh Medal is the Institute's most prestigious award, and is presented to persons of undoubted renown for outstanding contributions to acoustics. It is named after John William Strutt, Third Baron Rayleigh (1842-1919), a very versatile physicist who conducted both experimental and theoretical research in virtually every

branch of the subject. A graduate, fellow and eventually Chancellor of Cambridge University, he was also a Fellow and President of the Royal Society. His book *The Theory of Sound* remains a landmark text in the development of acoustics.

The Rayleigh Medal dates from the early years of the British Acoustical Society. At the first Presidential address of the BAS the President, Professor Bishop, suggested that there should be an invited Rayleigh lecture, to be given by someone distinguished in any branch of acoustics, who would be presented with a medal by the society. It was decided that the medal would be awarded every year, alternately to an acoustician in the UK and an international acoustician, and this practice has continued. The first Rayleigh Medal was awarded to the German acoustician Professor Meyer in 1969, while the first UK recipient, in 1970, was Dr R W B Stephens of Imperial College. The presentation to Per Brüel in 1973 was made by the Hon. Guy Strutt, a descendant of Lord Rayleigh.

The first presentation of the Rayleigh Medal by the Institute was to Peter Parkin in 1975.

Tyndall Medal

The Tyndall Medal, named after the eminent physicist John Tyndall (1820-1893) was also initiated by the British Acoustical Society, this time in 1970. The medal was originally known as the Silver Medal, and was designed to recognise outstanding work done in Great Britain by a UK acoustician under 40 years of age. By the first year of the Institute the medal had become known as the John Tyndall Medal, and it is now commonly referred to as the Tyndall Medal.

In 1975 it was decided that the medal would be awarded in alternate years at the Autumn meeting and in 1977 the wording was revised to say that it would be awarded in even-numbered years to a citizen of the United Kingdom, preferably under the age of 40, "for achievement and services in the field of acoustics". In 1992 it was awarded jointly to Steve Elliott and Phil Nelson, the only occasion on which it has had two recipients.



RWB Stephens Medal

Dr Ray Stephens (1902-1990) was the first President of the Institute. His main interests lay in research in physical acoustics and ultrasonics, but he influenced successive generations of students through his continuing work in education, particularly at Imperial College, where he worked from 1925 to 1970, and at Chelsea College where he also taught.



In 1982 Dr Stephens was to be the guest of honour at the Autumn Conference dinner, and the president wrote to him to ask if the IOA might name a special lecture after him. He agreed and it was decided by Council in 1983 that the Stephens lecture would normally be an annual event, to occur at the Autumn or Spring Conference, and would be marked by the presentation of a scroll to the lecturer. The lecture could be on any aspect of acoustics - technical, educational, organisational, interdisciplinary or international - but typically would cover recent developments in a particular subject. Although the speaker was to be prominent in "his" field, it was hoped also to include some younger workers. The first lecture was given at the 1984 Spring Conference by Dr Edgar Shaw, an early student of Dr Stephens.

In 1995, following Dr Stephens' death a few years before, it was decided that a medal should be awarded in his memory. His son, the Rev H Stephens, offered to finance the cost of striking the die for the proposed medal and the costs of the first three medals. It was decided that the medal would be awarded in alternate years for outstanding contributions to acoustics research or education, with the recipient normally being invited to give a lecture at the Spring or Autumn conference.

The RWB Stephens Medal would be awarded in odd-numbered years, so as to alternate with the Tyndall Medal. The first recipient of the medal was Dr Bob Chivers who received it at the Autumn Conference in Windermere in 1997.

Simon Alport Prize

Between 1986 and 1996 the Institute awarded the Simon Alport Prize, which was funded by Cirrus Research Ltd in memory of one their young engineers whose career was cut tragically short. A prize of £250 was awarded to the young person (under 28 years of age) who, in the opinion of the judges, had published the best recent paper describing work involving the use of computers in acoustics. It was agreed that the award would only be given when there was a recipient deemed worthy of it, which might not necessarily be every year.

The first recipient of the prize, in 1987, was Julian Wright of Celestial Instruments Ltd. In 1991 the age limit was increased to 30, and in 1992 it was decided that in order to increase the number of potential recipients there would henceforth be no limitations on age or nationality.

After 10 years the prize was withdrawn and the Association of Noise Consultants agreed to sponsor an award aimed at encouraging younger members of the Institute. This award was to be offered each year for the best paper by a young member presented at an IOA conference.

Student prizes

Since 1993 the Institute has given a prize to the best-performing Diploma student in a year. The A association of Noise Consultants (ANC) also agreed to award a prize for the best IOA Diploma project each year, in addition to the prize for the best paper; both the ANC prizes were awarded for the first time in 1996.

The Institute also awards a prize jointly with the Institute of Sound and Vibration Research in memory of Professor D W Robinson. This prize is awarded for the best MSc dissertation at ISVR related to human aspects of sound and vibration, or audiology, and was first awarded in the year 2000.

Award for distinguished service to the Institute

Over the years Council several times agreed that there was a need for some token of recognition and appreciation for people who made outstanding contributions to the activities of the Institute. The Distinguished Service Award was introduced in 2001, to be awarded to members who have provided sustained assistance in the running of the Institute. The award consists of a mounted tuning fork together with a written citation; there is no time scale nor any limit to the numbers of recipients of this award.

Peter Barnett Memorial Award

The Peter Barnett Memorial Award was initiated in 2001 by the Electroacoustics Group to honour Peter Barnett who died the previous year. Peter Barnett was an acoustic consultant with a wide range of interests but he was known primarily for his expertise in the fields of electroacoustics and speech intelligibility, and was a stalwart of the Reproduced Sound series of conferences.

The annual award recognises advancements and technical excellence in the fields of electro-acoustics, speech intelligibility, and education in acoustics and electroacoustics. The award is a silver miniature Head and Torso Simulator (HATS) or binaural head, and was presented for the first time in 2001, to Herman Steeneken (the Dutch co-inventor of the Speech Transmission Index).

There is also a student award which may be awarded periodically if there is an outstanding student in electroacoustics who is felt to merit such an award. The first such award, to Francis Li, a postgraduate student at the University of Salford, was in 2003.

Engineering Medal

In 2002 it was decided to introduce an award specifically for registered Engineers at Chartered, Incorporated or Technician grade, to recognise outstanding contributions in the field of acoustical engineering. The medal is awarded in even-numbered years, the first recipient being Rob Harris of Arup Acoustics in 2004.

Young Person's Award for Innovation in Acoustical Engineering

This award was announced at the Autumn Conference in 2004 and awarded for the first time in 2005. Every two years it recognises excellence and achievement in acoustical engineering among those in an early stage of their career, and is also intended to increase awareness of the value of acoustic engineering and technology among the general community. The age limit was originally 30 years but it was increased to 35 in 2006. The winner is required to make a presentation about his or her work at an appropriate conference. In some years prizes are also given to one or two runners-up.

Award for Promoting Acoustics to the Public

The Award for Promoting Acoustics to the Public was created in 2004 to encourage activity generating greater awareness of the importance and principles of acoustics to the general public, particularly to people without acoustical expertise. The award may recognise either a single piece of outstanding work or sustained long-term activity, and is made every two years. Recipients can be individuals, charitable organisations or companies who have been involved in pro-active engagement with the public. The award, which consists of an engraved glass trophy together with a written citation, was presented for the first time in 2005, to Bronwen Bird.

Peter Lord Award

The Peter Lord Award was introduced in the Institute's fortieth year to commemorate Professor Peter Lord, a founder member and former President of the Institute, who died in 2012. Peter was a hugely influential figure in UK acoustics, being a driving force behind the setting up of the Institute, founder of the Applied Acoustics department at the University of Salford, and first editor-in-chief of *Applied Acoustics*. The award is made annually for a building, project or product that showcases outstanding and innovative acoustical design. It is presented to the team or individual responsible for the acoustic design, and consists of a plaque to be displayed on the winning construction or project (where possible), together with a trophy and certificate for the winning team or individual. As well as rewarding the person(s) responsible for the acoustics, a further aim of the award is to raise the public profile of acoustics and its importance in design.

Meetings Committee

Geoff Kerry, Stephen Turner and Ralph Weston

In the period leading up to the formation of the IOA a joint meetings committee formed from members of both the British Acoustical Society (BAS) and the Acoustics Group of the Institute of Physics had met to co-ordinate a programme of meetings. In late 1973 the (by then) provisional council of the IOA agreed that this committee would become the Meetings Committee of the new Institute chaired by Roy Waller.

It was noted by Council in 1974 that the committee reported a most encouraging upward trend in attendance having acted upon suggestions to a member questionnaire. A meeting on *Entertainment noise as a hazard to hearing* attracted 120 participants and was widely reported in the press and on radio. Other meetings were also reported which covered subjects from airport noise through to vibration in ground and structures, all of them being well attended.

The 1975 Spring Conference was hosted at Nottingham University (a Dr V Rampton is mentioned). There were 120 participants from both the UK and overseas. A small sub-committee was set up to negotiate plans for a European symposium on European noise legislation.

In 1976 the meetings programme continued to vary both in content and geographical location. The content ranged from specific case interest such as aircraft noise to the psycho-acoustics of hearing and physical acoustics. Specialist groups were also organising meetings which were considered successful financially. A more efficient division of responsibilities between the committee and the secretariat was arranged during the latter part of the year to improve

communications and attendance figures and strengthen the financial position.

There is no other reference to the committee until 1978 when it was reported that there were 17 formal meetings, of which the Spring Conference at Cambridge University was the largest, attracting more than 250 delegates. A policy which devolved responsibility for initiating and planning meetings to groups and branches had been fully implemented. The committee introduced a scheme to improve the awareness of forthcoming meetings among members, and to stimulate response to calls for papers, by means of monthly digests containing reply slips.

In 1979 the Spring Conference was held at the University of Southampton, and this was the first year in which the Autumn Conference in November was held at the Windermere Hydro Hotel. The Windermere venue was selected partly because an early September meeting followed the summer holidays too closely, and November was an unsuitable venue for universities. Visiting the Hydro Hotel in November proved very popular, and the total number of participants amounted to 150 including exhibitors, wives (little sex equality in those days) and guests. The whole year was a success in terms of meetings, and in particular a meeting at Chelsea College on acoustic emission and materials evaluation attracted a large number of foreign contributors. Preprints of the contributions in the form of an A5 booklet were available before the annual Proceedings of the Institute appeared. The London Branch evening meetings were also mentioned.

The nation's financial difficulties were noted in 1980 but a high level of support was maintained for the year's meetings. Geoff Leventhall organised the Spring Conference at Bedford College, London, to which Easter time in Regent's Park helped attract 150 delegates, although the exchange rate may have discouraged some would-be delegates from mainland Europe. The Windermere conference attracted only 85 delegates. There were a number of other one-day and two-day conferences, and one singled out for special mention was on diesel engine noise research, which was organised by Dr S Haddad of Loughborough University. More than a third of the delegates and contributors came from outside the UK.

The committee was strengthened by the addition of Brian Grover with his links to the British Society of Audiology. The committee had taken up the task of organising Inter-Noise 83, the Institute having been invited to host it by International INCE, but was experiencing problems in selecting a suitable venue.

The 1981 Spring Conference at Newcastle University attracted more than 200 delegates though the one-day meetings that year saw a noticeable reduction in attendance attributed to the then-current economic situation. There was a successful meeting at Chelsea College on acoustic emission and photo-acoustic spectroscopy.

In 1982 the work of the committee was heavily influenced by Inter-Noise 83 and a decision was made to reduce the number of meetings during the latter part of that year. However, it was still a busy year for several specialist subjects, starting with a rerun of a meeting on sound propagation outdoors that had been badly affected by travel difficulties because of snow in December 1981.

The spring meeting at Guildford attracted 130 participants. Other one-day meetings did quite well and a meeting on auditorium acoustics in Edinburgh attracted 83, many from overseas. The autumn meeting was held in Bournemouth and 92 attended. The highlight was a presentation to Ray and Ellie Stephens to mark RWB's 80th birthday.

In 1983 the committee concentrated its efforts on Inter-Noise 83 at Edinburgh. This was the 12th International Conference on Noise Control Engineering. Held in July, it attracted almost 700 delegates from 38 countries to hear over 300 papers and proved a successful conference that made a significant contribution to the finances and prestige of the Institute.

There was no Spring Conference that year but the Underwater Acoustics group held a major conference in April and the remainder of the programme was held in London. Mention was made of how groups and branches were being encouraged to organise more meetings to relieve pressure on the Meetings committee. For once, the names of the chairmen of the committee were minuted: following Geoff Leventhall's retirement from Council, Mike Ankers took over the chair.

In 1984 the discussion about meetings continued, and it was recognised that the success of the Institute, especially financially, depended greatly on the quality and quantity of conferences. There was a need for a well-defined meetings policy that sought to promote a wider participation by the membership. Concern was expressed in committee that such a policy could diminish the role of groups and branches within the Institute and this contravened the aims of the Institute. The discussion continued into 1985 when it was reported that only 140 delegates and 10% of the Institute's corporate members attended Spring Conference, but 150 attended the Reproduced Sound conference at Windermere. This is the first reference to the Reproduced Sound series, which of course continues in its own right even today. The annual report said that the experience of running meetings needed to be spread more widely, so the committee worked on ways to catalyse a successful future programme. A prayer was uttered for the greater involvement of more members. However, a number of successful one-day conferences were held that year.

In 1986 there was a change of mood in the committee minutes, where the following comment can be found: "If the success of an organisation may be judged by the numbers who attend its meetings, then in 1986 the Institute was indeed successful".

Owing to the hard work of groups and branches, more than 1,250 people, many from outside the Institute, attended 11 formal meetings that year. The Spring and Autumn conferences continued as the flagships of the programme, and Cathy Mackenzie and Roy Lawrence were acknowledged to have made both a success.

In 1987 some meetings were rescheduled or cancelled, and numbers were down. A spring meeting was held in Portsmouth and included for the first time a students' session. The autumn meeting at Windermere Hydro was split into two, covering industrial noise and Reproduced Sound, showing the latter had become an established feature. The success of the Institute's meetings at that time seemed to yoyo. Whilst 1987 was disappointing, 1988 was much better, with 11 major meetings, two of which were attended by more than 200 people. It was noted that it was perfectly possible to set up some meetings at short notice, such as the BS 4142 event, but Acoustics 88 and the FASE (Federation of Acoustical Societies of Europe) symposium on speech needed long-term planning. By 1990 it was again being pointed out that increased participation of IOA members would ease the financial uncertainty of meetings and conferences. It was noted that the progressive recession within general industry was affecting attendance at meetings, nevertheless, the income from meetings was satisfactory. The committee finalised a budget *proforma* during the year to be distributed to the organisers of meetings, in order to improve financial control. Approval was given for Key Sponsors to sponsor future meetings although negotiations with such sponsors had yet to take place.

Attendance in 1991 was down by 20% to 25% in comparison with normal expectations, but nine meetings were held in the year including the by now customary two at Windermere. A number of topics were identified for low-cost one-day workshops, and other measures were taken to restrict costs.

Euronoise was launched in 1992 as the first in a planned series of pan-European events. It was held over three days in September at Imperial College, London. There were delegates from 25 countries and 120 papers were presented. The spring and autumn conferences were not as badly affected by the economic recession as had been expected, and three "budget" one-day workshops were run. Further one-day meetings and the usual autumn pair continued for the next few years.

The main event of 1996 was Inter-Noise 96 congress, which was held in Liverpool and run by the Institute. The meeting was well-attended and has earned a reputation as one of the best Inter-Noise ever. This did not prevent the Autumn Conference or Reproduced Sound being held as usual at Windermere.

The year 1997 was one of change. Having served three years, Jeff Charles stood down as chairman and was replaced by Stephen Turner. Because of Inter-Noise the previous year it was decided that a lengthy spring conference would not be held, but that there would be a variety of one-day meetings and workshops. These included the first meeting organised by the Measurement and Instrumentation Group, which was on IEC 61672, the then-new standard for sound level meters. The Auditorium Acoustics conference went to Belfast to look at the new Waterfront Hall, and another international conference was organised by the Institute: this was ISMA-97 (International Symposium on Musical Acoustics) which was organised jointly with the Catgut Acoustical Society.

The committee once again looked to its terms of reference, with a view to serving the membership better: how this was implemented is reviewed below.

Stephen Turner took over the chairmanship committee in 1998 and began a period of change to both the structure of the committee and the approach to organising meetings.

The system that had existed was reviewed. Issues that were identified included:

- The rationalisation over the previous five years appeared to work. However, a revised meeting strategy covering the involvement of both groups and branches over a two-year cycle was recommended to provide a total programme of 18 meetings in year one and 16 in year two
- The eventual success of any meeting was often the result of much last-minute rushing around by those involved in the organising, time that they could ill afford
- There had been accusations that the Institute was "dumbing down" with the types of meeting it offered
- The Institute needed meetings to generate revenue for its financial wellbeing (in 1998 the budget required meetings to generate a net revenue of £15,000).

Part of the review process also involved a consideration of the various types of meetings that were being held. Three different types tended to be organised centrally, and an attendance fee was charged. These were:

- **Technical:** current state-of-the-art meetings that provided members with the opportunity to publish their latest work. The programmes evolved through responses to calls for papers, but these meetings did not tend to attract large audiences nor generate revenue. They were, however, an essential ingredient of the Institute's life
- **Popular:** the meetings which primarily generated revenue for the Institute. They provided a forum for members to meet but the programmes were designed to be as attractive as possible, including inviting and, if necessary, paying speakers to attend
- **Workshops and tutorials:** usually half a day or one full day. Either they provided a forum for the views of the membership to be aired, thus enabling the Institute to respond to consultation documents, or they were a simple knowledge dissemination and exchange exercise usually entitled "How to..."

In addition, there were also the evening meetings, usually organised by the regional branches, where one or two speakers gave presentations on a particular topic followed by a little discussion and an adjournment to a pub or curry house. For the most part, no charge was made to attend these meetings.

The conclusion was drawn that rather than relying on just the members of committee to identify, organise and hold the revenue-generating meetings, there should be a more formal role for the specialist groups and regional branches to participate in this key activity.

Draft proposals for a new constitution of the committee were drawn up in consultation with Council during 1999 and put to the inaugural meeting of the chairmen and secretaries of the specialist groups and regional branches held in February 2000. This meeting has proved very popular as a forum for an exchange of views and information between Council and the groups and branches. The feedback was positive and Council approved the new constitution in the spring of 2000. The change in responsibilities meant that the committee could be smaller and the new committee consisted of Stephen Turner (chairman), Jeremy Newton (secretary) and Ken Dibble, supported by head office staff.

One of the last events organised by the previous committee was the IOA's Silver Jubilee meeting at London's Barbican in 1999. The all-day event saw a morning plenary session with each specialist group presenting a review of work in their area, and an afternoon session with each group meeting separately to hear papers of current issues in their special interest field. The event was followed by the AGM. That meeting broke the record for attendance at a one-day meeting (and at an IOA AGM).

During 2001, as well as overseeing the various meetings, the committee started to develop the strategy. It emerged as a two-yearly cycle which took account of the relative strengths of the different groups and branches. The strategy distinguished between conferences (of more than one day's duration), one-day meetings and half-day workshops. It sought to distribute the responsibility and topics across the various groups and branches. The strategy was put to the February 2002 meeting of the chairmen and secretaries of the groups and branches and was implemented after that.

The membership of the committee remained static over the next few years, although it was increasingly becoming apparent that whilst having a small committee was not without its attractions it made the work of the committee more difficult if work commitments prevented members from attending committee meetings. Consequently in

2005 Sarah Radcliffe and Hilary Notley accepted invitations to join the committee. In the same year Stephen Turner stood down to take over the role of Vice-president (groups and branches) and Jeremy Newton replaced him as chairman.

Jeremy continued the meetings strategy developed under Stephen's leadership and the committee turned its attention to discussing matters such as the level of fees charged, guidance for students and speakers, and guidance on organising events, providing information on roles and requirements for all those involved.

In 2006 there was some disruption to the committee owing to maternity leave and Judy Edrich, the IOA's recently-appointed publicity officer, stood in as secretary. Twelve meetings were held including two very successful conferences in mainland Europe: the architectural acoustics conference in Denmark and the underwater acoustics conference in Italy. Strategic topics covered by the committee to assist with the selection of meeting venues included provision for younger members, membership demographics, and particularly geographical location. With the return of the secretary, Hilary Notley, committee activities during 2007 reverted to normal and the target of 14 meetings was achieved. A guidance booklet on PowerPoint presentations for Institute meetings was produced.

A revised meetings schedule giving clear guidance for regional branches and specialist groups on the number and types of meetings that the committee would like to see organised each year was produced in 2008. This was accepted and acted upon enthusiastically by the groups and branches. The committee also proposed a nominal target for financial viability of events. The following year saw some committee changes to cover maternity leave, and a search for a Young Members' representative. Eleven meetings were organised with attendances typically varying between 40 and 70 at one-day meetings and around 110 at conferences. These figures were considered lower than normal but Euronoise 2009 in Edinburgh was a major success with some 700 delegates, almost certainly as a result of the effort put into its organisation. The committee also turned its attention to minimising the effects on income from meetings resulting from the worldwide recession by continuously reviewing each meeting's success to minimise deficits in current and future events.

By 2011 there was a return to stability within the committee, and 11 meetings were organised, but the financial performance of conferences was put under the spotlight and the committee undertook to ensure that all steps within reason were being taken to eliminate unnecessary costs. The successful run of international conferences continued into 2012 with the Spring Conference being held jointly with the French Acoustical Society (SFA) in Nantes, and the 11th European Conference on Underwater Acoustics taking place in Edinburgh.

In 2013 Jeremy Newton stood down as chairman and Hilary Notley took over the role, handing the secretary's job over to Chris Turner. The Acoustics 2013 conference trialled the proposed format for the 40th anniversary conference, with specialist groups organising several sessions to run in parallel.

The committee, though small in number, has continued to oversee a very dynamic and successful programme of meetings and conferences whilst ensuring that the annual meetings programme remained viable, providing a targeted surplus each year. Feedback from the post-meeting questionnaires has remained positive both for conferences and meetings over the past few years. In a typical year, taken together with the contributions from the groups and branches, well over 40 and often more than 50 technical meetings are held covering the whole spectrum of interests providing members with excellent opportunities to review and develop their acoustical knowledge.

Membership Committee

Paul Freeborn and Rachel Canham

Little detailed information exists about the membership numbers and structure in the first few years of the Institute's existence, but by the end of 1976 it had almost 1,000 members. The Membership Committee was chaired by Professor David Johns until 1978, when

he retired having revised the membership structure the previous year and introduced the two corporate grades of membership. The committee was by now assessing something of the order of 200 applicants for membership every year. Consequently Council agreed

a method of dealing with applications “more expeditiously” to ease the workload of the committee and it was agreed that non-corporate membership applications could be approved by the committee rather than requiring full Council approval.

By 1980 the Institute had attracted 13 Sponsor members and had introduced reduced rates for retired members. The following year the committee assessed some 230 applicants of which 209 were successful, putting the total membership over the thousand mark at 1,104. In addition the benefit of a 10% reduction in exhibition fees was introduced for Sponsor members in appreciation of their support. At about the same date, in response to increasing numbers of members in Hong Kong, Council approved the inauguration of a Hong Kong Branch. This was also the year that introduced the “must have” sartorial accessory, the Institute tie, then available in a choice of three colours, one of them being a slightly odd shade of brown.

John Bickerdike took over as chairman of the committee in 1981 and one of his first tasks was to begin inquiries into the mechanism to offer our members a route to Chartered status. Membership numbers were still heading in a strongly upward direction with 1,151 members in 1982, 1,249 in 1983 and 1,284 in 1984. This was about the time that the Institute first drafted its Code of Conduct, which was revised and approved by Council in 1984.

In 1983, Council took an unusual step in support of a group of its members. Whilst stressing that the Institute was a non-political organisation, Council agreed to write to the relevant government department asking that its members who formed the Greater London Council Acoustics group should not be broken up after GLC abolition. It will probably never be known if the Institute did indeed influence government decisions then, but the group was not broken up and it survived in various forms with some original members still working in the group today.

By 1986 membership numbers had surpassed 1,400 by which date John Bowsler had been at the helm of the committee for some years. He retired from his stint in 1986 but not before introducing the requirement that an appropriate length of experience was a necessary prerequisite for membership. That precondition is still enforced today.

With ever increasing numbers, nearly 1,500 by 1987, a new grade of Associate member was proposed to Council. After various papers had been presented to Council and after approval by the Institute's legal advisors, the grade of Associate member, AMIOA, was introduced in 1989. In the same year it was agreed that the Institute should work towards three grades of sponsor member ranging from Subscriber up to Key Sponsor, membership grades which we still have today. This was a busy year for the Institute as it also saw the first batch of applications for the newly introduced route to Chartered Engineer status, a milestone in the Institute's history. It also saw Dr John Holmes handing over the reins of the committee to Ronald Mitson for a short period, from whom they passed on to Professor Frank Fahy. During the following year work started on re-designing the membership application forms and also on modifying the Bylaws. In addition a working party was formed to investigate the ways of strengthening our relationships with members of overseas acoustical societies, particularly in Europe.

With numbers edging ever closer to the 2,000 mark, Professor Peter Wheeler took the chair of the committee in 1991 and the following year a Hong Kong membership secretary was appointed to provide a preliminary sift of the increasing numbers of applications from the colony (as it then was).

The following year Alex Burd took over as chairman of the committee and by 1993 total membership finally broke through the 2,000 barrier with increasing numbers of applicants in Hong Kong being screened by local members. Consideration was also given to setting up an Institute Benevolent Fund: however after much discussion it decided not to proceed at that time.

In 1994 the Institute was asked to approve a recognition statement for an acoustics course proposed by the Open University, which it duly did. Under the chairmanship of Alex Burd, discussions were held with the Hong Kong Institute of Acoustics in connection with their request for mutual recognition of qualifications for membership of both institutes. Whilst the UK Institute agreed that the Hong Kong Institute's principles of vetting members fell in line with the current procedures it did not feel it could go as far as offering automatic membership.

In 1996-97, with membership by now in excess of 2,200, the new grades of Subscriber member and Institutional Sponsor were formally introduced, the latter being specifically aimed at institutional organisations such as local authorities, the first being Bury Metropolitan Borough Council.

Having been in place for over 10 years the Code of Conduct was revised in 1996 and the following year it was reported for the first time that a complaint was being investigated under the Code of Conduct. It was also noted that numbers in the Hong Kong Branch were now reducing as local acousticians sought to join the Hong Kong Institute of Acoustics. However, as a counterweight and owing to increasing demand, an Irish Branch was established to serve all acousticians on the island of Ireland.

Having served as chairman for some six years Alex Burd retired and Dr Jay Dunn took over in 1998. On the positive side membership was now running at over 2,300, but on the negative side it was reported that three Code of Conduct investigations were under way, two of which were successfully resolved by the chairman's action. From this date onwards Code of Conduct investigations seemed to become a continuing and increasing part of the committee's work. This may have been the result of an increasing tendency for people to complain, particularly if, say, a planning appeal did not go their way. On the other hand it may just have been part and parcel of being a growing professional institute.

At the request of the Institute's Engineering Committee the Membership Committee was tasked with assessing how an Engineering Technician Grade would fit into the membership structure.

The year 2000 saw a slight drop in membership numbers, albeit small, from 2,375 to 2,364. It also saw an increased awareness of Continuing Professional Development (CPD) and a CPD committee was formed, initially reporting to the Education Committee but later to the Membership Committee. By 2001 membership numbers had resumed their upward trend with almost 2,400 members recorded.

In 2002, after much consideration, the new grade of Technician member was introduced with the authorised title of TechIOA, and the Associate grade was renamed Affiliate to avoid confusion with Associate member. Also in the following year terms of reference were drawn up for the committee and approved by Council.

With CPD becoming a firm requirement of membership of the Institute, online guidance was provided in 2004 by the CPD committee which was by now a subcommittee of the Membership Committee.

The year 2005 saw a new chairman for the committee when Dr Brian Tunbridge took over the role. For the second time in the Institute's history there was a slight drop in the number of members, most likely due to the slump in confidence in the UK economy. This year also saw the Institute issuing silver membership certificates to all those who had been members for 25 years. Owing to the increasing workload of the committee a full-time membership officer was appointed at the St Albans head office.

The year 2007 saw the committee decision that for all future applications for the grade of Fellow of the Institute, the sponsors would be asked to provide a supporting letter in addition to a signature on the application form. It was also recognised that some applicants for FIOA may have had difficulty finding other Fellows of the Institute as sponsors: consequently it was agreed that Fellows of other recognised Institutes would be acceptable sponsors. It was also decided that to aid consistency in decision-making the membership officer would be asked to maintain a list of academic courses that had been deemed acceptable qualifications on an application for Institute membership.

It would not be possible to write a history of the committee without mentioning Rob Hill, who retired as secretary in 2008 after having served in that position for 28 years, right from the committee's inception. The position of secretary to the committee was taken on by Tony Garton. In the same year a raft of benefits designed to encourage membership was introduced. It was decided to offer undergraduate students on acoustics courses free membership of the Institute for the duration of their course; conference organisers were given the freedom to offer one year's free membership to overseas speakers at any of our conferences as a mark of appreciation; and new members were offered a 50% reduction on conference fees for their first year of membership. It was also agreed that age limits should be removed as a requirement of membership as they were no longer considered necessary or appropriate.

In 2009 membership applications finally moved into the electronic age with the introduction of placing a membership application online. CPD became a prominent issue with all applications for upgrade to corporate membership requiring evidence that the member was practising CPD. Discussions were also held on ways of supporting our older and (perhaps) retired members, which resulted in the proposal to set up a Senior Members' Group as well as promoting awareness of the option of reduced fees for retired members. The year also saw the introduction of new ties for sale, these being hand-made 100% silk ties specially designed for members, together with tie pins.

By 2010 membership was tantalisingly close to 3,000, standing at 2,977, but the following year membership reduced to 2,931, undoubtedly due to the world-wide economic recession. The current breakdown by grade of membership is shown in the table.

Having served as chairman for the maximum period allowed, six years, Brian Tunbridge retired from the office and handed over to Paul Freeborn in 2012. In support of the push to raise the profile of CPD, it was decided that a sample of CPD records would be inspected by the committee. Also this year a comprehensive membership survey was carried out: the results have proved to be of great value in shaping the future of the Institute as well as providing volunteers willing to serve on the various committees of the Institute. We were again approached by the Hong Kong Institute of Acoustics to consider whether we could agree to a form of joint membership. However, the committee concluded that as the Hong Kong IOA does not have the same CPD requirements as those in the UK it would not be possible to agree joint membership at this time.

The generally increasing number of members in the Institute, year on year, has demonstrated its success over the years, with only slight reductions on a few occasions generally related directly to the wider economic situation. At the time of writing we remain on the cusp of the 3,000 mark, as shown by the graph.

Grade	2013
Hon Fellow	35
Fellow	174
Member	1751
Associate member	731
Affiliate	69
Technician	88
Student	72
Key Sponsor	2
Sponsor	50
Total	2972

Publications Committee

Adam Lawrence

Publications Committee has a responsibility for *Acoustics Bulletin*, *Acoustics Update*, the website and Proceedings and in the past oversaw the now defunct *Buyers' Guide* (now the *Find an acoustics specialist or supplier* section on the website) and the *Register of Members*.

Acoustics Bulletin

Acoustics Bulletin has historically been the main method of communication between the Institute and its members. When the Institute was first formed, a newsletter was written, with two editions in 1974 and one in 1975. Volume 1 of *Acoustics Bulletin* appeared in 1976, with three issues that year. Each volume covers a different year: four issues of the Bulletin were published per year from 1977, and six from 1991. The Bulletin has always had the same objectives: to

Continuing Professional Development

Continuing Professional Development (CPD) is the means by which people maintain and improve their knowledge and skills related to their professional lives. CPD can involve any relevant learning activity, whether formal and structured or informal and self-directed. It provides a record of professional skills and should also document a plan for future development.

In 1993, IOA member Sue Bird, who was also President of the Women's Engineering Society at the time, was invited to give a lecture at an engineering conference in Nelson, New Zealand to celebrate 100 years of women's suffrage. The Blackwell Lecture had traditionally been about CPD, so Sue did research in the UK amongst the engineering institutions and the Engineering Council to find out what was going on. After the lecture in 1994, the IOA asked her to start looking at the situation in the IOA, and discussed whether it should introduce a CPD scheme for its members.

A working group was convened under the auspices of the Education Committee, and it devised a scheme whereby members would collect CPD hours for each conference, seminar or evening meeting they attended. The hours would be added up at the end of the year and the records submitted to the IOA for logging, with a recommended three-year rolling hours' total. This version of the IOA scheme was in place from around 1997. Certificates were given for attending IOA meetings so that members would have evidence of their attendance and thus their professional development.

As time went on it became obvious that this method of "collecting" hours did not fulfil all the aspirations of the scheme, and so a new method was tried. This involved deciding each year on individual goals and identifying how they might be achieved. The CPD activities then counted towards the goals and the situation was reviewed after set timescales. A CPD Committee was set up in 2000 to work on this new version of the IOA scheme and to produce appropriate tables and forms for the use of members, as well as promotional materials and articles.

In 2003 the CPD Committee was taken over by the Membership Committee, which continued to review and monitor the scheme. In 2010 a new CPD action group was set up as a sub-committee to update and promote CPD activities within the Institute, resulting in the updated goal-based scheme we have today.

The IOA continues to issue CPD certificates stating hours for those attending meetings who may require evidence for other professional bodies. However, the current scheme encourages members to consider their career and personal development, and requires them to formulate a personal action plan to help them achieve their objectives. Information about the current CPD scheme, blank forms and an example of a completed form are available on the IOA web site. Samples of members' CPD records are checked each year and participation in CPD is now mandatory for members seeking to upgrade their membership to MIOA or FIOA.

inform members about past and future Institute activities, to share relevant technical information, and to provide industry news. To offset the costs of the Bulletin advertising has always been included.

The Bulletin has nearly always been managed by an editorial team. The team's shape and form has changed over the years, but essentially the editor is responsible for collating the content, deciding the length of each piece and the overall layout, order and proportion of content, discussing issues of policy, content and production with the committee, and liaising with the different authors. Over the years there have been a number of special editions of the Bulletin covering different key events in the Institute's life, or focusing on specific technical issues, and there have been a number of style and layout changes reflecting the needs of the Institute and of members. In total there have been eight different editors of the newsletter and/or

Bulletin. In practice, the editor has also been responsible for writing some of the content, the proportion varying over the years.

The editorial team has at different times included a number of associate editors, an editorial board and a management board who have had differing roles and responsibilities. There were four associate editors between 1976 and 2011, the editorial board sat between 1991 and 1996, and the management board sat between 1997 and 2004. The editor's primary responsibility is to provide the completed content of the Bulletin for publishing, printing and production. At different times over the life of the publication the production of the finished product has been handled by a number of different companies before dispatch to members.

There have been several changes in style over the years of the Bulletin, as introduced by different editors. Examples of front covers in the principal styles are illustrated here. The original newsletter was simply typeset in one column per page. The cover of the Bulletin's first issue had an imprint of Lord Rayleigh (the image used on the Rayleigh medal, and the President's insignia) and soon settled down to a different background colour for each edition through the year: January (green), April (buff), July (blue) and October (orange). The content was predominantly presented with two columns per page. At the end of 1978 the cover changed with the introduction of the logo, and bolder shades of the same colours were chosen for the covers. The majority of the content was in three columns per page.

The next substantive redesign occurred in 1991, when the production was increased to six times a year. The cover was re-designed to include the contents of the edition and the colour was fixed on light blue. The content was grouped under headings, which have continued to the present day. Technical content was printed at two columns per page with other content at three columns per page.

Aside from some advertising from the mid-1980s the introduction of colour came in 1994 with just a few photographs. Through the 1990s there were a number of subtle changes including the shade of blue used on the cover, and the steadily increasing use of colour in the magazine. In 2001 the cover included a picture on the "Institute blue" background, and this coincided with the change to full colour for editorial and advertising. By this time the page headers for the different sections were colour-coded, with Institute news being blue, technical contributions being green and product news in red, with these colours continuing to the current day. The cover photograph filled the entire front cover, as was the fashion with quality magazines at the time, and thanks to the efforts of the then newly appointed advertising manager (Dennis Baylis) the outside back cover bore a full page advertisement for the first time from September/October 2003, somewhat controversially relegating the list of Sponsor members to inside the back cover.

The most recent major alterations took place in 2006, when the front cover was also changed to the current format with the picture forming part of the cover. The content headlines towards the bottom of the front cover reflect the practice from earlier Bulletins with a different colour for each edition through the year. January/February issues are colour coded in magenta, March/April in yellow, May/June in green, July/August in cyan, September/October in red and November/December in Institute blue (of course). There have been a number of other subtle changes in this time including the fonts and highlighting.

One of the main features relates to Institute meetings. Throughout the Bulletin there have been lists of upcoming meetings and events, with the first one being the meeting *Statistics, computers and test design in audiology* on 5 July 1974. Any such meetings are then reported in a subsequent edition. The first meeting report given (in newsletter number 2) was a report on the symposium on noise in transportation at the Eighth International Congress on Acoustics, with other 8th ICA symposia reported later. The Institute's medals and awards programme is an important part of the conference programme, and this has featured regularly with citations being published for all medalists and award winners.

In the first decades of the Institute there was a greater focus on Proceedings, with abstracts of papers included in the Bulletin for some of the meetings and conferences. By the early 1990s abstracts were no longer published in the Bulletin, however lists of the papers presented were included for another few years, until around 1995.

Technical contributions have always been a mainstay of the Bulletin, and these keep members up to date with news, activities

and developments across the many facets of acoustics, supplementing similar information presented at meetings and conferences. These technical papers were not grouped together under the heading "technical contributions" until 1991. Over the years there have been a number of special issues covering particular themes, the first being on ultrasound in 1979. Although the Bulletin is not a peer-reviewed journal the technical articles do undergo review before publishing. This task has been handled in several different ways over the years, starting with the associate editors, through an editorial board (1991-1996) and a management board (1997-2004). The management board was subsumed into Publications Committee thereafter, with a new editorial team assisting Charles Ellis, the present incumbent, from the beginning of 2012.

Also furthering members' development the Bulletin has regularly included book reviews, with the first one being Lindsay's 1973 book *Acoustics - Historical and physical development*. Book reviews have been managed in two main ways. Before 2006 one person was responsible for commissioning book reviews: this was Stuart Flockton between 1977 and 1987, Tony Pretlove (1987-2000) and Steve Peliza (2001-2006). From then on, book reviews were managed by Publications Committee, which generally delegated the task to the chairman of the appropriate interest group. He or she would then suggest a suitable reviewer who would be asked to write a review, and in return the reviewer may keep the review copy of the book or donate it to the Institute library.

At the front of each Bulletin (and the early newsletters) there is a letter from the President, with RWB Stephens encouraging members to provide matters of acoustical interest in the first newsletter, and thanking all members in his last letter in the third and final issue. William Allen recalls the 1947 formation of the Acoustics Group in the first edition of *Acoustics Bulletin* in 1976. Mike Ankers wrote in 1991 that a common theme of previous Presidents' letters was the encouragement of members' activities. In 1994 Alex Burd noted that incoming Presidents traditionally used their first letter to set out their "stall" for measures they intend to promote.

The other regular feature is industry news, which has reported over the year a whole range of new products, new companies, appointments and staff changes, and other information of interest. In parallel with this the Bulletin has always carried some advertising to cover a reasonable proportion of its production costs. The first advertisement was for a Nagra tape recorder. Advertising has been handled by an advertising manager, since 2002 Dennis Baylis. Dennis succeeded Keith Rose, who was instrumental in organising the original *Buyers' Guide*. Before Keith the advertising was handled by Roy Collins (1980-1983) and Sydney Jary (1984-1989).

Letters to the Editor were in general printed as and when received, especially when the addressee happened to think they might provoke a useful discussion, although some more extreme views were mercilessly censored before they saw the light of day. In common with the quality end of the national press, mistakes identified by correspondents were owned up to and corrected at the earliest opportunity, and only twice between 2001 and 2012 was the "Editors cloak" invoked: the rubric on the title page of every issue pointed out that the views expressed were not necessarily the official view of the Institute, and individual contributions did not reflect the opinions of the Editor. Book reviews were always a thorny subject, although recent practice whereby the chairman of the appropriate interest group is responsible for finding a reviewer tends to impart some authority.

There have been a number of occasional features, which included: *Acoustics at...* or *Consultancy Spotlight*. This feature started in the newsletters and first described Acoustics at the Admiralty Research Laboratory. During the first years of the Bulletin the series continued with other academic and research institutions. During the 1980s some consultancies were included. In the 1990s the series evolved into Consultancy Spotlight, wherein the articles reported work undertaken by a consultancy on a noteworthy project. In the 2000s the series can be considered to include "Company Profile", a definition loose enough to have included the ANC in the 2010s.

There have been two main series of *Pioneers in Acoustics*. The first series ran intermittently between 1975 and 1985 and covered British and international pioneers in acoustics. Most of the articles were written by R W B Stephens. The second series ran intermittently between 2002 and 2008, and R W B Stephens was included as a pioneer.

Some pioneers were considered important enough to be profiled for a second time. The 2002 set of pioneers was uncredited, though in fact the pieces were written by the editor (Ian Bennett) based on an original idea of Keith Rose, and with the advice of John Tyler. The quality of the prose shines particularly in some of the later articles, the work of John Tyler alone.

Between the early 1990s and the late 2000s there were two series reporting relevant extracts from Hansard (parliamentary proceedings, generally the answers to written questions on matters bearing on acoustics) and providing details of new British Standards. The Hansard information was for some years provided by Rupert Taylor, but was later distilled from the Parliament website by Ian Bennett. The Standards information was provided initially by Nicole Porter, and later by John Tyler, but the Industrial Noise Group (which became the Noise and Vibration Engineering Group) began to publish the information in its own occasional newsletter from about 2006 so it was omitted from the Bulletin thereafter.

In 1991 the Bulletin increased its publication frequency from four times a year to six. This was part of a drive to reduce costs at IOA HQ, since by including meeting notices within the Bulletin the annual postage costs were reduced. In 1991 a central section of the Bulletin was included on blue paper which gave meeting notices, calls for papers and other Institute news. This continued through to 2001 when the decision was made to redistribute the information throughout the Bulletin. Ian Bennett explains in his editor's notes of the time that originally the IOA news pages contained the newest news, and were produced on a separate print run and bound in at the last minute, but because the whole issue was now printed and posted out within a matter of days, there was no longer any point in doing so.

The most recent and currently running feature is *Instrumentation Corner* which has been produced by the Measurement and Instrumentation Group since 2009. This series was introduced by Martin Armstrong to provide hints and tips about anything relevant to practical measurement work in sound and vibration.

Another feature has been the publication of obituaries of prominent people in acoustics. In the earlier Bulletins these were called appreciations rather than obituaries, generally because of the unavoidable time lapse between the individual's demise and the appearance of the Bulletin in an age before electronic communications. By reporting the acoustical history of these individuals the appreciations provide an insight into some of the historical aspects of the acoustics industry and the Institute. For example, the obituary of R W B Stephens describes his contribution to the establishment of the IOA and his influence in both the British Acoustical Society and the Acoustics Group, and recognises his contribution as an associate editor for the Bulletin and his series on pioneers in acoustics. We can also use these to find out about the background to the first editor of *Acoustics Bulletin*, Michael Delaney.

Of all the people involved in the production of the newsletter and Bulletin, there are two individuals who have made a significant contribution over more than 20 years. John Tyler has at different times been editor and associate editor. He served on the Management Board for 24 years between 1987 and 2011. At certain times John also stood in as acting editor twice and as acting advertising manager once. Tony Pretlove was an associate editor for 24 years between 1976 and 2000, and also managed the book reviews between 1987 and 2000.

Finally, as this is a 40th Anniversary, it is appropriate to point out some historical articles in the Bulletin which may interest readers. In 1994 issue no. 5 and 6 gave a history of the British Acoustical Society; 1996 no.4 (the Inter-Noise 1996 issue) has a raft of historically focused articles, and in 1999 no.3 was written for the 25th anniversary. Other similar articles include: in 1978 no.4 the centenary of the publication of *Theory of Sound*; an RAF article reproduced from 1944 is included in 1993 no.2; and Alex Burd reminisces about 40 years in acoustics in 1998 no.1. There are also contributions covering the histories of Inter-Noise, BT, the Royal Albert Hall, Salford, ISVR, industrial deafness and hearing protection and acoustics research, amongst other topics.

Although the production schedule of the Bulletin changed from quarterly to bi-monthly in 1991 to allow more frequent communication to members, after some time it became apparent that some stories and news items came and went completely in the time between two Bulletins. In late 2006 a decision was made to introduce

a bi-monthly email newsletter which would alternate with the Bulletin, thereby giving members access to monthly news updates. The decision was that the e-newsletter would be free of advertising and only contain news items.

Acoustics Update

The newsletter is under the control of the Institute's publicity officer. The first newsletter, called *Acoustics Update*, was written by Judy Edrich and sent out on 15 December 2006, neatly slotting between the November/December 2006 and the January/February 2007 Bulletins.

Essentially, the newsletter followed a similar order to the Bulletin, with the first part being devoted to IOA news, including forthcoming events and meetings, calls for papers, reminders and notices for members, details of consultations, and links to news items on the IOA website. The newsletter was divided into a number of sections, each containing a number of short stories or links. Instead of technical contributions the newsletter contains links to news items with an acoustics "spin" from across the Internet. The newsletter finished with a link to the jobs advertised page on the IOA website, news from other organisations and details of other events/conferences/meetings of interest to members.

The newsletter was well received by members, and various minor revisions were made in response to feedback, such as having the newsletter complete with hyperlinks, as well as various improvements to the style and formatting.

In 2011 the newsletter began to be produced every month, under the authorship of Charles Ellis. Over the years the presentational style has been updated a few times, with the current style removing the section headings and having each news item with its own headline and link from the contents. The "jobs in acoustics" section was updated to contain links to all of the specific jobs being advertised at the time. The general order, and the interesting acoustics stories from around the world (*Soundbites*) remain largely unaltered and the newsletter is an important means of regular communication with members.

Website

The Institute has had a website since 20 October 1996. The initial site was hosted on the servers at University of Essex, with the address www.ioa.essex.ac.uk/ioa, and was written by Mark Tatham to contain selected items from *Acoustics Bulletin* and details of Institute events, affairs and activities. A draft version of this website was demonstrated to Council in February 1996, based on items from the Bulletin. Publications Committee took over responsibility for the website in 1997. By February 1998 there had been about 3000 visitors to the site, with Bulletin articles being the most popular items.

By 1999 minor updates had been made to include details of meetings and jobs, and visitors were known to be viewing the website from Europe and North America. The website was hacked during Easter 1999, but was only offline for a couple of hours. Updates continued to be made, with items from the Bulletin also being uploaded to the website. The website URL moved from Essex to the IOA domain in 2000, with all updates during this time being made by Mark Tatham and Kate Morton.

The first complete redesign of the web site took place in 2004, when a company was contracted to develop the site, with the process being managed by Matthew Ling. The new site was launched towards the end of 2004. There were two areas of the site, one public-facing and other for members only. The members' area included sections in which committees could share documents.

By 2007 it was considered that the website was beginning to look a little dated and a redesign was proposed. Proposals for redesign were received from a number of developers. One was selected to redesign the site at the end of 2007, and at this time a separate website for Euronoise 2009 was also being prepared. There were various issues with the website development and the site did not go live until the autumn of 2009, by which time it was looking much better but had lost much of the previous functionality, so it was decided that this would be considered a first phase of the development.

In 2010 the decision was taken to ensure that subsequent website revisions would not fall foul of the control and costs issues previously encountered, and requirements for the website were carefully and properly defined. It was clear that the integration of many Institute

clerical processes would greatly reduce multiple data entry and paperwork, freeing up significant amounts of time at the St Albans office. The website project thus became the catalyst for significant changes to the IT systems at the Institute.

The Institute produced a printed *Buyers' Guide* which allowed members of the Institute to identify particular companies which provided particular acoustics products. This guide was the concept of Keith Rose who was the Institute's advertising manager until his untimely death in 2002. The individual companies were contacted and each paid to appear in the *Buyers' Guide*, and this represented an income stream for the Institute.

The concept of the *Buyers Guide* has moved on to the website and is now called Find an Acoustics Specialist/Supplier. This expands the range of companies which are listed to include those offering consultancy and those acoustics and vibration instrumentation and equipment.

Proceedings

The publication of proceedings has always been important to the Institute, forming its technical output. This is a requirement of the articles of association to advance the science and art of acoustics.

The original proceedings were hard copy and were produced every Spring and Autumn. Over time the paper proceedings developed being produced for the Institute's principal meetings and conferences. These were printed and allocated a yearly volume number and part numbers for each individual meeting/conference.

In 2001 the decision was made to additionally produce the proceedings on CD-ROM, with the disk having PDF versions of the papers. The first CD-ROMs were for Autumn Conference 2001 Volume 23 Part 7 in 2001 Reproduced Sound 2001 Volume 23 Part 8 in 2001. The last paper proceedings were produced for Reproduced Sound 2001, Volume 23 Part 8 in 2001. Since this time technology has moved on and the PDF versions of the papers are now distributed

on a memory stick, with the first proceedings being the Institute's 40th Anniversary conference in 2014. The electronic versions of the proceedings include a menu which allows you to select the paper(s) of choice that you want to view.

The production of the proceedings is managed by Institute's head office in conjunction with the meeting organisers. Paper authors are sent a template and details on the layout and formatting required. The completed papers are collated together and sent for publishing.

Register of Members

From 1991 until 2013 the Institute produced an annual *Register of Members*. The original was to have an easy reference of members to allow details to be cross-checked. The register allowed for an entry for every company which employs a member of the Institute, including address and telephone details. Companies with more than one office could have more than one entry if they wanted, with the details allowing for members to identify and contact other members. Over time details of e-mail addresses, websites and a brief description of the company's activities were added allowing more methods of contact. The different companies were grouped into different categories, and then grouped by geographic area within the category. This approach allowed members or other interested parties to identify other relevant companies.

With the development of the website this function was added, and the printed register ran in parallel with the website until 2013. With the launch of the *Buyers' Guide* on the website operating in parallel with the online members' register it was apparent that there was significant overlap in the two functions, although each had its own separate dataset. In order to provide a more obvious route for the public the members register function was reduced to simply providing a check on membership for individuals within the members' area of the site, with the find a specialist area providing the public

Research Coordination Committee

Keith Attenborough

The Research Coordination Committee (RCC) is the "newest" of the IOA committees. In 2000, as a result of increasing concern (a) about the status of acoustics research in the UK and (b) about the extent to which IOA was representing researchers, particularly in physical acoustics and non-destructive testing (NDT), a proposal for the committee was made to IOA Council. It responded positively with the proviso that the committee should include representatives of all of the IOA specialist groups. Initial membership included the then IOA President Mark Tatham who was concerned particularly about the status and IOA representation of speech-related research. The first terms of reference for the committee were drafted in 2001. These included

- Monitoring and improving the academic status of acoustics in the UK
- Investigating possibilities for a more coordinated approach by IOA members to funding bodies both within and outside the UK
- Encouraging the formation of research networks in acoustics
- Encouraging regular interaction between the IOA and research councils
- Working with research councils and other funding bodies to encourage events that feature (UK) acoustics research
- Advising and reporting to Council on any matters related to (UK) research in acoustics that impact on IOA activities.

A priority during the first year was to establish an efficient liaison with the Engineering and Physical Sciences Research Council (EPSRC), other research councils and government departments. There were two notably successful outcomes from the early contact with the EPSRC. First, "acoustics" was added as one of the keywords used by the EPSRC when classifying grants. Second, acoustics was chosen as a topic for one of the EPSRC Theme Days intended as a review mechanism for subjects that cut across EPSRC boundaries and to provide a mechanism for the EPSRC

to identify any gaps in their portfolio related to the Theme. The Theme Day was held in conjunction with the IOA Spring meeting at Salford in 2002. This helped to increase the event's exposure within the general acoustics community and brought many non-member researchers into contact with the IOA. The RCC continues to strive to liaise with researchers in acoustics who are members of other institutes such as IoP and IMechE rather than IOA and does this partly through its membership.

In preparing for the Theme Day the RCC encouraged the EPSRC to search its project database as widely as possible for both purely acoustical topics and acoustics-related topics. Relevant topics were found under chemistry, engineering, infrastructure and environment, innovative manufacturing, IT and computer science, mathematics and physics. The IOA RCC assisted with selection of more than 100 research grants from these topics and their classification under speech, biomedicine, engines, aerodynamics, music, transport, planning, buildings, ultrasonics, water and physics.

Early liaisons with the National Physical Laboratory (NPL), the Department of Trade and Industry (DTI) and the Department for Environment, Food and Rural Affairs (Defra) were successful. Among other things, the NPL hosted the 2003 meetings at its Buckingham Palace Road office and Defra has hosted many meetings since (albeit without providing refreshments other than water by government edict since 2010).

An early task relating to "raising the national status of acoustically-related research", and prompted by Roy Preston from the NPL, was to liaise with the Foresight Committee of the DTI. The opportunity arose for submitting a Foresight project application on mechanical waves as a logical successor to one on em waves. Unfortunately, despite hard work by many RCC members, Tim Leighton in particular, this was not successful since the goal posts were moved to favour "issue-led" rather than "subject-led" projects.

In 2001, the RRC organised a survey of acoustics research and acoustically-related research in the UK. As well as yielding information helpful to the Theme Day and a subsequent IOA research-orientated conference in 2006, this resulted in an *Acoustics Bulletin* March/April 2002 article *The world of acoustics research* by Trevor Cox and Keith Attenborough.

In 2003 the RCC proposed that a paragraph be inserted in the IOA Code of Conduct relating to research ethics. The Membership Committee (chaired by Jay Dunn at that time) considered that (a) the proposed wording was too detailed (b) it applied only to a

specialised section of the Institute's membership and (c) that the matters raised by the RCC were covered by the existing Code.

In 2011, having chaired the RCC since its inception, Keith Attenborough stepped down and Kirill Horoshenkov took over. In 2012, under Kirill's leadership, the RCC responded to an EPSRC survey on key research challenges and this was published subsequently in *Acoustics Bulletin*. Also in 2013 Kirill initiated a coordinated effort with IOP and IMechE in respect of UK acoustics research. Membership of the RCC was changed in 2012 to introduce a new class of "corresponding" (Tier 2) member.

Sustainable Design Task Force

Peter Rogers

While he was a member of Council in 2009, Peter Rogers floated the idea of introducing a sustainability policy to cover the Institute's activities. This was presented as a first draft and discussed in Council. Although the principle was agreed, little was developed until late 2012. Peter Rogers then joined forces with Richard Cowell and developed and presented a proposal to Council in 2013 to set up a sustainability group, which evolved into a task force. Five goals were agreed in relation to sustainable acoustic practice.

1. Identifying current achievements
2. Integration into CPD education and resources for members
3. Encouraging connections across disciplines
4. Increased public profile for the Institute
5. Getting our own house in order.

The initiative was felt to fit in well with future policy. Council gave its support. Since that time, the Sustainable Design Task Force (SDTF) has progressed on all fronts and, in its short life, has published a dozen case studies in *Acoustics Bulletin*, an IOA Diploma

assignment and the first of the sustainable practice guidance (SPG) notes for members on materials. Consultations with the specialist groups have resulted in number of cross-disciplinary meetings, and a presence in the Parliamentary Scientific Committee representing the IOA in discussions has reached and influenced policy makers. There are current plans to offer the Institute's first formal online CPD module aimed at all members.

Sustainability policy covering "getting our house in order" (mostly affecting head office procedures) was approved by Council, and a wider corporate policy is close to agreement. Significant momentum had been achieved by the time of the 40th anniversary conference, and the SDTF has made a number of recommendations to Council for continuing the progress and making sure the IOA contributes into the future.

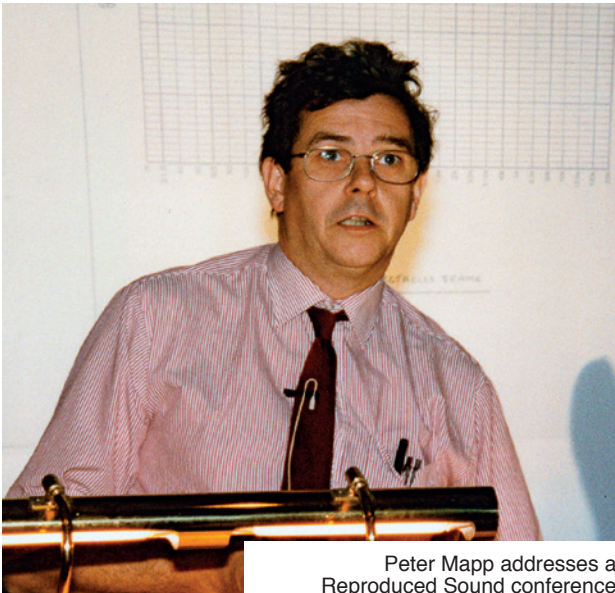
It is hoped that with the support of successive Presidents, Council and a developing, supportive, voluntarily force, this is a beginning of a programme of encouragement towards enhanced IOA strength in sustainable acoustical practice.



1998 - Networking at Reproduced Sound



2000 - David Bull prepares a demonstration at RS 16



Peter Mapp addresses a Reproduced Sound conference



2003 - Ken Dibble at Reproduced Sound 19



A trip on the River Edre during Acoustics 2012



Delegates mingle at ECUA 2012 in Edinburgh

Groups and Branches

Groups and Branches

Geoff Kerry

In 1974 the Institute hit the ground running with two regional branches and five embryo specialist groups already functioning, all set up under the auspices of the British Acoustical Society (BAS). The two regional branches, whose constitutions were initially accepted in April 1974, were the North East formed originally as a branch of the Society of Acoustic Technology when it became the first BAS branch in 1968, and Southern Branch, formed in 1969. At the December 1974 Council it was agreed that branch committees should be considered as sub-committees of Council, but it was apparent that both constitutions required some modification to fit in with the IOA Articles. In both branches, but mainly in the North East, there was some resistance to the "interference" of a new central body and to overcome this Council requested that both send delegates to the regular Council meetings. In addition, Council asked Dr Robin Mackenzie to act as the Scottish representative of the IOA. The five groups confirmed in early 1974 were Aerodynamic Noise, Industrial Noise, Musical, Speech and Underwater. Various attempts were made to start up a Physical Acoustics Group, but although Council gave its approval in October 1976, it was reluctantly disbanded in 1978 owing to lack of support. The possibility of starting up an Architectural Acoustics group was discussed as early as May 1976, but following a survey of members it was decided that Building Acoustics was a more appropriate title for the topics to be covered. Agreement for this group was given in October 1976 when it was also agreed that there should be an annual meeting of group representatives and better liaison between groups and branches, Council and the Meetings Committee. A standard model and generic group constitution was to be drawn up, and it was eventually agreed by Council in 1977 although responses had been obtained from only two of the groups, now numbering seven. The following year there were proposals to form branches in London and in the Midlands and by 1980 for branches in Hong Kong and in the South West as well. Council decided it was responding to, rather than driving, the agenda on groups and branches and appointed a sub-committee under Professor Peter Lord to consider and report on the structure and support for regional branches and specialist groups. The committee reported to Council in December 1980 and feedback was sought from the existing groups and branches. In the meantime a request to set up a branch in the North West was added to those from South West and Hong Kong and within the year there was one for a branch in Scotland. Official approval was awaiting agreement on a model draft constitution.

Following some debate and delay, Peter Lord's committee's recommendations were approved by Council. Groups and branches would have terms of reference in common and would be represented on Council by a Vice-president: there was to be a bi-annual meeting of representatives from each group and each branch. Although these proposals cut across the earlier practice of having at least one Council meeting a year open to any group and branch representatives, they were thought a more practical approach in the face of the rapidly growing membership and the increasing numbers of branches and specialist groups. Special consideration was to be given to the membership of both Council and Meetings Committee to ensure a fair representation, particularly of the differing group interests.

By and large, the group and branch strategy adopted in 1983 has remained intact to the present day. There have been some new branches formed. In particular the formation of the Irish Branch in 1998, embracing as it did the interests of Irish acousticians in both the north and south, required due tolerance of the law of both nations to be embedded in the branch's terms of reference. In 1984 the Eastern Branch was formed, but the Welsh Branch did not appear until as late as 2010. There were some changes to the regions covered. In 1994 the Midlands Branch was formed to embrace the whole of the Midlands, swallowing the largely dormant East Midlands Branch even though it had had a successful run since its formation in 1982. Central Branch was formed in 2006 to fill the geographical gap between London and the Midlands. London Branch as such was not formed until 1987 but it had been in existence as a viable entity in the form of the London Evening Meetings since early 1977. Hong Kong Branch was approved in 1983 and ran its own programme until, in advance of the handover of the colony to the Chinese Republic, the Hong Kong Institute of Acoustics was set up, totally separate from the IOA and its local branch. Although the two organisations ran side by side for a few years, the IOA branch eventually became dormant. Nevertheless, many members of the Institute still live and work in Hong Kong. North East Branch also became dormant in the late 1990s and eventually, in 2009, the decision was made to amalgamate it with the Yorkshire and Humberside Branch to form the Yorkshire and North East Branch. Even now this branch along with several others suffers because its geographical size means great distances have to be covered by some members in order to attend meetings. Several ideas have been tried and the search continues but the possible extended use of webinars and transmitted or recorded material appears to be one viable option which, if adopted, could enhance the facilities available to branch members especially when CPD activities are involved.

Group development following the revision of group and branch strategy has followed a similar path. There have been some notable additions: the Electroacoustics and Measurement and Instrumentation Groups. Both have contributed significantly to the main IOA meetings programme, the former with the highly successful Reproduced Sound conference held each autumn and the latter with a series of educational one-day meetings covering practice and advances in measurement techniques, backed up with a regular series of articles in *Acoustics Bulletin*. Other groups have amalgamated with, or emerged from, earlier ones. The Industrial Noise Group at one time covered aspects of environmental noise as well, but the rapid expansion in environmental concerns led to the formation of the Environmental Noise Group in 1993. Members of that group have carried out sterling work co-ordinating the Institute's response to the many Government initiatives dealing with environmental noise that have appeared over the past few years. The Aerodynamic Noise Group, the first to be formed within the BAS, amalgamated with the ING in 1983 after a period of inactivity and the ING itself, virtually dormant for a year or so in the late 1990s, was re-formed into the Noise and Vibration Engineering Group in 2002. The Speech Group, which had held numerous successful autumn conferences as well as

successful one-day events, became dormant around the turn of the century but re-emerged as the Speech and Hearing Group in 2007 and has remained quite active since. The Physical Acoustics Group formed in BAS days has had a turbulent history, partly because many physical acousticians remained with the Institute of Physics (IoP) when the IoP Acoustics group was dissolved and the majority joined with BAS members to form the IOA. Various attempts to get PAG going were not particularly successful and in 1984 a proposal was put to the IoP to form a joint group. This was accepted in 1986 and the joint group has run a successful series of meetings for many years. However the emphasis and drive shifted to IoP members and Council is currently consulting with members to decide the future of the IOA element in the joint group.

Two groups, Young Members and Senior Members, were formed

recently to deal with the specific interests of members in the respective age groups. They are more like national branches and each has a varied range of activities. It could be argued that the Musical Acoustics Group is also more of a national branch since it caters for members whose professional interest in acoustics is not necessarily related to music. One of the oldest groups, it is currently going from strength to strength and is publishing a new series of its popular magazine *MAG MAG*.

The following reports present the views of the members who have been active in their respective groups and branches, sometimes starting them, sometimes developing them and sometimes just joining in their activities. It is quite clear from them that much of the activity in the IOA is centred on branch committees out of the limelight of the main Institute and its Council – out but not forgotten.

Central Branch

David Watts and Richard Collman

Central Branch was formed to cater for members having difficulty travelling into London after work in time for London branch evening meetings, and for whom meetings of the Midlands or the Eastern Branches were a little too distant. Hence, in 2006, the branch was inaugurated to provide a programme of meetings and a forum for members in Hertfordshire, Buckinghamshire, Bedfordshire and the surrounding areas. Having been instrumental in setting up the branch, David Watts chaired the branch management committee for the first six years before being succeeded by Richard Collman in 2012. Many other volunteers have assisted and continue to support the branch through their efforts on the committee, as is the case right across the Institute.

The National House Building Council offices at Milton Keynes became the usual venue for evening meetings, with the inaugural meeting held there on 7 March 2006. This was attended by the President and the Vice-president of groups and branches, with the former (Tony Jones) being invited to cut a specially prepared cake: this was rapidly consumed by those attending. Casella CEL in Bedford provided an alternative location for several meetings, and various other venues have hosted one-off meetings or visits.

The membership of the branch has grown from about 80 at the end of 2006 to nearly 200 at the end of 2013.

An early aspiration of the branch was to promote acoustics in schools and by the end of 2007 several “Acoustics Ambassadors” had been approved by Setpoint Hertfordshire, the contract holder for

Hertfordshire under the nationwide STEMNET scheme promoting science, technology, engineering and mathematics in schools. These volunteers have delivered science-related and acoustics-related activities and projects in schools, notably the *You're banned* activity developed by Richard Collman. This won “best activity” at the national STEMNET awards presented at the House of Lords.

Another theme of the branch has been the interests of younger members and a meeting specifically aimed at this group was held in December 2008. It featured presentations on becoming a Chartered or Incorporated Engineer, and on continuing professional development, as well as affording a useful opportunity for issues of particular importance to younger members to be aired and discussed.

The branch held eight meetings during 2012, although owing to a lack of time to organise events, this fell to five for 2013. The meetings continue to cover a wide range of topics such as wind turbines, railway noise, vibration, noise planning policy, calibration and school acoustics, as well as visits to Marshall Amplifiers, the Open University and the National Physical Laboratory. Most committee work is now carried out by group email and several committee members have played an invaluable part in initiating and organising meetings.

David Trew's innovation of webinars for some meetings has also been a major development. The idea provides an opportunity for members who cannot attend in person still to participate in meetings (but not the discussion or curry afterwards).

East Midlands Branch

Kevin Howell

East Midlands Branch was established in June 1983 with John Savidge as chairman, Frank McCorry as secretary and David Snow as treasurer. On 16 November the first branch meeting was held at Derby Lonsdale College where Professor E J Richards gave a talk on *Noise and machinery*. In 1983 the branch held meetings at the Institute of Hearing Research at Nottingham University and at Loughborough University where Mike Ankers was the speaker. In 1984 the branch had a visit to British Gypsum at East Leake, followed by a visit to the Rolls Royce Hucknall complex led by M J T Smith. A planned one-day joint meeting with the Yorkshire and Humberside Branch on transportation noise unfortunately had to be cancelled. In 1985 the first meeting of the year was in May and was a presentation and tour of Q-Studios in Queniborough and included the deferred AGM from the previous year. In September there was a visit to the Royal School for the Deaf in Derby. In December there was a talk by George Vulcan. At the end of the year John Savidge resigned as chairman and Frank McCorry took over while David Snow took on both the secretary and treasurer roles. In April 1986 the branch held a meeting at Loughborough on vibration and noise from blasting. In October there was a one-day meeting jointly with the Industrial Noise Group at Birmingham International Airport on *Noise and*

vibration in the aircraft and spacecraft industries. In November there was a presentation from Mark Lutman and Ross Coles on the damage to hearing from leisure noise. In 1987 there were two visits, one to Radio Nottingham and one to Ratcliffe Power Station, as well as an evening meeting at Loughborough University where John Walker talked about railway noise. In 1988 no technical meetings were arranged because of the poor attendances in 1987. A Christmas social was organised in order to generate interest but this was cancelled owing to lack of support. The branch was inactive in 1989, but attempts were made to re-establish it in 1990 and in November a meeting was held at Nottingham University where Mr D G Quinn, Chief Engineer of Lotus Engineering's noise and vibration group, gave a talk entitled *Adaptive noise control in vehicles*. In 1991, 1992 and 1993 the branch reported it was awaiting re-organisation but there was no activity. There was no further activity until 1994 when the Midlands Branch came into being on 7 December of that year with a launch meeting held in Rugby (see page 80).

Eastern Branch

David Bull

I had been discussing the possible benefits of setting up an Eastern Branch with a number of people working in different organisations in the field of acoustics. The main impetus for such a consideration was the extensive education and training in acoustics being carried out at the Colchester Institute, which involved all types of students.

Early in May 1988 I was discussing the idea of an Eastern Branch with Peter Hunnaball in the development laboratory of Woods of Colchester. After a while Peter turned to me and said "let's go for it, David" and so we started off on a long trail that is still unfolding. We contacted various different organisations in the Eastern region with the result that eight members of the Institute had an initial informal planning meeting at West Suffolk College in Bury St Edmunds on 24 May 1988.

After some discussion about the role of a branch and what it could offer members it was agreed to press ahead with the formation of an Eastern Branch. The eight were David Balcombe, David Bull, Brian Coley, Nigel Grundy, Peter Hunnaball, Terry Metcalfe, Keith Rose and Marcel Tatham.

The proposal for a branch was publicised in *Acoustics Bulletin* and the inaugural meeting was held in the evening in October 1988 at Bury St Edmunds. To ensure a good start, Geoff Kerry (Vice-president, groups and branches) joined us having travelled from Salford. Approximately 30 members attended from Essex, Suffolk, Norfolk and Cambridgeshire. Officers were elected from the initial members mentioned above, and Ian Haines volunteered to join the original eight, making a working branch committee of nine. There followed an initial talk from Bernard Berry on the latest research into environmental noise, an ongoing topic to be updated on several occasions!

The branch committee met four or five times each year to plan events. The meetings were often held in the Bury St Edmunds Bowls Club, a rather austere environment which tended to expedite meetings! AGMs were held in the more comfortable facilities of various companies and organisations, where there was usually an opportunity to combine the formalities of the branch meeting with a technical visit.

To publicise activity more fully, a branch newsletter was developed which was circulated via HQ to all members living in the Eastern region. This newsletter continued to be distributed for approximately four to five years but unfortunately no copies seem to have survived.

Since its early days the branch has continued to flourish through the active participation of many different members who have arranged a very wide variety of events in many different locations right across the region.

To date there have been about 175 presentations (usually about seven a year) on all manner of topics associated with acoustics from hi-tech to low-tech. These ranged from the latest research and technical experiences through rather mysterious to the not-too-serious, such as "sound healing" which had us all making vocal sounds to one another to see if we felt some benefit. Content varied from very objective analytical understandings to the much more subjective approaches to noise annoyance in a wide variety of circumstances. Every conceivable topic has been covered, and the programme has certainly kept members up to date and made significant contributions to their CPD requirements.

To give a general indication of the extensive range of topics, consider the following (incomplete) list: medical ultrasonics, gas

turbine noise control, train noise and vibration, auditorium acoustics, entertainment noise, the ear and hearing, sound reproduction, long-distance sound propagation, vibration isolation of buildings, shooting noise, musical instruments, helicopter noise, real-time noise mapping and sound quality.

The meetings have helped members working in all types of organisations from heavy industry and engineering, through scientific research and development, consultancy and local authorities to education and training.

It has always been the aim to make presentations as accessible as possible by using venues and timings to suit the majority of members. Venues across the middle of the region have been very popular, e.g. Colchester, Bury St Edmunds, Cambridge and Ipswich, but meetings have been held at other places, from Chelmsford in south Essex to Norwich and Peterborough further north. Meetings have generally been in the evening although half-day meetings have also been well supported.

The branch arranged a national conference on Health and Safety and Noise at Work. This was held in Bury St Edmunds in 1991 and it attracted delegates from across the country.

As well as the more conventional meetings, technical visits have always formed an important part of branch activity. These have been arranged at a wide variety of companies and organisations. Some visits were of specific acoustical interest, such as research and development laboratories and acoustical instrument manufacturer. Others were of more general acoustical interest such as building services research, radio and TV studios, car and engine manufacturers, a national airport, and a nuclear power station.

Social events were always high on the agenda of the branch committee and an annual branch dinner was initiated very early on. Very enjoyable evening gatherings have taken place at various hotels, restaurants and education establishments across the region. Some even had music and magic! Other social events bring pleasant memories such as "mini" summer cruises on sailing barges off the east coast, participation in a shooting school, and a visit to a brewery.

The branch has always been very active and as well as providing technical and educational benefits it has brought much more social interaction and networking among members who are normally dispersed over a wide area.

This article cannot possibly do justice to all the many people who have contributed so much to the very successful operation of the branch over the last 25 years, particularly those who have acted as chairmen and secretaries. Apart from the nine pioneers, it would be difficult to name all those who have so willingly given their time and enthusiasm to ensure that the branch continues to thrive. All members owe them very sincere thanks for all their efforts, and if anything or anyone of significance has been omitted the author offers his apologies. Long may the trend continue of the younger generation taking up the challenge of organising the regional branch to support all the local Institute members.

Looking back over the years it rapidly became apparent that profound changes had occurred, not least in computer systems. Amstrad computers and Locoscript word processing are totally incompatible with anything used today, and consequently until recent times very few records have been retained. Much searching along many lines of enquiry for information about the early days of the branch has produced very little. Consequently much of the above is the result of deep searching of an older, slower human memory Mk 1.

Hong Kong Branch

Peter Bird

In 1982 the organisational structure of the Institute extended, for the first time, beyond the shores of the British Isles. The Hong Kong Branch was formally inaugurated on 23 July 1982 and, in a

parallel development, the Hong Kong Polytechnic's associateship course in noise and vibration control was instituted and accepted as meeting the academic standard for corporate membership of the

Institute. The intention was that evening meetings should be held at regular intervals, with topics to be chosen with the intention of being topical, practical and particularly relevant to Hong Kong. The initial meeting was addressed by Terry Willson of the Environmental Protection Authority.

During the early years there was much activity with several successful evening meetings including a discussion on whether or not Hong Kong Chinese residents could tolerate higher noise levels than people elsewhere in the world. There was much interest from the local press and radio. In 1984 the branch with youthful eagerness organised the prestigious second Western Pacific Regional Conference in conjunction with the Hong Kong Polytechnic, and this conference turned out to be a great success.

After these first few pre-Internet years the distance between this branch and head office in the UK began to show and, although the branch continued to flourish, official reports of its activities began to dry up. Pressure of work and illness within the branch committee had caused the evening meeting schedule, initially so successful, to lapse. However, branch membership continued to be strong and in

1989 an EGM was called with a view to re-activating the branch. A new committee was elected and a programme of activities for 1990 was drawn up. This gave rise to a big leap in membership from 48 in 1989 to 92 in 1990 and a new branch newsletter, *Sounding Board*, was produced. A conference, *Pollution in the metropolis*, was held in 1991 and branch membership reached 113.

Applications for membership of the Institute from Hong Kong poured in and in 1993 it was the most rapidly expanding branch. The membership application process was assisted by setting up a pre-vetting system by local members with recommendations to the Membership Committee. The meetings programme remained strong throughout 1994 with a branch membership of 143, slightly down from a high of 152 in 1993. Technical talks continued and there was an exchange programme with Shanghai in 1994 with six members of the Shanghai Acoustical Society visiting the branch in December.

However, British possession of Hong Kong was by then coming to an end, with the handover to the Chinese authorities due in 1997. In 1995 the branch was replaced by the newly formed Hong Kong Institute of Acoustics.

Irish Branch

Martin Lester

Irish Branch was formed in 1988, with the first meeting taking place on 24 September. The forming committee was Gerry McCullagh (chairman), Oliver Hetherington (secretary), Kevin Chambers, Frank Clinton, Gary Duffy and Robin Mark.

Over the years the committee has changed with the current incumbents being Martin Lester (chairman), Gary Duffy (vice-chairman), Sam Bell (secretary), Heather Armstrong, Damian Brosnan, Diarmuid Keaney, Damian Kelly, James Mangan, Robert McCullagh and Sarah Middleton. During the intervening years the following have also served on the committee: Simon Hetherington, Eugene McKeown, Brian McManus and Ray Walsh.

During its existence the branch has held a number of evening meetings and four one-day meetings. The first one-day meeting was at the City West Hotel, Dublin in May 2002 on *Road traffic noise* which was followed two years later by the issue of the Irish National Roads Authority document *Guidelines for Road Traffic Noise and Vibration*; the second was *Sound insulation in dwellings – Current and future building regulations in the UK and Ireland: Implementation and limitations* at Clontarf Castle Hotel, Dublin, in November 2005; the third was *Wind turbine noise 4* (being the fourth in the series of such IOA meetings around that time) which was held at the Armagh City Hotel, Co Armagh, in February 2008; and the most recent was *Wind turbine noise assessment* in July 2012, close on the heels of the publication of the Institute of Acoustics' consultation document on *A good practice guide to the application of ETSU-R-97 for wind turbine noise assessment*. All these meetings have been well attended and have complemented a programme of evening meetings held at a number of venues predominantly in Belfast, Dublin and Armagh, although other locations are frequently considered.

In October 2005, after a period of illness, Gerry McCullagh, the founding chairman of the branch, passed away. In recognition of his efforts into the promotion of, and education in, acoustics throughout the island of Ireland, an annual Gerry McCullagh Memorial Lecture was instituted. An eminent acoustician is invited to speak on a relevant subject, or more often a summary of their experiences, and a certificate is awarded to the best performing student resident in the island of Ireland in the Institute of Acoustics' Diploma that year.

The first Gerry McCullagh Memorial Lecture was given by Bernard Berry of Berry Environmental in November 2006 on *Recent developments in environmental noise*. Succeeding lectures have been *Sure you're sure? A broad view on uncertainties in environmental noise measurement* by Geoff Kerry of the University of Salford (2007), *Pop concerts – sound management and control* by Jim Griffiths of Vanguardia Consulting (2008), *Noise policy in Europe – emerging issues and the role of the European Environment Agency* by Colin Nugent of European Environment Agency (Noise) (2009), *Development and application of noise management policies* by Stephen Turner of Bureau Veritas (2010), *Taking tea with Wotan – tales of an itinerant acoustician* by Peter Wheeler (2011), *The burden of disease from environmental noise* by Wolfgang Babisch of the Federal Environment Agency, Germany (2012), and *Acoustic design in schools – 100 years of guidance* by Bridget Shield (2013).

The certificates for best performing student have been presented to Lindsay Shaw (2006), Pamela Christie (2007), David Crawley (2008), Matthew Cassidy (2009), Esam Abu-Khiran (2011), Stephen Allen (2012), Suzanne McCreesh (2013) and Gareth Thompson (2014). No certificate was presented in 2010 because the timing of the Diploma year end changed.

London Branch

Bob Peters and Tony Gorton

London Branch developed from a series of IOA London evening meetings which started early in 1977. These were organised by the then Greater London Council Scientific Branch with John Simson, Stephen Turner and Paul Freeborn among the main organisers, and meetings were held in County Hall. Some of us remember, despite receiving careful instructions, wandering around the maze of corridors trying to get out – and who knows, there may be lost branch members still trapped in the maze!

During the first few years of London evening meetings the IOA Council had suggested to the organising committee that they might wish to form a London branch, but the committee at first declined, preferring to continue with the existing arrangement of London evening meetings. However in March 1987, after the meetings had been suspended for two years as a result of the abolition of the GLC, the London Branch was formed, with the original committee becoming the *ad hoc* branch committee until elections could be held at the next AGM.

The first meeting of the formally constituted branch was on the topic of aural craftsmanship and was given by Jeff Charles. This was particularly appropriate since Jeff had been a member of the original London evening meetings committee, and his talk *Acoustic consultancy: Aural craftsmanship with scientific pretension* was a reprise of his Tyndall Medal lecture a year earlier.

Much of the history of the branch is contained in a precious although rather battered old thick red foolscap book, which contains the attendance register for each meeting. The first meeting recorded in the book was on 20 January 1977 and was on the topic *Should night flights be banned or restricted?* 40 people attended. The last was in October 2009 (28 attended) after which a new book was started. With a full programme consisting of eight or nine meetings in a calendar year, usually with none in June, July or August, the Red Book contains records with signatures of attendees from about 200 meetings, with a further 20 or so since recorded in the new book. There are some short gaps in the records where, for unknown reasons – possibly the secretary forgot to bring the book to the meeting – no meetings were recorded for several months, and one longer gap between May 1982 and October 1984 may be connected to the demise of the GLC.

As well as the regular venue for meetings in County Hall the branch had a tradition of holding one meeting a year at IOA headquarters in St Albans and one at NESCOL. In the several years following the abolition of the GLC the driving force behind the meetings remained with essentially the same nucleus of people, the members of a privatised version of the former GLC Scientific Branch which went through several changes of ownership and name. The venue of the London evening meetings changed with this group to Great Guildford Street, and when that venue ceased to be available the meetings moved on a month-by-month basis around various offices in many parts of Greater London. It was not unknown for one group of acousticians looking for the month's venue to meet a similar group coming the opposite way down the same street on the same mission! In more recent times the venue has been stable over a longer period, with moves forced only when a company has refurbished offices or the members have outgrown the meeting room. At present the branch meetings are held at the offices of WSP in Chancery Lane. For a few years in the mid-1990s, the London meetings went “walkabout” to the far-flung corners of the branch (St Albans to the north and NESCOL, Epsom and Croydon to the south) but eventually the experiment petered out and they have returned safely to central London.

The first few entries in the Red Book up to May 1978 reveal that meetings were held about: the “quiet town” experiment, noise at work, train noise in the community, noise abatement zones, Concorde noise, construction site noise, entertainment noise, attenuation of low-frequency traffic noise, measurement of environmental noise, external noise and schools, and a visit to the BBC's music studios. Although there are some topics in this list which were “one-offs” and related particularly to the late 1970s, several topics were revisited time and time again over the years, and are still very much of interest today. Attendance at these early meetings ranged from 15 to 80. In subsequent years there have been highs and lows in attendance, and for a time the numbers became so low that the survival of the branch seemed questionable. The low point

was probably the meeting when the number attending was so small that they could sit round the speaker's laptop rather than needing to use a projector. Since then there has been a strong revival. A normal attendance is now 50 to 60 people and popular topics often attract more. A frequently-heard question nowadays is “Where can we get more chairs?”

The branch has tried to maintain an eclectic programme allowing members to be aware of the latest developments in the principal fields of acoustics. As might be expected over a 30-year period, many topics have been repeated including transport noise (aircraft, train and road traffic noise), community and entertainment noise, construction site noise, sound insulation, noise and planning, noise in the workplace, noise and schools, and measurement and instrumentation. Besides these there have been a number of wider-ranging talks. Among the more eye-catching titles are meetings on the design of brass musical instruments, acoustics at depth, cochlear mechanics, rodents and ultrasound, a sound map of the Underground, bell-ringing, living with deafness and tinnitus, “have dog will travel”, and the history of cinema sound.

Every year a great deal of time and effort, and often anguished discussion, is spent in branch committee meetings on the subject of the venue (restaurant) for the annual dinner, the menu and after-dinner speaker but it usually seems to turn out well in the end. Venues in the past have included the Science Museum, Doggett's Coat and Badge, the Bleeding Heart, London South Bank University, Shakespeare's Globe Theatre and the Foreign Press Association, and speakers have included Rupert Taylor, Jim Griffiths, Bridget Shield, Peter Wheeler, Peter Lord and Ian Sharland.

The branch normally organises a half-day (or occasionally whole-day) visit each year. The places visited have included Broadcasting House, Glynedebourne, Whitechapel Bell Foundry, the Royal Albert Hall, Wembley Stadium, the Thames Barrier, the Millennium Dome (before its opening, and in its later reincarnation as the O2), Royal Berkshire Hospital, Trinity College of Music and an organ factory. A memorable event was the one that expanded from a half-day at the Channel Tunnel Visitor Centre to a trip to France through the Channel Tunnel, including a four-course meal at a chateau with samples of their wine. In the event, the trip was so badly affected by snow that the timing had to be changed and almost all the acoustical content of the day was lost. Happily, the eating and drinking still took place.

The branch has a tradition of organising a one-day conference on some topic of interest every year. These meetings form part of the IOA's annual programme of conferences. There have been a wide variety of subjects such as building services noise, noise in London, planning and noise, noise and health, and noise nuisance. Several of these meetings have attracted good audiences of 70 or more.

The work of organising meetings, visits and annual dinners is carried out by members of the branch committee which meets (in recent years at least) directly before each evening meeting. Although under the guidance of the chairman the work is shared to some extent, much of the effort that keeps the branch running smoothly is expended by the branch secretary. The branch has been extremely fortunate to benefit from the dedicated services of just a few long-standing secretaries, including John Wade, John Miller, Tony Gorton, Anne Carey and Nicola Stedman-Jones. Branch chairmen have included John Simson, Stephen Turner and Jim Griffiths. Both posts are currently filled by the last-named in each case.

As well as the Red Book the records of branch activities reside in the minutes of branch committee meetings, and in details of visits, annual dinners and one-day meetings. Some of this material has been passed on from secretary to secretary, originally in paper form and more recently as electronic files. Condensed reports of branch activity have also been recorded in Council minutes, under the reports of the Vice-president, groups and branches, and also in *Acoustics Bulletin*. One consequence of the History Project is that the branch committee may wish to consider to what extent these various materials should be collected, collated, edited as necessary, and stored. A complete list of meetings recorded in the Red Book and its successor is also available, including the title of the talk, the speaker, venue and recorded attendance.

Midlands Branch

Kevin Howell

Midlands Branch came into being on 7 December 1994 with a launch meeting held in Rugby. The instigators of this initiative were John Hinton and John Magrath, local authority officers from Birmingham City Council and Rugby Borough Council respectively. The three presenters on the evening were Bernard Berry, Nicole Porter and Stephen Turner, all still very prominent figures in acoustics.

The two Johns organised three meetings during 1995, the third of which included the inaugural general meeting at which the first branch committee was formed. Messrs Hinton and Magrath were joined on the committee by Kevin Howell, Deborah Webb *née* Francis, Denis Robinson and Mike Fillery. The first committee meeting was held in January 1996 when, by general assent, John Hinton took up the chairmanship of the branch, Mike Fillery became secretary and Kevin Howell treasurer. It was decided at this meeting that the committee would aim for three branch meetings and one site visit in 1996. At this meeting it was also decided that a survey should be conducted of branch members and this was undertaken by Deborah. About 50 responses were received to questions covering where members worked and lived, their preferred venues for meetings, as well as their preferred meeting formats, days and times. Many useful comments were made, and the results of the survey were discussed at a committee meeting in November 1996. Much discussion centred on the wide geographical spread of members and the need to organise meetings across the region.

The committee has been quite stable over the years with John Hinton remaining chairman for 12 years until 2007 when he stood down to concentrate on his role as IOA President-elect. John remains an honorary member of the committee. Paul Shields took over as chairman and continues to this day. Mike Fillery continued as secretary until 2005 when Paul Shields took over, but Mike remained on the committee until 2007. Mike Swanwick (a committee member since 2006) became secretary in 2008, when Paul became chairman; Kevin Howell took over as secretary in 2012. These stalwarts have been supported by many committee members over the years, in roughly chronological order: Ron Hawkes (1998-2006), John Shelton (1998-2004), John Grant (1999-2008), Alan Whitfield (2000-2003), Brian Hemsworth (since 2005 and membership secretary since 2007), Rik Lewis (2006-2008), Robert Colder (2006-2013 including being junior consultant representative), Andrew Jellyman (an ever present branch supporter, joining the committee in 2008 as CPD representative), Heather Billin (since 2009 and early career representative), Mike Breslin (since 2012) and Grant Swankie (2012-2013). John Pritchard has been a co-opted member of the committee since 2009.

In the 1990s the branch averaged four meetings per year. In the 2000s the average edged up to five. For the last few years a concerted effort by the committee has aimed at holding one meeting per month resulting in 45 meetings being held in the four years from 2010 to 2013. By the end of 2013 the branch had held 119 meetings of various types, including one it helped to organise, being a one-day meeting on transportation noise (May 2006) in Solihull.

Meetings have been organised widely across the Midlands with about 60% of them in the East Midlands, mainly Derby, Nottingham and Loughborough, and 40% in the West Midlands, mainly Birmingham, Coventry and Solihull.

Branch meetings have covered a very wide variety of topics over the years, and no area of acoustics has been left unexplored. As well as the acoustics mainstream we have had some talks on what may be described as subjects on the periphery of the discipline. For example, in August 2010 we had a fascinating presentation from Ray Goodwin, an amateur wildlife enthusiast, who had taken numerous wildlife recordings with fairly makeshift equipment. The results of his efforts have been of sufficiently high quality to be used by the BBC and film makers.

One of the regular annual meetings the branch holds happens each September, when we go to Derby University to hear presentations (usually three) from IOA Diploma students who are just completing their course. We try to hold it on the first evening of the

new student intake and both sets of students get to mix together and with branch members. This tradition began in 2003 and is still going strong. Prizes are awarded and in 2013 a new trophy, the Andy Nash Award, was instituted. Andy Nash was a member of the URS acoustics team and a former IOA Diploma student and presenter to the Midlands Branch who sadly passed away in 2012 at the age of 33.

As well as the usual evening meetings the branch has held some memorable visits and tours. In September 1996 we had a superb tour of Birmingham Symphony Hall, including venturing beneath the hall where massive isolators protect it from train vibrations from the New Street railway line running directly below. In June 1998 we visited Donington Park racing circuit to view their noise monitoring system. In September 1998 there was a tour of the Motor Industries Research Association (MIRA) test facilities at Nuneaton in Warwickshire. In September 1999 a visit took place to the impressive John Taylor Bell Foundry and Museum in Loughborough, where they have been manufacturing bells since the middle of the 14th century. In April 2003 there was a meeting and visit to the Jaguar Engineering Centre in Coventry, the next month one to Hucknall, Nottingham to see the huge Rolls-Royce aero-engine noise test facility, and we visited the Rolls-Royce Heritage Centre in Derby in May 2005. In July 2006 we held a half-day meeting on new technology in the noise and vibration industry at the National Space Centre in Leicester, which included free tours of the centre. A meeting at Birmingham International Airport on aircraft noise in May 2007 included an airside tour up close to some Rolls-Royce engines, described to us by Mike Swanwick, himself of Rolls-Royce. In May 2010 we had a half-day meeting on aspects of occupational noise and vibration at the Health and Safety Laboratory at Buxton with a tour of the facilities. In July 2010 and March 2012 we visited the Institute of Hearing Research at Nottingham University to listen to presentations and view the facilities. We have held three meetings at British Gypsum's Building Test Centre at East Leake in Nottinghamshire in October 1997, May 2009 and August 2011, with each visit having a different technical focus.

We have also had a succession of disappointing visit cancellations which led us to believe that any organisation agreeing to a visit from the branch was destined for difficulties. A meeting in September 2001 on managing the noise environment held at Birmingham International Airport was due to include an airside tour, but the tour was cancelled owing to the security clampdown following events 10 days earlier. A much anticipated visit to the Arrows F1 team in October 2002 was cancelled when the company announced its financial difficulties, and subsequently went into liquidation at the end of the year. A planned visit in late 2003 to Alstom in Birmingham (where Virgin Pendolino trains were being built) had to be called off when the company announced they would be ceasing production at the plant. A second visit to Birmingham Symphony Hall in October 2004 never materialised when it was discovered that there was no longer anyone on the staff sufficiently expert to talk to us about the acoustics.

The branch committee would like to thank the many presenters, sponsors, meeting hosts and the branch members, too numerous to mention, for their support and for ensuring the success that has been achieved.

North East Branch (the early years)

Ralph Weston and Geoff Kerry

North East Branch was the first IOA branch to be formed although it did so under the auspices of the British Acoustical Society (BAS). Back in 1967 a group of enthusiastic members of the BAS met in Newcastle-upon-Tyne to discuss the formation of a regional branch. The following is an amalgamation of their history gleaned from annual reports, Council records and articles in *Acoustics Bulletin*.

From that first meeting the North East Branch of the BAS was formed, with the object of furthering the aims of the parent body throughout the region. There does not seem to be any record of who was at the gathering, nor whether any officers or committee were elected. The next reference to the branch was at the BAS Council meeting in January 1968, when the secretary of BAS reported on the formation of a branch centred in Newcastle-upon-Tyne.

We now jump to July 1971 when the BAS Council minutes report the notification of the branch committee with the names of the committee. However, the names were not published. It was not until October 1972 that the branch secretary reported on its Annual General Meeting for that year and that the following officers were elected: chairman, G T Willshare; secretary, D Headon; treasurer, B Oakes; members of the committee, J Pentland, E Richardson, T Smith and H Whitehouse.

In 1974 the chairmen of the North East and Southern Branches were co-opted onto Council for the year. This same year the North East Branch restated its aims which were to disseminate information on acoustics at all levels over a broad cross-section of the public. There were some 32 members and their programme included the usual meetings, visits and social events. Some of the meetings were aimed at other professionals such as city planners, architects and public health staff. By 1976 ways were being explored to cater for such a geographically widely-scattered membership, and several joint meetings were arranged. One such meeting was a one-day meeting on construction site noise, in association with environmental health officers, which attracted more than 150 delegates from all over the region.

It was noted that there was a constant migration of members into and out of the region, and one ex-member of the branch who had been influential in the formation of the Southern Branch was also involved in the formation of London Evening Meetings Branch. Perhaps just as important as bringing acoustics to the region, however, was the forum that the branch provided for members to meet informally, to exchange information, to conduct business and even arrange to borrow equipment. In this respect the branch provided an invaluable service to its members, an aspect aptly demonstrated in 1977 when branch members provided a pool of proposers and supporters for applications to the new professional grades of the Institute. It was noted that branch members came from all over the north east extending as far down as Leeds, and even across to Carlisle.

In addition to being a promised Year of Devolution, 1977 completed the first decade of the branch; it was felt at the time that it would be extremely gratifying if both events could be commemorated by the establishment of a network of regional branches. This could only strengthen the Institute by introducing it to new ordinary members and getting them involved in Institute activities, in a way that was not possible at the time. These objects and sentiments remain the same today for all branches.

The 1977 programme was certainly extensive and included a meeting on Northumbrian pipes. There were also two social occasions, a dinner and a snooker evening. In fact, the snooker meetings, which were apparently held at Newcastle University, seemed to be popular regular events put on by the branch. The annual dinner 1977/78 was attended by 20 members and Jas Hall demonstrated the Northumbrian pipes.

Speakers at the three half-day meetings that year included Dr Utley, Mr Marsh and a Mr Atkinson who talked about the Darlington quiet town experiment, and 1978 was another active year. At an open forum where individual members were invited to discuss their acoustical problems, three major topics were raised:

noise from open-cast mining, the use of lagging in air duct noise, and fan noise.

Over the years the branch has been a consistent contributor to *Acoustics Bulletin* as reported by Trevor Smith and later by Chris Norris.

A good meetings programme was arranged in 1978 which included a visit to Harrison & Harrison Ltd, organ builders. During 1979 the secretary, Chris Norris, reported that despite strong representations to Council over the previous year the branch and its members remained unrepresented on Council.

The following year began with a meeting on steam plant noise. As mentioned earlier the secretary, Chris Norris, reported that one black cloud hung over the branch. After strong representations to Council the branch and its members remained unrepresented on Council. It was proposed to nominate a member for Council at the next elections, and get all branch members to vote for him. Trevor Smith eventually became a member of Council and following the review of group and branch activity by Council, was appointed the first Vice-president responsible for Groups and Branches.

The branch was still active in 1980 and the AGM was followed by the obligatory snooker. Another forum type meeting was held, and representations were made to Council about branch and group policy. In 1981, a new type of meeting was held when students on the Diploma course at Newcastle Polytechnic presented their projects, and a book token prize was presented for the best. Four members gave short papers on their projects. Arrangements for the IOA Spring Conference, Acoustics 81, to be held in Newcastle and in which the branch would be involved, were also mentioned in the branch minutes: Normal meetings continued after the Spring Conference. It was noted that though there were good attendances, these often derived from non-IOA visitors.

A full day meeting was held in 1982 on flow-induced vibration. A special general meeting was held to introduce and approve a new constitution. Mike Ankers addressed a meeting at Darlington Town Hall. His *Thoughts on current noise laws and practice* provoked a lively discussion and was a great success. The season ended with 20 members and friends being guests of the Durham Guild of Bell Ringers, the venue being the ringing chamber in the main tower of the Cathedral, 50m above ground level. A meeting at Carlisle, well outside the normal catchment area, was also well attended.

In 1983 Ross Bainbridge reported an unusual meeting held in the wilds of Northumberland close to the Roman wall. The members visited Nigel Church in Stamfordham which carried on the business of building church organs. The rest of the year's programme continued to be well-supported.

Chris Norris, chairman of the branch since 1983 and past secretary, left to take up a post in St Johns, Newfoundland and at the next AGM Neil Marshall acted as chairman and was subsequently confirmed in that position. A poorly attended meeting in March 1985 was followed by a meeting with 25 members was held at Carlisle in April. Also in April 1985 Trevor Smith ended his four-year stint as Vice-president, groups and branches. The last meeting of the year was an evening of oriental music. The meetings programme continued during 1986 but the annual report to council for 1987 recorded that the branch was experiencing the most difficult period in its history. Many of the industrial groups in the region were suffering from the recession and members had either been made redundant or moved to other work so that branch activity had dwindled significantly. A similar report in 1988 stated that branch interest had tailed off owing to the work situation in the North East. This year saw two meetings early on followed by a quiet time and the branch's future was under review with the possibility of suspending its activities altogether.

Two meetings were held in 1989 but a third was cancelled owing to lack of support, although about 25 people had come to the second meeting. During 1990 the branch was dormant but in 1991 meetings were arranged in March, on the Noise at Work Regulations; in November, on BS 4142, and in December at the Morpeth Chantry

and Bagpipe Museum. How well-attended these meetings were is not recorded.

After that date there were no more reports in *Acoustics Bulletin* from the branch, although it seems from the annual reports that official branch membership in 1991 was 53, and in 1992 it was 52;

North West Branch

Dave Logan and Geoff Kerry

The inauguration of North West Branch was held up for the best part of 12 months whilst Council awaited the outcome of the committee reviewing future policy for groups and branches. A report in *Acoustics Bulletin* from July 1982 entitled *Reports from new branches* confirmed the acceptance of the branch some six months previously although a report in the January 1982 edition indicated that the first branch meeting had been held on 17 September 1981. In fact, Council at its meeting in July 1981 had yielded to lobbying from members in the North West, ably led by the branch's first chairman, Mike Ankers, and had agreed in principle to the branch being set up. It had been indicated, however, that definite approval would have to await the acceptance and publication of the report on groups and branches. The first year's programme set up a diverse pattern of topics that was to be the hallmark of the branch for many years ahead with topics on subjects such as hi-fi, vibration, and occupational and industrial noise control, and a visit to the BBC studios in Manchester, topped by a visit in December by the then President, Professor Brian Clarkson, to talk about the aims and objects of the Institute.

The second full year's programme had seven meetings including the first AGM, two visits and a social evening as well as technical meetings covering more diverse topics such as noise abatement zones and instrumentation standardisation. The attendance at some events was disappointing and did not reflect the hard work put in by the committee. There were visits to British Aerospace (BAe) at Woodford and to Chloride Motive Power, along with talks on the role of the consultant in noise and vibration problems and noise control in industry. The social gathering involved a talk by Ralph Harrison, a previous treasurer of the Institute, who gave a very humorous account of his hobby of canal cruising. Attendance at meetings ranged from a dire five to a much more reasonable 24, bearing in mind the size of the region: at one point the branch address lists had a few members living in Canada! The total branch membership (including Canadians) was around 100. The programme of visits and talks continued for several years and began to draw in students from the Salford course. The branch members played an important role when the Institute's Spring Conference, timed to coincide with opening of the new acoustics laboratories, was held at the university and was attended by branch members who contributed enthusiastically to both the technical and social programme.

That year also saw the first of the "Meet the IOA" evenings. Forty or so students on the acoustics course turned up to receive free refreshments and a comprehensive description of the structure and purpose of the IOA, and branch members described the openings available in the various fields of acoustics particularly in the North West.

The success of the branch's sixth year was, however, not to be repeated for the next three years. Owing to increased business commitments amongst its members, the committee found it hard going to organise more than four meetings, and the following year, although an attempt was made to increase the size of the programme, circumstances dictated that there had to be five cancellations to the original plan. However, at the meetings that were held during 1988 there were new faces and an increasing number of students attending, which was encouraging. The third year of the downturn was something of a curate's egg, a full programme of activities planned, patchy attendance, but a growth in enthusiasm with new blood on the committee. The year the committee confirmed the aims and objectives of the branch, a second Meet the IOA event was held, and the presentations by branch members on their diverse fields of work produced some lively discussion and some potential job applications.

A loyal core of members continued to support the branch although by now the committee realised that a target of five to six

by 1995 some 50 members still claimed allegiance to the branch. After several years of inactivity and in order to cater for the interests of members in the North East, in 2009 Council decided to expand the Yorkshire and Humberside Branch to become the Yorkshire and North East Branch. See the report on page 85.

meetings in the year was the optimum. As usual this year had a mix of visits and talks including one by Dr Ian Hempstock on the results of his research into the attenuation of hearing protectors under practical conditions. Following this presentation the membership were brought up to date with the Institute's new Certificate of Competence course.

The following year, apart from the usual programme of visits and talks, members were invited by the University to attend the inaugural lecture given at the University of Salford by Professor Peter Wheeler, President-elect at the time. The large attendance did not go unnoticed by the Vice-chancellor and it clearly gave him a good impression of the strength of support for acoustics in the region.

By now the committee was getting into its stride and over several successful years of meetings there was a steadily increasing number of attendees. Up to this time most of the meetings, both lecture and committee, had been held at the offices of the Greater Manchester Council and after its demise at the University of Salford. A change of format which introduced the idea of pre-meeting sandwiches included a change of venue to central Manchester and the offices of BDP in Sunlight House, conveniently located near a number of local hostelrys to provide adequate post-meeting refreshment. An unusual event was held in 2001 when a social evening was held at the UCL print works where the 3D film *Everest* was viewed by acousticians, concentrating their minds on visual as well as aural science. Geoff Kerry had taken on the Presidency and with his experience gained as Vice-president, groups and branches he decided it was a good idea to take the branch on a "walkabout" to meet the members. With the help of a local member the branch committee decamped to Lytham St Annes with an enticing event called *Ask the experts*. For this, Geoff had assembled several committee members to form a panel for a session of *Acousticians' Question Time*. Regrettably only one local member turned up but he did enjoy receiving an awful lot of free advice. The members of the panel were stumped by the question "was Prince Charles correct in suggesting that speech would help plants grow?" and this was referred back to the original *Gardeners' Question Time*.

By this time, benefiting from the expertise and contacts of the committee, the quality and content of the talks had been ramped up and the branch was able to provide a series of timely meetings covering emerging topics such as IPPC, acoustic design in residential buildings covering both ADE and BB93, the ANC guidelines on the measurement and assessment of ground-borne vibration and an afternoon meeting covering the potential changes to BS 4142.

As part of a commitment to putting something back into the Institute the branch organised every two years either a full day or half-day meeting as part of the main meetings programme. Unusually on one occasion the branch was able to organise a half-day meeting on urban regeneration, in London some 200 miles from its base. Topically to coincide with the last flights of Concorde Geoff Kerry dusted and revised his talk on the effect of Concorde's sonic boom on buildings, little knowing that the last flight in and out of Manchester Airport would occur on the very afternoon of the talk – but there was no sonic boom over Cheshire.

The venues for the evening meetings were now provided alternately by Arup and BDP, who vied for the award for the best sandwich of the year, although in order to participate in the judging it was necessary to arrive at least an hour before the slated meeting start time when there were still some butties to judge. Committee meetings were now held at the Bureau Veritas offices where the main topic on the agenda was invariably "who has brought the biscuits?"

The annual programme of five or six meetings a year has continued with good attendances. One particular event to discuss the shortcomings of BS 4142 was really well-attended as were several on environmental noise related topics such as BS 5228, noise maps and local action plans, and the assessment of low-frequency noise complaints. The branch also supported the Joint Engineering Institutes North West regional branch by organising a prestigious public evening lecture by Professor Trevor Cox on musical engineering. Additional support was provided two years later to the Joint Engineers by introducing engineering students to the various types of career available in acoustics.

It would seem most appropriate at this time to acknowledge the significant support given to the branch by many of its long-standing committee member, in particular its chairman Peter Sacre and secretary Paul Michel. Paul studiously provided IOA head office with

a copy of the minutes of each and every committee meeting, as required by the branch terms of reference. These minutes, it must be said, had a rather subtle approach to reminding members of their required actions. Laughter emanating from the Chief Executive's office announced to the hard-working staff the arrival of those minutes.

The past couple of years have seen quite a few changes to the committee. Peter Sacre has stood down but remains the IOA's longest standing chairman. He has been replaced by Mike Hewitt, only the branch's third chairman in 33 years. Whilst that might suggest that longevity is the name of the game for stability, it is realised that things move on and a number of younger faces have recently joined the committee. Attendance at meetings remains high; there have been several good quality meetings held at Liverpool University, and it looks as though the policy of setting a meetings programme with a diverse range of acoustics and related topics is set to continue.

Scottish Branch

Peter Bird, Graham Parry and Alistair Somerville

Scottish Branch has its origins with the first six graduates of Heriot-Watt's MSc in acoustics, noise and vibration in 1982 who wanted to keep in touch with each other. After discussions with various members of the Institute of Acoustics, by 1984 this idea had turned into an embryo branch of the IOA with a committee chaired by Dr Howard Latham. However, there were clear geographical problems with membership equally divided between east and west coasts and attendance at meetings at Edinburgh and Glasgow was variable. In 1983 Edinburgh hosted the very successful Inter-Noise Conference with more than 600 acousticians attending from all over the world. In 1985 a successful joint meeting with the North East (England) Branch was held in Carlisle and in 1986 the branch was formally recognised by the IOA Council. At this time the branch, which was under the chairmanship of Bill McTaggart aided by secretary Bill Laurie and treasurer Andy Watson, decided to concentrate its efforts into a smaller number of high quality meetings, one of which was a very successful visit to BBC Scotland.

By 1987 the branch's policy of two meetings a year was felt to be working well although attendances remained variable. One of the meetings was *The Wilson Report - 20 years on* at Heriot-Watt University which was attended by 22 delegates, but the other at the Department of Otolaryngology at Edinburgh Royal Infirmary less well so. However, it has to be borne in mind that at that time the membership of the branch was only 53 so an attendance of 22 at the one was very good. Also in 1987 the branch agreed to run meetings which would be part of the IOA main meetings programme.

By 1988 the membership had grown to 79 and three meetings were held but there was no increase in 1989 nor in 1990. By 1990 the committee had changed with Bill Frame replacing David McKenzie and Andy Watson and Bill McTaggart being re-elected.

There was a low point for the branch in 1991 when a large amount of money was lost as a result of a cancelled meeting when promised financial support was withdrawn but that was a brief hiccup. This same year saw another change in the committee with chairman Patrick Corbishly of the HSE and secretary Ronald McLaughlin. Branch membership grew to 86 and remained about the same up to

1996 when there was another change in the committee membership with Bernadette McKell taking over as chair and John Nicol as secretary. In 1998 John Nicol was replaced by Bill Frame of the Salex Group and branch membership started to increase significantly, rising to 120 up from 108 in the previous year. Meetings were reasonably well attended with good feedback from members. Branch membership continued to grow, reaching 129 by 2002. By 2001 Lillian Lauder had taken over as secretary and in 2003 David McKenzie took over the chair. The number of meetings remained small but the quality was felt by attendees to be first class.

2005 saw Alistair Somerville elected chairman and meetings included a joint meeting with the Irish Branch in Clontarf Castle in Dublin with a good degree of relaxed networking taking place in the evening. The following year saw membership starting to rise again to a high of 180 in 2009. Unfortunately numbers have fallen slightly since that time. The meetings programme has continued to entertain members of the branch with a visit to the Scottish Parliament Building in 2003, a musical evening after the AGM in 2006, a visit to the Scottish Storytelling Centre in 2007. However, more serious aspects of acoustics have been covered during the nearly 30 years of the branch's existence including BS 4142, noise mapping, sound insulation standards, ventilations systems, statistical energy analysis, PAN56, aircraft and wind farm noise among many others. Collaborative meetings have also taken place with the Royal Environmental Health Institute of Scotland, Environmental Protection Scotland and the Audio Engineering Society. One of the most important aspects of meetings has not been ignored, that is the networking which often follows the meeting proper in the more relaxed surroundings of a nearby restaurant or bar.

On governmental aspects, the branch has considered the Draft Strategic Noise Action Plans, the Environmental Noise Directive, changes in planning guidance and sound insulation testing, among others, making comments where appropriate and influencing national policy and standards.

In short, the branch has gone from strength to strength in the 30 years since its conception and it has a bright future ahead of it.

Southern Branch

Matt Simpson

Southern Branch has been in existence since the first year of the foundation of the IOA. Previously, the region was served by the British Acoustical Society's Southern Branch and that of the Institute of Physics. These were merged into the Southern Branch of the IOA in 1974. During the last 40 years the branch has been characterised by its service to the region in three notable regards: it has provided a direct link between the Institute and its membership; it has

provided a forum for the discussion of developments within the fields of acoustics and vibration; and (arguably one of the most characteristic aspects of the branch) the social value provided by its gatherings has allowed the less formal interaction of its membership and the strengthening of relationships within our industry. The efforts made from the start aimed to ensure that the regional membership could share the technical issues of the day and interact informally

within “post-match” discussions held at hostelrys, and even in one instance at a skittles evening, and this has flavoured the branch with a community feel. For more than 40 years the branch community has enjoyed continued strength and growth. Some years, however, have seen the branch weather more challenging periods, but it remains active and true to the original purpose.

Peter Wheeler, as secretary of the fledgling branch committee, attended the second Council meeting of the newly-formed IOA in April 1974 to gain formal approval for the establishment of the branch. It quickly grew to some 80 members, holding meetings in Southampton and Portsmouth. The initial membership consisted of staff from the Institute of Sound and Vibration Research and other local colleges, engineers working at Fawley refinery, and staff of the several acoustical consultancies formed by ISVR graduates. A number of “industrial members” were admitted as Group Subscriber members.

An active diary from the very start consisted of evening and half-day meetings covering a diverse range of topics, maximising the appeal of these meetings to most members within the southern region. Membership growth began immediately in the most part owing to the number of organised tours to sites such as Goodmans Loudspeakers and the British Hovercraft Corporation on the Isle of Wight. Whilst the technical presentations gave the membership up-to-date information on developments within acoustics, the tours offered a more hands-on feel of the practical applications within the field. They also served to advertise the existence of the branch to various industries. The result of these efforts was that after its first five years the branch’s membership began to include more non-academics.

As well as the tours, meetings addressing legislative developments and environmental noise appealed to a multi-disciplinary audience, further increasing the attraction of the branch to members from more diverse backgrounds.

The range of topics the branch has brought to its membership over 40 years has been varied and too numerous to list. The branch has always addressed the core disciplines of our industry such as environmental noise, wind farms, railway noise and vibration, noise at work and noise barriers to name just a few. However, we have also been keen to discuss the more specialised aspects of noise and vibration. Of the many topics covered, some that particularly stand out are jet noise, insects’ uses of sound, noise and vibration from the Ariane launch vehicle, and on-line condition monitoring.

Whilst reading through past literature for the branch my eye was drawn to an advertisement from 1980 encouraging all members with an interest in acoustics, alcohol or DIY to take note of the coming year’s meetings. Surely the vast majority of members would of course have an interest in acoustics and some would possibly have a passion for DIY, but how exciting could these meetings have been when alcohol was introduced into the mix? It came about, however, that the “alcohol” aspect of that year’s events programme was a meeting concerning alcohol-induced hearing loss. Any imbibing was restricted to the post-match analysis in the local pub.

In 1981 and 1982 the branch reached something of a crisis point. The large geographic area covered by the branch had always presented a challenge for members travelling to meetings. The branch was without a chairman and an EGM was called to discuss its future.

South West Branch

Dan Pope

South West Branch traces its beginnings back to 1980 with the formation of a committee centred on Exeter, followed in 1981 by the formal establishment of the branch at an inaugural meeting held jointly with environmental health officers at a hospital in Plymouth. Joint meetings were a feature of the early years and included a meeting with the Department of Architecture at the then Portsmouth Polytechnic, and sessions at Cornwall Technical College with Diploma in Acoustics students. Apart from those events the early years of the branch were more centred on Exeter and Plymouth with meetings held at a variety of venues in those cities.

By 1983 the election of Ian Sharland as chairman revealed the resolution that the branch should continue.

The difficulties of the early 1980s were most likely due to several interdependent factors. It is interesting to note the correlation between branch membership numbers and national economic fortunes throughout the years. Branch difficulties in the early 1980s happened during a recession which saw national unemployment rise by 124% and company earnings decline by 35%. If a valid measure of the health of the branch can be inferred from its numbers, then the southern community has grown robustly from an initial membership of fewer than 100 to today’s figure of nearly 500. From the mid-1980s the average year-on-year growth of branch membership has been just under 5%. Notable deviations from this average growth rate highlight some of the storms that were weathered over the years both locally within the region and as a fallout from national causes. Drops in membership occurred in 1992, 1997 and 2008. These years coincided with falls in GDP, especially in 1992 with the early 1990s recession and in 2008 with the late 2000s global financial crisis. However the branch seems to bounce back whilst maintaining the quality and breadth of discussion topics and presentations.

By far the largest fall in membership was in 1987 when the formation of the London Branch reallocated a large number of IOA members from the south to the metropolis. The London Branch precipitated a reduction in Southern Branch membership of more than 50%, and it was some 10 years before it recovered. From interviews with members who remember that time the feeling was that the south’s particular mix of academic and industrial centres of excellence in acoustics provided the required momentum and focus to retain the branch’s identity.

The branch has always provided a direct link between the IOA and its membership. In more recent years meetings have discussed BS 4142:1997, BS 8223:1999 and BB93, and discussions with the region’s membership have provided feedback to those in the process of formulating new guidance within these fields. In this way members have helped to formulate the IOA’s position and have had a direct influence on the thinking of those responsible for revising these guidelines.

Some administrative difficulties have remained the same throughout the branch’s history. Recent feedback from membership has shown that the size of the region still means there are travel issues for many members when attempting to access and attend meetings that have found a base in Winchester. From the branch’s inception to the present day, this difficulty has been addressed by holding meetings at a variety of different locations throughout the south. With a continued determination to meet its membership’s expectations, the branch is both maintaining its core principles and expanding its services to its members: best practice dissemination, IOA contact with its membership and membership networking are still driving factors at each meeting. Meetings are still held at different locations but with a view to the future they are now also being made available as webcasts, allowing the remote viewing of presentations and the interactive questioning of presenters.

With a new committee and chairman, strengthening membership numbers and a lively diary of upcoming meetings the future of the branch looks sound with a determination to build on the invaluable work done by those who have gone before over the previous 40 years.

It was recognised very early on that the main challenge faced by the branch was the size of the area that it covered, stretching from Gloucester down to Land’s End, with a limited membership (59 in 1984) spread over its entire area. By 1985 the branch had a membership of 71 and continuing the collaborative theme, in conjunction with the Cornish branch of the Institute of Environmental Health Officers, it successfully organised a one-day seminar on noise and planning in St Austell, which was attended by 50 members from both Institutes.

From 1985 to 1988 there is no recorded information about the

branch's activities, although membership had by then increased to 107. It was now without a committee, circumstances which prevailed over several following years even though the branch membership showed steady increases to 146 at 1994.

March of that year saw a relaunch of the branch at a meeting held at the University of the West of England (UWE) which was attended by 60 people including the IOA President at the time. The theme of that meeting was "noisy neighbours" and a variety of other topics were covered in 1994's programme including fan testing at Nuair in Caerphilly, the hosting of the Environmental Noise Group's workshop, again at UWE and an underwater acoustics evening at BAeSEMA, Filton.

From 1994 through to 1999 although the branch committee operated on a more informal and *ad hoc* basis it successfully organised a number of wide-ranging meetings to interest its increasing membership from different acoustical disciplines. These included sessions on instrumentation, *Stringed instruments ancient and modern* involving hurdy-gurdy music and organised jointly with the Musical Acoustics Group, sound transmission in buildings, the Environmental Noise Group's draft Code of Practice on noise from pubs and clubs, and another joint meeting with CIBSE at Nuair including a tour of the acoustical testing facilities and a presentation on the reasons why fan performance is not achieved on site.

The turn of the millennium saw the more formal establishment of a branch committee representing a membership now totalling just over 200. Meeting topics included noise mapping from a local authority perspective, and subsequent meetings around this subject were also arranged, including a presentation on noise modelling in practice at which attendees were given a hands-on opportunity to use the latest software. A later meeting, *Noise mapping of Bristol*, highlighted the technical challenges faced in the production of the noise map of Bristol.

During these years other topics included noise and vibration in vehicles, the art of being an expert witness, and a visit to the BBC at Cardiff to see the radio/TV studios, control rooms, and the set of the long-running Welsh language soap *Pobol y Cwm*.

In 2007 the branch had its first social gathering, which was held at the Avon Gorge Hotel overlooking the Clifton Suspension Bridge.

The branch's annual report for that year in *Acoustics Bulletin* stated that this involved food, drink, and the swapping of acoustical anecdotes, experiences, and more importantly, business cards.

Bristol remained the focus of meetings for 2008 with local venues for two formal meetings and a social event. The first meeting involved presentations on the management of transport emissions, being a case study of the M32 using modelling techniques to investigate the effects of different scenarios on both noise and air pollution emissions. There were also a number of case studies on smoking-related noise. The second meeting was a visit to one of the three 2MW wind turbines in Avonmouth docks, where delegates' questions were answered about technical aspects of the installation and about noise. The visit was followed by two presentations, one covering the key requirements of the noise assessment of the turbines according to ETSU-R-97, and how noise impact can be minimised, and the other focussing on micro-turbines and the implications for permitted development rules. This was the first year in which branch membership exceeded 300, although this was to fall back over the next few years.

The branch's first meeting in Exeter for quite a number of years took place in May 2009 and was entitled *Unattended environmental noise measurements - a cost effective method or a can of worms?* In addition to two presentations, the 23 delegates had the pleasure of hearing the Institute's President, John Hinton, who gave a short opening address.

From 2010 onwards the branch committee has gone from strength to strength with recruitment of young, enthusiastic acousticians to replace the "old guard". Meetings over the last couple of years have included one on reverberation time testing of different venues, Bristol O2 Academy and St George's; two sound-walks around Bristol city centre, one with Immediate Past President Trevor Cox; a joint MAG group meeting in Exeter on temperament and video game sound design; a meeting with speakers from the British Library on the history of wildlife sound recording and the library's archive of recordings of English dialects; hypnotism and brainwashing in music; and psychological responses to environmental sounds. With a number of field trips planned the revitalised branch looks forward to an exciting future.

Yorkshire and Humberside (later Yorkshire and North East) Branch

Graham Parry

The branch was formed at an inaugural meeting on 22 September 1981, when a working group was set up to investigate the prospects of a successful local activity in acoustics. Membership of the Institute from the region (North, West and South Yorkshire and North and South Humberside) totalled 53 at that time. The working group decided to seek the approval of members for affiliation as a branch of the IOA, and this was approved at the General Meeting held on 10 December 1981. This first year was a success with five technical meetings being organised with a good level of attendance.

The branch unfortunately suffered from a lack of interest from the majority of its members although in 1985 it hosted the Institute's Spring Conference at York University and that was a very successful event.

Recognising the lack of interest of the members the committee agreed that some fairly positive action was needed to enable the branch to continue its function. In an attempt to determine the interests of the branch membership, the committee sent a questionnaire to all branch members with a reply-paid envelope to try to ensure its return. From the replies received it appeared that the membership did not wish to see any major change, nor did it wish to see the branch disappear. This would be a recurrent trend over the ensuing years!

Much of the late 1980s and early 1990s would see the branch in the doldrums and often reported as awaiting reorganisation. In 1996, however, it was reported that the branch had held three meetings which ranged from the new revision soon to become BS 4142:1997 and the monitoring and control of airport noise at Yeadon (Leeds Bradford) Airport.

The branch after its reformation continued to hit its meetings target with excellent meetings on topics which included hearing protection, computer based instrumentation, hand-arm vibration issues and the sound insulation of composite panels, although somewhat disappointingly an average of only 12 people attended each meeting.

In 1999 it was reported that the branch had not been very active, largely as a result of retirements from the committee who included John Bickerdike after several years of sterling service as secretary. Interestingly, an increase in in branch members from 141 to 178 was recorded between 1999 and 2000.

After yet another period of inactivity the branch held two successful meetings in autumn 2000. In October members were the guests of Keith Attenborough and his colleagues at the University of Hull. The meeting was entitled *Put a sock in it* and its subject was the use of porous materials in acoustics. Philippe Leclair explained the more interesting aspects of the behaviour of an acoustic wave travelling through a porous medium. Alan Cummings then concentrated on the practical applications of porous materials and finished with some demonstrations of sound control using porous absorbers. As a finale, and to justify the meeting's title, he demonstrated the effectiveness as a silencer of a metal cylinder stuffed with socks! In November David Bull attended the branch AGM at Leeds Metropolitan University (LMU), now Leeds Beckett University, in his capacity as Vice-president, groups and branches. As well as the normal AGM business of choosing branch officers and discussing future meetings, members visited the university's new acoustics laboratory. The design of the facility was the subject of

two presentations. Tim South of LMU discussed the requirements of a laboratory for teaching acoustics to a wide variety of students, and explained why such an unconventional location had been chosen on the ninth floor of a building overlooking the city centre. Philip Durell of Philip Dunbavin Acoustics then described, with the aid of a large number of photographs, how he had set about converting the University's requirements into practical specifications. Philip emphasised the importance of attention to breaks. Less obviously, he made it clear that an important factor in achieving targets is the establishment of a good working relationship between the acoustical consultant, the site manager, and the tradesmen who put the designs into practice.

During 2002 the branch committee organised an eventful series of meetings. Keith Attenborough of Hull University ran an exciting regional event in the Deep Submarium in June which coincided with the official launch of the new Acoustics Research Centre at Hull. The visitors had the opportunity to enjoy the unique facilities in The Deep followed by the excellent presentation on the acoustics of mammals by David Goodson of Loughborough University.

In November Andrew Parkin of RW Gregory LLP presented to members the new version of the Building Bulletin (BB93) which relates to classroom acoustics. At the same meeting held at Bradford University Kirill Horoshenkov offered a talk and audio demonstration on the temporal variation of the predicted performance of railway noise barriers. Lesley Ormerod of the Environment Agency ran a very useful meeting at Sheffield University which outlined the current state and the future of the IPPC and explained its implications for noise and vibration emission control. This meeting was held in December and was attended by many members of the branch.

A workshop entitled *Noise control by natural means* took place in February. This event, organised at Hull University by the En:Able network, was hosted by Keith Attenborough, and attracted a considerable number of members of the acoustics community in the UK and professionals from other areas which included horticulture, forestry, landscape design and architecture.

Another busy year for the branch followed in 2003 with a series of seminars and meetings. A seminar entitled *Noise control by natural means* was held in February at Hull University and hosted by Keith Attenborough. A particularly successful event was held at Bradford University on *Noise maps: Are these hard to map?* Those attending had the opportunity to test the capabilities of each of three noise mapping PC packages with the three companies demonstrating their software to over 40 attendees. The company representatives answered many questions and the session ran for more than *five hours*.

David Daniels was elected branch chairman at a meeting in May 2005. This represented as a resurgence of interest in the branch again, as was demonstrated by a number of very interesting meetings and visits which included Sulzer Pumps in Leeds, with Brüel and Kjær providing a talk and demonstration on the use of sound intensity methods to measure sound power.

In September 2005 a joint Yorkshire and Humberside Branch and North West Branch meeting was held at Holset Engineering in Huddersfield, and this was followed by a very interesting talk entitled *Can the sound quality of a product increase sales* presented by Dr Sophie Maluski of Hoare Lea Acoustics. The company gave a tour of its turbocharger production facilities.

After yet another spell of inactivity the branch continued with meetings at the universities of York and Bradford. At the University of York, Dr Damian Murphy discussed room acoustics research in the intelligent systems audio laboratory, including selected archaeological sites in the UK, and Dr David Chesmore discussed the development of automatic systems for recognising insects, birds and animals using bio-acoustic signal processing and pattern recognition.

At the University of Bradford, Professor Jian Kang of the University of Sheffield described an integrated approach to urban soundscape evaluation, simulation and design. He was followed by Robert Pheasant of the University of Bradford, who presented an assessment of the influence on tranquillity of natural and manmade sounds combined with visual stimulus. At both of these meetings there was a general discussion on forming a formal committee, with several offers of interest in participation.

At the annual meeting in 2007 at the University of Leeds members of the branch were given the opportunity to learn exciting facts

about the sounds of food and the use of acoustics for the material characterisation. This excellent talk and demonstration was presented in July by Professor Malcolm Povey who worked in the Procter Department of Food Sciences at Leeds. Professor Povey drew useful metaphors of light scattering to help appreciate sound propagation and its application to the measurement of the properties of complex inhomogeneous materials such as foods. His talk was followed by a tour of the laboratories which host an impressive range of facilities for analysis of foods and other types of organic materials.

In 2008 the branch held three meetings at the University of Bradford in January, at ARUP Acoustics (Leeds) in April and at Cummins Turbo Technologies Company (Huddersfield) in May. At the January meeting Professor Peter Thorne of Proudman Oceanographic Laboratory presented a talk on the use of acoustics for monitoring sedimentation processes around the British coastline. At the April meeting Richard Greer of Arup Acoustics talked about novel approaches for sustainable spatial planning, responsible urban regeneration and creating good acoustic environments. At the May meeting Dr Sheng of Cummins focused on measurement, prediction and control of turbocharger noise and vibration. His talk was followed by a demonstration of the capabilities of an acoustical camera (Tony Shepperson of AcSoft) for the localisation and characterisation of prime sources of noise in turbochargers.

The branch committee met regularly to discuss topics and venues for future meetings of the branch. The committee was strengthened by the election of Will Martin of Arup Acoustics in Leeds as deputy chairman of the branch.

In 2009, in order to ensure that members in the North East were better represented Council requested that the branch area was re-defined and so the Yorkshire and North East branch was formed. Two branch meetings were held. At meeting a meeting in January, at the University of Bradford, Andrew Parkin of RPS Gregory talked about the past, present and future of the BB93. There was a good debate on the experience of the industry and possible means to bring BB93 up to date. In April at a meeting at Arup Acoustics office in Leeds, Steve Devonshire of Bang and Olufsen (UK) spoke to members of the branch about the company's history and its unique sound reproduction technologies developed over a number of years. He gave a very impressive demonstration of BeoLab loudspeakers built on an active loudspeaker platform. The audience had an excellent opportunity to enjoy jazz, vocal and classical music reproduced at a quality usually only in concert halls and special acoustic venues.

In 2010 the re-named branch had its first meeting for many years on Tyneside at Armstrong World Industries in Gateshead, with a plant tour and a lecture on *The art of manufacturing acoustics ceiling tiles*. Rob Gardliner of Armstrong gave a presentation which covered a wide range of themes related to suspended ceilings and acoustics. He expanded on the topics of test methods, quality control and sustainability, and endeavoured to answer many questions. The tour of the mineral fibre ceiling tile plant took members through the process from the raw materials to the finished product coming off the manufacturing line.

Most recently the branch has struggled to maintain interest in activities and has seen a period of relative inactivity. As with many branches one of the main reasons why branch activities die away is the long distances members have to travel to attend meetings and this is of particular relevance to the Yorkshire and North East Branch. Late in 2014 a past branch chairman, Kirill Horenshekov, successfully persuaded several members to form an acting branch committee which has set one of its objectives to overcome the "distance" problem. The indications are that with careful planning and possible assistance from electronic communications the branch will be able to continue to the benefit of local members.

Welsh Branch

Gwyn Mapp

Welsh Branch was created in 2008 in response to the increasing divergence of public policy between England and Wales.

Having broken away from the South West Branch, the branch has responded to a few Welsh Government consultations relating to noise and has held one meeting, an acoustical tour of the Millennium Stadium in Cardiff.

Building Acoustics Group

Jeff Charles

The Building Acoustics Group (BAG) was formed shortly after the formation of the Institute, and has continued since 1978 to concentrate on control of noise from all sources in buildings, criteria for noise levels in different situations in buildings, sound insulation (including measurement, predictions and criteria), and the acoustics of auditoria. Before the formation of the Environmental Noise Group in the early 1990s, BAG also addressed planning and noise.

BAG over the last three-and-a-half decades has attempted to address building acoustics by assisting in preparation of contributions to the Institute's main Spring and Autumn Conferences, holding specialist meetings on specific topics, providing representatives to contribute to committees developing national guidance, and collaborating with other bodies varying from other IOA specialist groups to the Belgian Acoustics Association.

The number of IOA members designated as BAG members has increased from more than 300 in the early 1980s to nearly 500 by the turn of the century. By the start of the present decade, the group's membership had doubled. The group started with an excellent team led by Dr Chris Gilford, and secretary Robin K Mackenzie, and has benefitted from a continued stream of hard-working enthusiasts.

The programme of technical meetings since 1978 has been varied, starting with a joint two-day meeting in May with the Royal Society of Edinburgh in Edinburgh on *Noise in our society* (a catch-all title). In that first year another collaboration with the Institutes of Civil Engineers, Highway Engineers, and Royal Town Planning produced the successful *Planning and noise* meeting in London. The meeting featured central government advice in Circular 10/73, replaced in 1994 by planning guidance PPG24, itself scrapped in 2012 and replaced with non-numerical guidance. As well as these meetings, the group assisted in arranging sessions for the Autumn Conference, at the University of Aston, on the design of auditoria from the point of view of the musician, and the use of impulse model techniques to assess the transmission and absorption of sound in buildings. Both these subjects, auditorium acoustics and sound insulation, have remained core activities of the group.

In 1979 sessions were arranged for the Spring Conference at ISVR on sound transmission in structures and building services noise. The auditorium design interests were served by a visit to the national Olivier Theatre, and a separate meeting on room acoustics. The Olivier visit set a style for the group meetings on auditoria in which members experience an event in the auditorium. Group members have been able over the years to hear events in auditoria in UK and abroad, whilst attending detailed technical sessions. In 1980, the meeting on *Design for good sound in buildings* included a visit to the Hexagon theatre in Reading.

In the early 1980s meetings continued on sound insulation matters and auditorium acoustics. The latter included a joint meeting with the IOA Musical Acoustics group in Edinburgh on *Auditoria and electro-acoustics*. In 1985 the group provided a special feature in the January edition of *Acoustics Bulletin*. This contained technical reviews of key issues by leading acousticians:

- Places of entertainments, by Dr Mike Barron and Professor Peter Lord
- Public buildings, by Dr David Fleming and Peter Allaway

However, the main activity of the branch has been to host one conference a year (more or less). Topics have included wind farm noise, and planning and noise, and have presented illustrious speakers including the brightest and best members of the IOA, the serving head of the Planning Inspectorate in Wales, and the serving Welsh Minister responsible for, among other things, noise and renewable energy.

- Domestic buildings, by Les Fothergill, Dr Geoff Jackson and Bob Craik
- Building services, by Neil Spring

In the same year the group organised two sessions on building acoustics at the Spring Conference in York, as well as an *Auditorium acoustics* meeting at the University of Cambridge. This included an evening concert for members in the Music Room at the university. At the meeting the international nature of the group's interests were illustrated by a paper on objective measurements in Danish concert halls. The meeting also addressed the design of orchestra pits.

The late 1980s included further meetings on sound insulation and noise within buildings. The highlight in this period was the keynote Tyndall Lecture given by Dr Mike Barron entitled *Reflections on reflections in concert hall* at the Windermere Autumn Conference in 1988. The group also had to address the new Building Regulations noise insulation provisions, and a detailed meeting was held at BRE in December 1988 to continue the discussion from the earlier meeting at the Polytechnic of the South Bank, *Improving sound insulation in existing buildings*, and the discussions at the room acoustics and building acoustics sessions at the Spring Conference that year.

Further technical meetings were held in the early 1990s on sound insulation, as well as on environmental noise, specifically for the Autumn Conference in 1993. The latter did not include a concert for members, but a visit to a wind farm, a topic later to be debated widely by IOA members. For the concert going members of the group, the meeting in May 1992 was a must. This featured the new Birmingham Symphony Hall, and a performance there by the Philharmonic Orchestra of Novosibirsk. The meeting jointly arranged with the RIBA heard 24 technical papers, and the group was delighted that no fewer than thirteen of the papers were presented by visitors from abroad. Some delegates had travelled from Japan and the west coast of North America to attend.

The late 1990s gave further concert going opportunities to members with the meeting on *Opera and concert hall acoustics of Glyndebourne* in 1995, *Auditorium design* at the Millennium in Belfast in 1997, and *Auditoria: the legacy of the 20th Century and beyond 2000* at Manchester's Bridgewater Hall. These meetings continued to attract international interest.

The group also in that period continued to address sound insulation, arranging sessions at the Windermere Autumn Conference in 1995, Inter-Noise 96 at Liverpool, and separate meetings on *Sound insulation: - the law, the science and the practice* (BRE, 1996), a workshop on sound insulation in London (April, 1997), and *Buildings for sound education* in September 1998. The latter discussed the new DfEE Building Regulations 86/87, now replaced by BB93, itself recently updated. The decade ended with Duncan Templeton's delivery of a keynote paper *Building acoustics: Art or science* at the IOA's 25th anniversary conference at the Barbican Centre.

The new century started with *Cinema acoustics*, which included a visit to the IMAX cinema on London's South Bank. The group was also very active in arranging technical papers for the Spring Conference, in Liverpool *Acoustics 2000: Research in practice*. Professor Bob Craik presented a keynote address on the application of statistical energy analysis to large structures such as buildings.

In October that year BAG organised a one-day meeting on nursing acoustics which included presentations and discussion on the effect of noise and vibration on patients, staff and sensitive medical equipment.

There was a return to sound insulation in 2001 with two meetings on Approved Document E of the Building Regulations. The question-and-answer sessions at these meetings assisted the group's chairman, who issued a formal response from the IOA to the DETR consultation. Also in 2002 the group arranged a master class in flanking transmission (EN12354) in London, and two consultative meetings on BB93 on school buildings, and the new Building Regulations.

The concert goes were not overlooked during this period, as a three-day meeting on auditorium acoustics was held in July 2002 based on London's Royal Albert Hall. This was well attended and had an international involvement as extensive as those of earlier auditorium meetings.

The group initiated professional practice meetings, a new meeting type, addressing *Design and build unplugged*, *Contractual and legal issues* and *Acoustics and sustainability* (all three meetings in London). With the arrival of Robust Standard Details a meeting was arranged in October 2002 which assisted IOA in preparing a response to the consultation on the subject.

BAG took the major role for the Institute in organising the Autumn Conference in 2003 and the Spring Conference in 2005 both in Oxford. The latter was oversubscribed for the venue capacity attendance of 140. The specialist subjects included room acoustics, sustainability, school acoustics and sound insulation. A workshop was arranged for that conference on measuring sound insulation, with a presentation of the delegates' results on the final day. The

meeting was enhanced by presentations by Professor Heinrich Kuttruff, Professor Michael Vorlander and Rob Harris.

The group then assisted with the International Conference on Auditorium Acoustics in Copenhagen in 2006 (147 delegates) and the three-day meeting in Oslo in 2008 (194 delegates). This series continued in 2011 with the Eighth International Conference on Auditorium Acoustics in Dublin.

Although the group is proud of having developed these important international meetings for experts to debate, key building acoustics issues were also addressed, and sustainability was emerging as essential for appropriate acoustic design. After the April 2004 meeting on *Acoustics and sustainability*, the issues were raised at the Spring Conference in 2005, and in *The sound of sustainability: Going for gold* Spring Conference at Cambridge in 2007 and then the *Sustainable acoustic materials* meeting in September 2008. The group's technical meetings also covered auralisation, vibration and structure-borne noise, soundscapes, acoustics in healthcare and a review of guidance on school acoustics.

The current decade continued the new emphasis with meetings on green building in February 2011 and September 2012. BAG collaborated with the Belgian Acoustic Association with a meeting in Gent on *Noise in the built environment*, and with the UK Association of Noise Consultants on *Practical acoustics in an ever changing world* for the 2102 Autumn Conference, Birmingham. At these conferences the building acoustics issues were those fundamental for the specialism. In 2013 BAG collaborated with other IOA specialist groups for the Spring Conference in Nottingham, and the building acoustic sessions addressed sound insulation, absorption, ventilation and noise intrusion, reverberation time, machine isolation, and the acoustics of refurbished buildings for the performing arts.

Electroacoustics Group and the Reproduced Sound conferences

Bob Walker

The histories of the Electroacoustics Group (EAG) and the Reproduced Sound (RS) conference are so closely interdependent that it is difficult to separate them, and it would be perverse to do so. In fact, the history of the EAG is rather shorter than that of the RS conference.

For quite a few years prior to 1985, the Institute's annual Autumn Conference had been held in late October or early November in the Lake District, at a hotel called Windermere Hydro (see the section on Early Windermere Conferences on page 110). At this distance in time it is not quite clear why this combination of date and location was chosen, but it is certainly true that a number of individuals had an interest in walking the hills and dales of the Lake District, even despite (or perhaps because of) the weather there at that time of year.

In 1985, Dr Roy Lawrence of Liverpool University and Mrs Cathy Mackenzie, at that time one of the Institute's very few administrators, had the idea of giving that year's Autumn Conference a special title and topic. It had been clear to them both that there was a need for more opportunities for discussion on the subject of electroacoustics. This topic was not well represented in the Institute's history up to that point or by any specialist group within the Institute. Accordingly, the 1985 Autumn Conference was named Reproduced Sound and took place in the usual location. About 150 delegates attended the three-day event, which attracted 43 papers. Of those original authors, three are still regularly attending and presenting at RS conferences – Bob Walker, Allen Mornington-West and Jamie Angus.

This brief account will, necessarily, mention only occasional highlights from a 30-year history. The RS narrative is mostly the author's own recollections, with some additions by other long-serving members and delegates. One thing notable throughout the annual and conference reports is the continuing comments about "money being short" and recessions as excuses for low attendances. Nothing much changes!

After its inauguration in 1985, the conference was run again in 1986 in Windermere, with 120 delegates attending. It was officially

called the "second annual Reproduced Sound Conference", rather pre-empting its subsequent annual nature at an early stage. It was noted in the Annual Report that it was "... showing every sign of becoming an annual event". In the event, the first 14 annual RS conferences were all held in the Hydro Hotel!

In 1987, the Meetings Committee report noted that "special mention must again be made of the two Windermere conferences organised by Dr Roy Lawrence. Ever striving to extend the sphere of influence of the Institute, the third conference on Reproduced Sound attracted not only our new and old friends from the recognised fields of audio recording and reproduction, but also a large and participating contingent from television". The comment demonstrates that Dr Lawrence was still the main motivator – though ably assisted and supported by Cathy Mackenzie. The conference had not been adopted by any of the Specialist groups and the EAG did not yet exist.

In 1989, the Institute moved its offices from Edinburgh to St Albans. Despite the upheaval, the Lawrence and Mackenzie team still succeeded in assembling a conference with 115 delegates for RS 5.

In 1992, the Annual Report records that "activities associated with the field of electroacoustics have been serviced mainly through the established conferences on Reproduced Sound", and that "the newly-formed EAG would be organising a one-day meeting in London in 1994". This year does mark the beginning of the EAG. The first chairman was Dr Malcolm Hawksford of the University of East Anglia, and the first secretary was Dr Jamie Angus of the University of York.

The 1993 Annual Report notes that the EAG was essentially non-functional and that "it was still the intention to promote the group in association with the very successful conferences on Reproduced Sound [*sic*]". That implies that EAG was not yet involved in the organisation of RS and that it was, presumably, still being arranged by Dr Lawrence and the secretariat. In another "new" initiative, RS 9 featured a training course on acoustics for sound system engineers. The course was, apparently, a great success, with

27 members registered. This sort of tutorial session re-appeared in slightly different guises at several later conferences.

The 1994 report notes that the training course was repeated at RS 10. In the same report, the EAG did not even rate a mention in the specialist groups section indicating a substantial degree of inactivity! The one-day meeting mentioned in the 1992 Annual Report also does not appear to have materialised. The 1995 report notes under the EAG that "There was no activity during 1995. Anyone wishing to revive the group should contact Dr J A S Angus at the University of York, or contact headquarters." That, at best, suggests that Dr Angus was struggling on alone, with no activity and no support. At worst, it represents complete apathy and desperation.

In 1996 it is recorded again that "the EAG had not been active during the year, though ...it was hoped that it would be re-energised by the committee taking over the organisation of Reproduced Sound". From this we can tell that 1996 marks the date at which the EAG took over the organisation of the RS conferences. The committee membership is still recorded as being without a chairman, with Dr Angus remaining as secretary.

In 1997, Cathy Mackenzie retired from the Institute, though she continued to provide services under contract. The Annual Report includes a summary of her substantial contributions to the Institute and RS conferences and an expression of thanks for her dedicated service.

The 1997 Report also records that the EAG "had been in a state of morbidity" for several years. However, at Reproduced Sound 13, the group was rejuvenated and re-launched under the chairmanship of Ken Dibble, with a committee (for the first year) composed of members of the RS 13 organising committee. The programme included the organisation of Reproduced Sound 14 under the chairmanship of Julian Wright and that of a meeting on loudspeaker measurement and specification.

In 1998 RS 14 had only 67 delegates. This marks a low point, though it is fair to note that the Autumn Conference, which typically had as many or more delegates as RS, could only manage 61. Perhaps in retrospect this marked the end of Windermere as an attractive conference venue. The 1998 Annual report notes that the EAG had lain dormant for several years but had been resurrected by a re-launch meeting held at the RS 13 Conference.

In October 1999, the EAG organised a joint one-day conference with the Speech and Hearing Group in Manchester covering the electroacoustic and physiological aspects of speech intelligibility, and attracting 35 specialist delegates from all over the UK. The weekend of 17-19 November saw the 15th annual Reproduced Sound conference at its new venue, the Stratford-upon-Avon Victoria Hotel. Apparently "All were agreed that this was yet another socially and technically successful conference, with general approval of the new venue". Plans were already in hand for RS 16 to be held in November 2000, again at Stratford, with Robin Cross as the new committee chairman responsible for technical papers.

At RS 16 in 2000, Roy Lawrence was presented with an Honorary Fellowship in recognition of his contribution in starting the series of RS conferences. Also, the outstanding contribution to the work of the group made by Peter Barnett, who died shortly after RS 16, merited special mention. An annual memorial, the Peter Barnett Memorial Award and Lecture, was established in his memory and is now presented annually at RS conferences.

The year 2001 saw a consolidation of the new strategic role of the committee with the fusion of the EAG committee and the RS organising committee. This conference was also the first in the RS series to issue its proceedings on CD rather than paper. RS 17 attracted 85 delegates, including several from mainland Europe and quite a contingent from the USA. During the year the possibility of holding RS 18 in Dublin was explored as a means of involving the Irish Branch in one of the Institute's mainstream events. Unfortunately the costs of holding the conference in Dublin proved too high and the project had to be abandoned. The group secretary, Jamie Angus, felt it was time to stand down. As a result of the abandonment of the Dublin venture, RS 18 would be held for the fourth consecutive year at in Stratford-upon-Avon in November 2002.

The main activity of the EAG in 2002 was the organisation and production of RS 18, again at the Stratford-upon-Avon Victoria Hotel. The conference title was *Perception, reception, deception: How do you know?* The cryptic title belied the good solid technical debate

and discussion which took place over the weekend. Ken Dibble received the Institute's award for his many years of unstinting service to the Institute and Dr Wolfgang Ahnert was presented with the Peter Barnett Memorial Award. The conference attracted a total of 74 delegates, some from as far away as America and Australia.

Taking *Exploring and sharing audio and acoustics* for its theme, Reproduced Sound 19 concluded with Genelec's demonstration of high definition audio and surround sound.

RS 19 (2003) took place at a new venue, the Oxford Hotel, Wolvercote, near Oxford. The organising committee, chaired by Mark Bailey, was a subset of the EAG committee. The conference was entitled *Explaining and sharing audio and acoustics*. As was by now customary, the idiosyncratic title managed to create an air of mystery about the conference contents. Delegates were at once relieved and comforted to learn that the usual topics were there for discussion. Three Institute awards were presented during the conference. The Peter Barnett Memorial Award was presented to Peter Mapp, the student prize to Francis Li of Manchester Metropolitan University and the Institute's prize for the best Diploma student to Brian Donohoe.

In 2004, RS 20 was again held again at the Oxford Hotel. The Tyndall Medal for 2004 was presented to Professor Trevor Cox, who addressed the conference on *Acoustic diffusers - the good the bad and the ugly*. Jamie Angus was announced as the recipient of the 2004 Peter Barnett Memorial Award, and Peter Mapp delivered his 2003 Peter Barnett Memorial Award lecture called *Dumb microphones and deaf loudspeakers - the reproduction and measurement of sound*. The conference was widely regarded as a technical and social success. The EAG committee felt a strong sense of ownership and care towards the RS conferences and thought that major change to the format would be perilous.

For RS 21, in 2005, again at the Oxford Hotel and following the tradition that was RS, the EAG had set out to make RS 21 something special. The task was clear: to create something that was worthy of the RS title, informative, educational, inspiring, and, of course, interesting and entertaining. The committee's choice, under Mark Bailey as chairman, was a title that looked forward as well as back. *Feedback to the future* was coined and universally agreed as an apposite title for the 21st conference. The Peter Barnett Memorial Award was presented to Dr Per Brüel who addressed the theme of the development of instrumentation with *From sound level meters to RaSTL*. Jamie Angus gave his lecture for the 2004 Award, *Spherical chickens and sound reinforcement: How Fourier rules the roost*. New in 2005, the first Award for Promoting Acoustics to the Public was presented to Bronwen Bird, for developing innovative acoustical exhibits and educational programmes. The conference was honoured by the presence of Per Brüel who gave the Peter Barnett Memorial Lecture, which was not only informative, but also entertaining to watch. Jamie Angus' lecture was, in his inimitable style, a delight to attend.

In 2006, the EAG had another successful year. Besides supporting the ongoing activities and interests of its members, the group organised two conferences. The first was a one-day conference on speech intelligibility measurement held in collaboration with the Measurement and Instrumentation Group. The conference was successful, with 70 delegates attending for the day. The second was the annual Reproduced Sound conference, RS 22. That conference theme continued, as usual, with its main focus on developments in electroacoustics, room acoustics and intelligibility. Dr Evert Start was presented with the Peter Barnett Memorial Award. His award lecture *Making waves: it takes one to catch one* was followed by a demonstration in which he used the longest loudspeaker array the conference has ever seen to show how a virtual source could be created anywhere in the room. Also, Bob Walker received an Award for Distinguished Service to the Institute and it was noted that he had been involved with at least 20 of the 22 Reproduced Sound conferences.

In 2007, the EAG organised the RS 23 conference. The location was The Sage, Gateshead, one of the UK's newest music venues. Also this year, a wireless voting system was used in a number of papers to trial the use of large-scale listening tests in a real auditorium space. The conference began with an invited lecture by Dr Michael Barron, *An acoustician's view of sound system design for auditoria*, and also included the Peter Barnett Memorial Award paper by Dr Graham Bank. This was also the first occasion since its inception that RS had

not been in the same venue as the Autumn Conference, and it was the first to be non-residential.

However, there was a return to the residential format with RS 24 in 2008, held at the Ship Hotel in Brighton. Attendance rose again, to a total of 125, a small increase on the previous year primarily because students responded to the reduction in the student fee. The RS conference series sets out to provide extensive networking and discussion time, which is particularly important for students and younger professionals starting their careers. Students made up nearly 35% of those attending. The Peter Barnett Memorial Award was presented to David Griesinger in recognition of his long and instructive association with the electroacoustics industry. An invited paper from Phil Nelson on multi-channel sound was also well received. A demonstration from the youth wing entitled *Wii are the music makers* by Matt Trevor from Derby University, using a games controller to control a multimedia environment, added spice to the conference.

RS 25 was held in 2009 at the Thistle Hotel in Brighton, after the Ship had been found to be unsuitable, and was once again well attended both by regulars and new faces. At the EAG AGM a new committee was agreed, including a new chairman, Paul Malpas, who thanked Sam Wise for his tireless efforts in the post over the previous two years.

Next year's conference marked the start of a new numbering sequence to reflect the year in which the events were held which resulted in it becoming RS 2010. It was held at the Wales Millennium Centre in Cardiff and was again well attended both by regulars and new faces. At the EAG AGM, the 2011 committee was agreed. Paul Malpas remained as chairman and Helen Goddard as secretary. The chairman proposed a vote of thanks to Ken Dibble, who was standing down after over 25 years' service to RS throughout its entire history. Finally, it was a delight to present Dr Leo Beranek, one of the most famous acousticians in the world, with the Peter Barnett Memorial Award.

For RS 2011 the conference returned the Thistle Hotel, Brighton. This was well attended, with a new influx of students. Opinion was also sought at the 2011 AGM about the venue for RS 2013. The suggestion of Manchester or Salford, with links to the BBC at MediaCityUK, was enthusiastically received and investigations into venues and links with the BBC were already being explored. Three prizes were awarded for Diploma students. The best student prize

for 2010 went to Sarah Large and for 2011 Luke Rendell. The ANC Prize for the best Diploma project for 2011 was awarded to Andy Thompson. At the same conference, Bob Walker was presented with the Peter Barnett Memorial Award, and Steve Dorney from University of Southampton received the Award for Promoting Acoustics to the Public for his work with ISVR developing public engagement and outreach activities.

RS 2012 was again held at the Thistle Hotel in Brighton and was again well attended by both regulars and new faces, who included 22 students. The conference theme continued from previous years, with its focus on developments in electro-acoustics, room acoustics and intelligibility. Overall, the EAG committee was satisfied with the response to the programme and began planning for the 2013 event, to be held in Manchester. The Peter Barnett Memorial Award was presented to Pat Brown. Unfortunately, he was unwell and was unable to travel to receive the award in person. The citation and presentation were recorded and the award subsequently presented in person by Peter Mapp on a visit to the US. Two other awards were presented at 2012. Brian Tunbridge received a Distinguished Service Award for his work in acoustics and for the Institute and Luke Rendell was presented with his (2011) prize for the best IOA Diploma student. At the EAG AGM the 2013 committee was agreed. Paul Malpas remained as chairman and Helen Goddard as secretary.

RS2013 was held at a new venue, the Renaissance Hotel in Manchester. It was well attended, with 101 registered delegates, of whom 38 were registered as students. The committee was again pleased to see a number of new faces, as well as the much larger than usual complement of students. The programme began with a visit to the BBC at MediaCityUK. In the evening, the University of Salford hosted a second session also at Salford Quays. At the conference there was presentation of the Peter Barnett Memorial Student Award to Luis Gomez-Agustina and the IOA/IAC Young Person's Award for Innovation in Acoustical Engineering 2013 paper to Marcos Simón. The day after the conference, there was a visit to the Royal Exchange Theatre, Manchester. Former IOA Chief Executive Roy Bratby had been made an Honorary Fellow of the Institute in recognition of his contribution to its development over many years. He received his award at RS 2013. Also at the conference Allen Mornington-West, David Sproston and John Lee were presented with the Institute's Distinguished Service Award by the President.

Environmental Noise Group

Graham Parry

For IOA members with a particular interest in environmental noise, the 1990s were a period of great activity with the introduction of the Environmental Protection Act (Part III), the Noise Review Working Party report, the Mitchell Report (on railway noise), consultations about revisions of BS.4142 and Planning and Noise (PPG24). There were autumn conferences on environmental noise in 1991 (*Noise in the nineties: A quieter Britain?*) and 1993. The first Certificate of Competence courses in environmental noise measurement were introduced in 1993.

Also by the start of the decade, increasing numbers of environmental health officers were becoming members of the Institute having successfully completed the IOA Diploma, and they found it difficult to understand why there was no group dealing specifically with environmental noise. The Institute President at that time, Mike Ankers, was after all an EHO!

In 1990 the IOA had two groups catering for members' interests in environmental noise, the Building Acoustics Group and the Industrial Noise Group. In February 1991 an IOA member (Mr S J Holmes) wrote to Council suggesting the formation of an Environmental Noise Group. It was agreed that the President should reply that the matter had received some previous consideration, and that the Industrial Noise Group covered aspects of environmental noise. It was suggested that Mr Holmes join the committee of the Industrial Noise Group.

Much of the initial concern about forming a new group was centred on the costs (for members) of belonging to yet another group

(at that time a princely £2 a group). There was also some concern about the effect of the formation of the new group on the continuing viability of the Industrial Noise Group. It was clear that at that time Council did not embrace the idea with any degree of enthusiasm.

However, the issue was not to go away and, at the December 1991 Council meeting, Dr Bob Peters was asked to prepare a report on the establishment of the new special interest group in environmental noise. Twelve months later, after much consultation and discussion with all concerned, Council agreed to the establishment of an Environmental Noise Group, and Bob was no doubt able to celebrate the decision with the traditional mulled wine and mince pies provided at that pre-Christmas Council meeting. The decision was announced to the membership by Peter Wheeler in his President's letter in *Acoustics Bulletin* in January/February 1993. The reason behind the creation of the ENG was to bridge the perceived gap between the Building Acoustics and Industrial Noise Groups. One of the first aims of the group was to ensure that the committee membership contained a good mix of consultants, academics, researchers and EHOs, as well as good regional representation. There was still some work to do setting up terms of reference etc. but at an enthusiastically supported meeting at the 1993 Autumn Conference (appropriately on the theme of environmental noise), Stephen Turner (then with Rendel Science and Environment) was appointed as the first chairman of the group with Brian Parker (Portsmouth City Council) as the secretary. The Environmental Noise Group was born – at last! And there was much for it to do. Incidentally, Council solved

the problem of members having to join an extra group at additional cost by imaginatively allowing members who chose two out of three of the noise-related groups to become a member of the third group for free!

In its first year the ENG held a very successful workshop held with the South West Branch on environmental noise assessment and one of the main purposes of the meeting was to formulate a response to the DoE on a consultation draft on the preparation of environmental statements. This involvement in environmental assessment and noise impacts would become a recurrent theme in the work of the group almost every year from then on! Dawn Langdown became secretary in 1994 and she went on to chair the Southern Branch, also providing service to the IOA in several areas.

In 1995 the ENG embarked on a very busy year with a series of half-day workshops in Scotland and Northern Ireland once again visiting the subject of environmental noise assessment. However, the spectrum of interest of the group remained diverse and a workshop session was also staged on entertainment noise at the Autumn Conference.

By 1996 the ENG had 704 members having fast overtaken the membership of every other group within the IOA and as befits such a large membership with a wide variety of interests and jobs a number of workshops were held across the country considering "Noise from pubs and clubs", and the use of the WHO criteria. The group was instrumental in setting up a working party to put together a code of practice for noise from pubs and clubs.

Next year the ENG took on responsibility for organising the Autumn Conference and, whilst no workshops were held that year, somewhat tellingly progress was made on the Code of Practice for noise from pubs and clubs and the noise impact assessment guidelines. Stephen Turner stepped down as chairman to become chairman of the Meetings Committee and Ken Collins took his place.

There was yet another busy year in 1998 with oversubscribed workshops on PPG24 and pubs and clubs noise. It may well appear to the casual reader that at that time the ENG was at the centre of environmental noise and was in a position to influence the outcomes of noise, planning and nuisance issues. How many of us now wish that we could return to those halcyon days?

Between 1999 and 2005 a continuing theme of seminars and workshops was PPG24. Noise from pubs and clubs, and other government policy, filled the years, although the progress on the joint IOA/IEMA Guidelines on Noise Impact Assessment were reported to be making slow but sure progress. How little we knew then!

In 2002 the ENG organised the Autumn Conference at Stratford-upon-Avon with the theme of *Action on environmental noise*. The conference considered such issues as noise mapping and action planning, even though it would be some years before the first UK noise maps would be produced. Nigel Cogger took over as secretary from Dawn Connor (she had married in the meantime) as Dawn was retiring to France. This seems to be something of a trend as Nigel Cogger, who also went on to serve as secretary of the IOA, would also retire to France in 2013. By now membership of ENG had slipped back to 592 although it was still by far the largest group in the IOA.

This reduction would be dramatically reversed, because by the end of 2003 numbers had almost doubled to 1,047.

In 2003 the *Good Practice Guide on the Control of Noise from Pubs and Clubs* was published, and particular thanks for this were owed to John Hinton and his working party. Of course, as usual the ENG proved to be a launching pad for people's involvement in the IOA, with John eventually becoming President. In the same year the ENG organised a conference which covered the impact that the Wilson Report had had since its publication 40 years earlier and of course a similar conference was held in 2013 to mark the 50th anniversary of its publication. Four other meetings were held in Birmingham, London, Manchester and Edinburgh. This geographical diversity shows that the ENG is not particularly London-centric, as it ensures that as many people as possible get easy access to conferences and workshops. In this year Ken Collins was joined by a new secretary, Nicole Porter.

In 2005 the ENG was very busy organising two one-day meetings and a half-day meeting on the emerging PPS24. Many people within the group may now well lament the fact that PPS24 did not make greater progress, as its content could well have been retained in a similar fashion to that of PPS25 (on flooding). In 2005 the ENG organised the very successful and oversubscribed Autumn Conference at Oxford, where Brian Hemsworth was presented with the IOA Engineering Medal for his major contribution in the field of railway noise.

In 2007 John Hinton stood down from the committee of ENG in order to prepare for his term as President of the IOA from 2008 to 2010. His presence in ENG was a cornerstone of its activities and he would be difficult to replace. Nevertheless the year was a particularly successful one, with a one-day meeting in Birmingham on developments in noise research. It was also reported that significant progress had been made with the IOA/IEMA Noise Impact Assessment Guidelines which was hoped to see publication in June 2008 – once again a false dawn was embraced with great enthusiasm and energy. The membership of ENG hit an all-time high of 1,293, and in 2009 the group organised the highly successful Spring Conference besides responding to Defra consultations on Noise Action Plans. Steve Mitchell of ERM took over the role of chairman from Ken Collins.

In recent years the ENG has continued to assist in major IOA conferences and has organised the responses to Government consultations. Much of that burden has been carried by a relatively few members and the other 1,500 in the group may well be blissfully unaware of much of their work. The few are to be congratulated on their commitment.

Footnote: October 2014 finally saw the publication of the *Environmental Noise Impact Assessment Guidelines* by IEMA. Sadly, whilst the initiative for the document had come from the IOA and had been supported over a 20-year period by a considerable number of its members, the Institute was no longer joint publisher. Fittingly, the guidelines warmly acknowledge the enormous contribution made by Stephen Turner over the years in taking forward the document for publication.

Industrial Noise Group and the Noise and Vibration Engineering Group

David Lewis

When the IOA was formed in 1974 there was only one active specialist group. This was the Aerodynamic Noise Group, which was originally founded in 1972 under the auspices of the British Acoustical Society with the aim of furthering communication between research workers in the field of aerodynamic noise.

By the end of the year, building on the success of this group, there was growing interest in initiating a Musical Acoustics Group. Subsequently at the Institute Spring Meeting 1975, it was proposed by Dr Paul Wilcox of the University of Salford that there was also a need for a group concerned with machinery noise and factory noise.

He suggested that up and down the country there was

considerable individual expertise on machinery noise and hearing conservation which would benefit from informal interchanges of ideas between people in related fields. The primary aim he proposed for the group was "to make factories quieter, and thus healthier, places to work in leading to improvements in the efficiency of machines, men and factories".

The manner of achieving this aim would be to have a concerted three-pronged attack on factory noise under the following headings:

Machinery noise – identification and classification of individual noise-producing components on machines and classification of methods of quietening noisy components

Hearing conservation – psychological and physiological effects of noise on people, methods of inducing machine operators to look after their hearing, and persuading machine manufacturers to make their machines quieter at the design stage when building new machines.

Noise regulations – how were realistic noise levels for machines, operators and factories to be set? Was a general classification needed here for different types of industry?

The early years: 1975 to 1980

By the end of 1975 the Institute had five groups oriented towards their members' specialist interests. The reputation of the Aerodynamic Noise Group had been established for many years with constant activities being maintained by the enthusiasm of its committee and members. IOA Council was firmly convinced of the desirability of maintaining these groups and the Industrial Noise Group (ING) was developing well.

Three meetings were organised by the ING in 1975 and then, in the first quarter of 1976, the group's steering committee organised the session on industrial noise for the Spring Conference of the Institute in Liverpool. This was to be the first conference session organised by the ING and 170 delegates. Two further ING meetings followed in July and November. At the end of 1976 the group's membership stood at around 120.

In the following years successful meetings were arranged on a range of topics and at a number of diverse locations. For example the group's 1977 spring meeting was a novel experience held on board the *Suerita* on the River Thames, and the speaker was Andrew Middleton of ISVR, Southampton, on the subject of ship-board noise.

During the early part of 1979 the ING was without the services of its founder member, Dr Paul Wilcox, who spent some time in Australia on sabbatical leave lecturing at Sydney University. In his absence the secretarial duties were undertaken by Terence Kelly.

Following a number of cancellations the ING held its first meeting of 1979, which was supported by 12 members, at the Whitbread Brewery. The trip was very successful, giving members the opportunity to experience a modern beer plant which had paid special attention to noise control and also featured an impressive aesthetically designed acoustic ceiling.

The group remained a very popular section of the Institute during 1980, with well in excess of 200 members, about 10 percent of whom were distributed throughout the world outside the UK, thus confirming the importance of industrial noise as a topic. An analysis of members' interests and the geographical distribution of the membership was carried out via a postal questionnaire, and an interesting programme for 1981 was tentatively formulated.

The 1980s and 1990s: highs and lows

The Spring Conference in 1981 was held at Newcastle University in April and the ING was responsible for organising a parallel season on industrial noise. Approximately 20 technical papers were presented during the three days of the conference and the wide-ranging subject matter was grouped into four sessions: plant noise, instrumentation and hearing damage, prediction methods and noise control. The technical papers were supported by contributions and comments from the floor and the contribution of Professor Ellyn Richards (ISVR) was greatly appreciated.

No meetings were held in 1982. Early in 1983 a new committee was appointed and the rejuvenation of the group was announced at Inter-noise 83 in Edinburgh, by way of a social gathering over lunch. The attendance of between 120 and 150 members, some of them no doubt enticed by the supply of free wine, set a new high standard for social meetings of the group which, it was suggested, should be maintained!

The first technical meeting for two-and-a half years was held at ICI Welwyn Garden City in October on the subject of noise emission from industrial fans. This full day's meeting was in a new format for the ING, and provided many opportunities for discussion and for delegates to present their own specific problems to the panel of experts from the National Engineering Laboratory, ISVR, Woods of Colchester, ICI Acoustics, Environmental Planning & Design Ltd and Active Control. The new format proved a great success, attracting 45 delegates many of whom were practising engineers in industry.

The Aerodynamic Noise Group had been inactive for a number of years by now, and during 1983 it was agreed after consultation with the Vice-president, groups and branches, that the interests of the members of that group could be served best through the ING. The majority of Aerodynamic Noise Group members were also members of the ING.

Membership and financial position of the group were now buoyant, the membership having increased during the year to 380. The renewed momentum of the ING was maintained in 1984 by way of three organised sessions. The first was a one-day technical meeting in March, covering various aspects of impulsive noise. In September, the group was involved in organising (along with the Building Acoustics Group) a very successful one-day meeting on building services noise: the meeting was hosted by the North West Branch at the University of Salford. Finally, the group organised the session on ship and diesel engine noise at the Institute's Autumn Conference at Windermere. Ten papers were presented covering diesel engine noise and vibration, structure-borne sound in ships and the design and manufacture of vessels for North Sea oil exploration.

Membership of the ING increased during the year to 585 (including Aerodynamic Noise Group members) and the group's funds held at headquarters increased by almost 50%.

It turned out that 1985 was to be another quiet year but the group was again revitalised by extending the committee in 1986. Stuart Bennett (chairman) and David Bull (secretary) helped drive the programmes over the next few years with contributions to the 1986 Spring Conference, the 1987 Autumn Conference and the 1989 Autumn Conference in addition to a number of one-day meetings. The 1989 Autumn Conference was an even more resounding success than the one held in 1988. In all, 175 delegates took advantage of a beautiful weekend to hear 63 contributed papers and four invited speakers. The conference revolved principally around the new Noise at Work Regulations, but other sessions on environmental noise and hand-arm vibration were included. The technical sessions were of good quality and helped provide a most informative and sociable occasion, equally enjoyed by the numerous exhibitors.

By 1990 the ING had 674 members and over the next few years the group continued to contribute to the organisation of the IOA Autumn Conferences, and had input to Euronoise in 1992. However, ongoing difficulties with recruiting committee members and getting feedback from members regarding their areas of interest resulted in a decrease in organised meetings, with none arranged between 1996 and 1998. A graph of group membership by year shows the corresponding decrease in membership over this period.

After a period of inactivity the committee was reformed at an initial meeting on 25 February 1999. An important catalyst in this reforming was David Bull who chaired the initial meeting as a one-off. A new committee was formally established, listed alphabetically as follows: Mike Hewitt (secretary), Andy Raymond (chairman), David Lewis (editor of *Industrial Noise News*) and four further members.

Recent history: 2000 to 2014

During 2000, the ING held its first AGM following its reformation in February 1999. The group organised the Autumn Conference attended by some 70 delegates and 21 speakers plus session chairmen. During the summer and autumn, the committee was involved in surveying the group's membership with the aim of ascertaining what was expected from membership of the group.

The following year the group held a very successful one-day meeting over the summer entitled *What's all the noise about?* (WATNA 1), which set the scene for a series of planned one-day meetings on industrial noise information and control. WATNA 2 was intended for 2001 but for various reasons it had to be rescheduled for 2002.

Towards the end of 2002, the group was renamed the Noise and Vibration Engineering Group (NVEG) in an effort to suggest more immediately the wide remit of the group. To publicise this, and to discuss the implications of the EU Directives, the group hosted the Spring Conference 2003. There were 70 delegates at this meeting, which was held in Coventry on 15 and 16 May, and 18 technical papers and two Medal Lectures were presented. The group otherwise concentrated on furthering links with the NVH (noise, vibration and harshness) specialist community. The newsletter continued to be produced once or twice a year until it was superseded by the IOA e-newsletter in 2012.

In the period 2003 to 2007 a number of meetings were arranged and further members were recruited to the committee to represent its wider remit. Tim Ward (principal specialist inspector of the HSE) joined the committee, followed in by 2005 Stephen Walsh, Malcolm Smith, Barry Jobling and Rueben Peckham. Malcolm Smith was elected chairman in 2005.

A number of successful joint HSE/IOA meetings were arranged between 2005 and 2008, the main task for 2007 being the organisation of the Autumn Conference, entitled *Advances in noise and vibration engineering*, which focused on new diagnostic measurement techniques and their application to control methods.

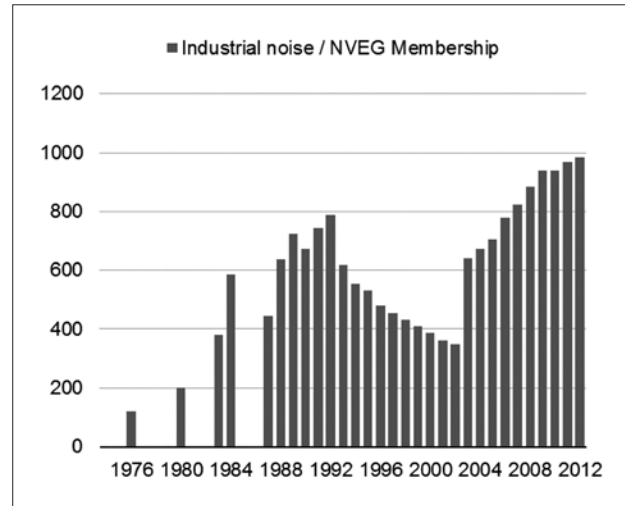
In the search for ideas for new events a consultation exercise was carried out during 2008 in which about 30 NVEG members were contacted personally by phone or email: this produced some useful suggestions. A call for papers for a meeting on noise from sustainable energy sources was sent out but, surprisingly this subject drew very few offers of papers and the meeting had to be cancelled. A second event, a workshop on measurement of sound power, reached the advanced planning stage, but had to be postponed to late spring/early summer 2010 as it required outdoor measurements to be conducted by delegates.

A meeting on noise, vibration and harshness (NVH) in cars and other transport systems was planned for September 2010 but had to be cancelled owing to the poor response to a call for papers. However, a session on NVH chaired by Stephen Walsh was included in the Acoustics 2011 conference.

The group assisted with the arrangements for Acoustics 2012 by co-organising a session on noise and vibration engineering with our colleagues in the Société Française d'Acoustique. Malcolm Smith also chaired a plenary session. An event organised jointly

with HSE on *Buy quiet/design quiet* was planned for December, but a change in committee membership (Tim Ward from HSE being replaced by Sarah Haynes) led to this meeting being delayed until March 2013. A meeting on vehicle NVH was also planned at Loughborough University, but this eventually formed part of the 2013 Spring Conference.

The NVEG continues to grow in membership and the committee continues to work on developing programmes of interest to members.



Measurement and Instrumentation Group

Richard Tyler

Establishing the group

The Measurement and Instrumentation (M&I) group came into existence after a chance discussion on 26 May 1994 when Alex Burd, the President at the time, presented Richard Tyler with his Fellowship certificate and asked him "What else do you think the IOA could be doing for its members?" The response was "Something relevant to measuring and the best instruments to use" and from there the idea of a new group took shape. At the 1995 Spring Conference in Liverpool a debate chaired by John Sellar established an interest in such a group, and Council voted to set up a Measurement and Instrumentation Group at its meeting on 25 May 1995. An *ad hoc* meeting organised by Bob Peters, Vice-president, groups and branches, was convened on 19 June at the IOA offices in Agriculture House, St Albans with eight prospective members. Richard Tyler and Peter Hanes volunteered to be chairman and secretary respectively until the first general meeting to be held on 28 October at the Autumn Conference at Windermere.

At fairly short notice the *ad hoc* group organised a session of papers to be presented at Windermere in October 1995 and the first AGM was held so that a committee could be formally initiated and the relevant officers elected. Nine people formed the first committee, and it is testament to their service to the Institute that four of the original members still serve on the M&I committee in 2014. Over the intervening years the committee has expanded to include a Young Members' Group representative and three co-opted members, including a representative of the ANC.

The group held its first one-day meeting, *Roughly how loud is that?* on 14 February 1996 at the Royal Society in London and has continued to present one-day and two-day meetings approximately three times a year ever since, as well as organising some or all of the Autumn and Spring Conferences in which it has been invited to participate. The selection of titles for the one-day meetings has often been a little tongue-in-cheek, but the meetings have consistently been of a high technical standard and attracted good attendances, as well as resulting in a net contribution to the IOA's

revenue. More detail on some of these meetings will be found a little further on.

The committee has always managed to plan a programme of regular meetings for the benefit of all members of the IOA, and usually has details of these organised between six and 12 months ahead of the meeting date. Responsibility for each meeting is taken by an individual member of the committee who can call for assistance as required from the other members, and there have always been willing champions for each meeting. By and large, committee membership has been fairly long-term, which has helped in the planning of meetings, and the committee only meets four times a year.

What's in a name? - 20 years of tongue in cheek titles from the M&I group

Ever since the formation of the group, it has been running several one-day meetings a year, as well as being involved in the organisation of main conferences. Before the first independent meeting in February 1996, we assisted in two meetings, one on PC programmes in acoustics and vibration and the other on sound power measurement. At some point in the committee sessions we came up with the idea of finding a snappy title for each meeting, intended to raise a smile, before passing responsibility to the proposed organiser.

This seems to have become a tradition now, with our first meeting, *Roughly how loud is that?* covering uncertainties in sound level measurement. A similar theme was explored the same year in *How sound are your measurements?* before reverting to more mundane titles in 1997-98 to cover the new 61672 sound level meter standard, sound intensity measurements and the 1996 Noise Act. Normal service was resumed in 1999 when we held a meeting entitled *DAT'll be the day* at the University of North London, which was unsurprisingly about DAT recording, a popular technique at the time. We revisited the theme in 2004 with *Just for the record... ing* in York, and 2005 with *From DAT to disk* at the Royal Society.

The M&I group is not just about noise measurements, however: vibration plays just as important a role in our lives, so *Getting a grip on hand-arm vibration* in 1999 at the National Motorcycle Museum explored this theme, reprised at the Royal Society in 2000 with

Shakin' all over. Power to the people obviously looked at sound power measurements, and environmental noise themes produced such classics as *Long-term measurements, just for the SEL of it; Weather or not to measure;* and *Noise mapping – which way now?*

The measurement of ground vibration mined a rich seam, with *Did the earth move for you?* in London, and *Rumble in the (urban) jungle* exploring the draft (2002) and later then new BS 6472:2008. *Let's get physical* the same year covered the new Physical Agents Directive, and the Autumn Conference was the responsibility of the group with the theme *What noise annoys?*

Playing safe in 2008 covered noise in entertainment venues, and *Did you hear that?* In 2009 addressed audibility and inaudibility, a more esoteric topic. *You want to put a microphone where?* looked promising in 2011, and covered insert and probe microphones such as MIRE, and in the same year we co-hosted the Autumn Conference on the austerity theme.

Making smooth the rough early in 2013 went back to human vibration, followed by *It couldn't happen to an acoustician*, a great collection of anecdotes and old wives' tales from experienced IOA members.

Besides producing snappy titles, the M&I group has used unusual venues for its meetings. Some of the more memorable include Blenheim Palace, the National Space Centre in Leicester, the National Motorcycle Museum in Birmingham and the Shuttleworth Collection of vintage aircraft in Bedfordshire.

Future meetings are at the planning stage, but one thing is certain, you can count on a good title if nothing else! Any suggestions for future meetings on the subject of measurements or instrumentation are always welcome.

Instrumentation Corner

In late summer of 2008, following a variety of comments from diverse sources about the proper comprehension of instrumentation issues, it was decided that the group would write a contribution for each edition of *Acoustics Bulletin* on an instrumentation or measurement topic, and the section became known as *Instrumentation Corner*. Almost every edition since January 2009 has carried an article by a committee member on a topic of special interest or within the author's special knowledge, and the programme for these contributions is planned well in advance of publication dates in order to give each author plenty of time to plan his or her "Corner". More than 30 articles have now appeared in six years.

The first short article was by the secretary. This was to introduce the addition to M&I group activities of *Instrumentation Corner*, with an explanation that each committee member would choose a topic in the expectation that it would be of interest to all IOA members. The second article was by the chairman, covering field calibration for sound level meters using an acoustic calibrator. This travelled from the certified pressure level of the calibrator through to the meter display, with the importance of using the correct adaptor being a key element.

Another founder member followed with the practical evaluation of low sound level system capabilities, from the instrumentation preamplifier noise spectrum, mainly low-frequency, and the microphone "thermal" noise spectrum, largely high-frequency, which combine to determine the overall noise floor. A co-opted member of the committee played his part by covering the routine verification of sound level meters using BS EN 61672-3 in the fourth article. The co-opted ANC representative changed the direction to vibration with the fifth article, on the recently published BS 6472-1, highlighting the changes from the earlier standard to weighted VDVs. This first year was completed with the fourth founder member exploring, with several examples, why L_n spectrum levels should not be used to calculate an overall A-weighted L_n level.

The second year started with an insight into the workings of International Standards for acoustical measuring instruments, explaining the various stages in the process from selecting a future project to the final publication. Measurement and risk assessment for the control of noise at work was the next topic, where reliability was addressed, not only the competence of the measuring person but also the need for a meter to have been pattern-evaluated. A later article addressed pattern evaluation, or lack of it, and showed its importance when mixing components for instrumentation, especially where a sound level meter is specified in a measuring standard.

Difficulties of headset measurements in determining the limits for portable music players then followed, including the selection of an appropriate coupler. Two articles on environmental noise rounded off this second year, on the subjects of an online multi-point measuring system for noise mapping, and an update on changes to Standards and the required measuring instrumentation.

As can be seen, the *Instrumentation Corner* articles over the first two years mainly covered acoustical topics and subsequent years have followed a similar pattern. However, year three started with two articles on vibration: the traceable calibration of transducers and the uncertainty of measurement. Later vibration articles compared geophones and accelerometers, looked at transducer mounting and revisited uncertainty. The series of articles returned to acoustics with the dynamic range of microphones, their low-frequency performance, and the capabilities of weather protection windshields following. Measurement was addressed by comparing the performance of sound level meters and noise dose meters, FFT versus percentage bandwidth analysis and the basic environmental noise parameters to meet 90% of cases.

For a change, at the beginning of 2013 the acoustics of underwater measurement were compared with those of the more familiar air. Next, the modern pre-polarised microphone was covered over two issues of *Acoustic Bulletin*, looking in particular at environmental constraints and how damage can dramatically change a microphone's performance. The revision of International Standards for sound level meters and filters was expanded upon in separate issues covering the many changes made to earlier versions. Articles will continue to be produced on topics that are both current and of significant interest to all Institute members.

All members of the committee, elected or co-opted, have played their part; some of the 11 authors so far have provided as many as three articles to date.

In conclusion

Bringing matters up to 2014, membership of the committee has never been stronger, with not only the nine full members but the three co-opted members as well participating in all aspects of the group's activities. At the last check, there were 499 members registered as interested in the group, representing 17% of the total IOA membership. Plans for the future of the M&I group continue apace.

Musical Acoustics Group

Mike Wright

It may seem surprising to some that the “seeds” of the Musical Acoustics Group actually go back as far as 1947. This was the time the Physical Society Acoustics Group was formed and regular Science Meetings were held. In 1950 *Wave Motion and Sound* published by R W B Stephens, a leading member of the group (later the founding member of the British Acoustical Society and the first president of the IOA). The next year, a meeting was held at the RIBA at Portland Place, *Musical and acoustical aspects of the Festival Hall organ*, which attracted an attendance of 400 plus. In 1960 the Physical Society merged with the Institute of Physics and in 1971 Professor Charles Taylor (Cardiff University) presents the Royal Institution Christmas lectures on acoustics and music.

The IOA was formed in 1974 and the first Annual Report mentioned that the Council has agreed to support the formation of a limited number of specialist groups. “The first group to be approved is the Aerodynamic Noise Group, which was a successful group of the former British Acoustical Society. A new group on Underwater Acoustics is under consideration and some members expressed an interest in forming a group on Musical Acoustics.”

In 1975 the Musical Acoustics Group was properly formed. Dr John Bowsher, a founder and current member of the group at the time of writing, was elected chairman, a position he held until 1981.

In 1976 group membership was reported to be “around 40”. The group’s first meeting was held at the London College of Furniture. The meeting “covered subjects as varied as musical string technology, differences in sound quality between horn player, and the electronic solo keyboard instrument of the late Mr K A Macfadyen”, author of *Physics Laboratory Handbook* (1970). The first group newsletter was published later that year.

1977 group membership increased to 51. The newsletter circulated two editions and there was a visit to the Boosey and Hawkes brass instrument factory in Edgware, North London. The following year, the group visited the instrument-making workshop founded by Arnold Dolmetsch in Haslemere, Surrey. The Autumn meeting was held at Aston University in collaboration with the Building Acoustics Group. This included a major and most successful session on *Halls for music from the performers’ point of view*.

In 1981 a number of group-sessions were held at the Spring Conference at Newcastle University. This event included thirteen papers on a range of topics and owed much of its success to the efforts of the chairman, Dr John Bowsher. The following year the group ran a visit to the BBC Radiophonic Workshop. This was founded in 1958 and well known for its pioneering development of electronic music and special audio effects such as the famous *Dr Who* theme using an early electronic sound synthesiser.

In 1983 a visit was made to QUAD hi-fi audio manufacturers. Peter Walker (MD) gave an excellent demonstration of some of the finer points of stereo reproduction, including that from the new Compact Disc.

Professor Taylor retired as chairman in 1984 and Dr Brown took over with Dr Zarek becoming the secretary and Mr Pamplin as treasurer. The visits programme continued with the visit to the (National) Musical Museum at Kew and the organ works of Henry Willis and Sons. The group also collaborated with the Electro-acoustic Music Association of Great Britain (formally EMAS) founded in 1979 and the Institute of Musical Instrument Technology in a joint meeting on electroacoustic and music. The delegates were honoured by the presence of Professor Xavier Rodet of Institute for Research and Coordination in Acoustics/Music (IRCAM) who spoke on the synthesis of the singing voice.

In 1992 the group was now chaired by Dr Bernard Richardson from the Physics and Astronomy Department, College of Cardiff (now University of Cardiff) with Dr Jennifer Zarek remaining as secretary. At this time, the membership of the group significantly increased to 138.

However, membership by 1994 had declined slightly to 130 and the Annual Report contained a rather stark message “that it had not been active that year” and that “members interested in becoming involved in regenerating the group’s activities should contact

headquarters”. However, it was encouraging to note that the London Branch helped to keep things going by holding an interesting meeting at the Royal Academy of Music in London featuring the recently refurbished Dukes Hall including the new two manual organ by J.L. van den Heuvel. From 1996 and despite a continuing programme of activities, the Annual Reports showed a continued fall in membership of the group to 94 in 1998. However, there were indications of a revival taking place thanks to the efforts of Dr Peter Dobbins, now elected group chairman. Involvement in ISMA’97 – the International Symposium on Musical Acoustics, a major annual event held at the University of Edinburgh at the time of the Festival in August contributed to this revival. This event was organised by the university with the IOA, the Catgut Acoustical Society and the European Acoustics Association. This event included more than 100 papers and attracted 150 participants. The event was the main activity and the efforts of Dr Murray Campbell founder of the Musical Acoustics Research Group at Edinburgh and Dr Bernard Richardson were also noted. In 1999 and despite a further small decline in membership to 90, the efforts of the group continued. The project of the year was an Industry Focus Meeting on Musical Acoustics, funded by the Engineering and Physical Sciences Research Council (EPSRC) formed by Royal Charter in 1994. This major meeting, *Making good musical instruments: can acoustics help?* held at the University of Edinburgh was aimed at bringing representatives from industry and academia together.

By 2002 membership reached its lowest level since the early 80s, falling to 79 but efforts to organise sessions at the Spring Conference continued. However the Annual Report of 2003 indicated a sharp rise in the membership of all branches. In the case of the MAG, membership jumped to 133. A meeting with a performance by the New Violin gave members an opportunity to learn about new stringed instruments, developed by Carleen Hutchings over the latter part of the 20th Century.

In 2004 a successful application was made to the EPSRC for a UK Musical Acoustics Research Network under the culture and Creativity Programme, led by Dr Murray Campbell. However, even though the group membership appeared from the Annual Reports to be rising, with 259 members in 2010, it seemed rather surprising that with the exception of a few organisational meetings with the hope of some visible activity appearing, the group was effectively dormant. An AGM was eventually held in April 2008, where the chairman Peter Dobbins reported that many of the group’s former activities were duplicated with the establishment of the EPSRC funded UK Musical Acoustics Research Network, coordinated by Murray Campbell. An attempt was made to merge the two groups but in 2010, the IOA Annual Report had to say with some regret that “to date this had not resulted in any new group activity. It would appear that either some new blood must be found to volunteer to revitalise the group, or we must accept that there is no longer a role for an IOA Musical Acoustics Group”.

After some efforts, the group was relaunched in 2013 with a new committee. At the AGM the committee formed with Mike Wright (chairman) David Sharp (secretary), Lisa Greenhalgh (Young Member Representative) and Chris Turner, Murray Campbell, Owen Woods and David Howard. Chris Stanbury and Christina Higgins were later co-opted to the committee. A new quarterly e-newsletter, *MAG MAG*, first appeared in June with Mike Wright kicking off the first edition. This was followed by Owen Woods and Christopher Stanbury taking on the editorship. Thanks to further developments of the Institute’s website, this newsletter is now accessible to all members. As a result of the recent dormancy and attempt at revival, a survey of members was carried out amongst its members and it became as to their aspirations. The fact that the group committee now includes Murray Campbell and David Sharp may have attracted some members from the Musical Acoustics Network.

In the year of the 40th anniversary of the Institute of Acoustics, the group combined forces with the Institute’s Southern Branch for a lively half-day meeting at Brighton – *Acoustic soundscapes*

which included Professor Trevor Cox's talent on an alto saxophone in some incredibly reverberant locations. In March, a one-day meeting was held at MediaCityUK, Salford in conjunction with the Electroacoustics Group, Trevor Cox and the University of Salford on the influence of recording techniques on musical composition, interpretation, performance and appreciation. Contributors from wide backgrounds also included Professors Murray Campbell, Patrick Gaydecki and Mark Plumbley, Dr Bruce Wiggins and Dr Rob Toulson. The main group meeting was held in July at the Royal

Academy of Music on *Acoustics of organs and the buildings in which they are housed*. This was chosen after a new organ, built by Orgelbau Kuhn, was installed in the Duke's Hall to replace the instrument that was installed some 20 years earlier. Ambitious plans were set for the Institute's 40th Conference in October. Local branch meetings featuring musical acoustics were well attended. Further meetings were planned well into 2015 in a continued effort to stem the mistaken view by some acousticians and others that musical acoustics is simply "an interesting subject".

Physical Acoustics Group

Geoff Kerry

A proposal to form a Physical Acoustics group (PAG) was made at the January 1976 Council meeting but its establishment was postponed just five months later when it became apparent that there were insufficient members prepared to support it. However, a further two months on, the new President, Professor Roland Dobbs, decided to press ahead and its formation was agreed in October. Unfortunately, the earlier predictions of lack of support proved well founded and in December 1978 Council was asked to consider disbanding the group. A new proposal was placed on the table in February 1979 only this time it called for an Ultrasonics and Physical Acoustics Group: the proposal was not taken any further and for the next few years little was done, largely because there was some doubt about the level of interest in this subject area.

In October 1984 the President announced to Council that he had received a letter from the Institute of Physics (IoP) advising that they were setting up a Physical Acoustics Group and suggesting that the IOA appoint a representative to the steering group with a view to setting up a joint group. Council agreed that the President reply asking the IoP to make it clear what subject areas the new group was proposed to cover, and expressing concern that the constitution of the proposed joint group should take note of the regulations governing the IOA as well as IoP. Dr Roy Haslett was asked to represent the IOA on the steering committee and was able to circulate a paper on the proposals before the December Council meeting at which it was agreed that a sub-committee would review the proposed constitution and form a response to the IoP. This was approved by Council at the following meeting. Dr Haslett resigned from the steering committee in late 1985 and it appeared (but might not necessarily be connected) that there was more interest from potential PAG members in ultrasonics. The Vice-president, groups and branches reported that he had been unable to find a replacement for Dr Haslett and it was agreed that the IOA should withdraw from the joint group leaving it to be constituted according to IoP rules. Any IOA meetings on physical acoustics could be held in collaboration with IoP. Although there appeared some reluctance on the part of the IOA, the joint group did go ahead with approximately 140 members drawn equally from the two Institutes and ran several successful meetings. It was, however December 1986, before a draft constitution drawn up by the IoP was considered by the IOA Council. The constitution had two places reserved for IOA representatives and after some discussion Council approved it without alteration. The draft was also approved by the embryo PAG during 1987 and ratified by the IoP Council. The IOA Council approved the appointment of Dr Bob Chivers and Dr William Britton as the first two IOA representatives. During 1989 the joint group held two meetings and organised sessions at two major conferences, including a session at the IOA Spring Conference in Oxford. The annual group meeting was a two-day event held at Bath covering progress in physical acoustics and ultrasonics and included the group AGM. This event was repeated the following year but attendance was poor causing some difficulties with the AGM. Nevertheless a pair of back-to-back meetings on transducers and guided waves, held in 1990, proved successful as did the annual review meeting, where a revised format involved three invited speakers reviewing their specialist areas. By 1992 the joint group was actively pursuing contact with other organisations especially in ultrasonics and this led to it participating in a conference on non-destructive testing

organised by the IEEE. In the following year it co-sponsored with the IEEE a meeting on non-destructive testing of civil engineering structures and in the process industries. The annual review meeting and AGM was held at the IoP Congress and was viewed as well attended and technically excellent. The records indicate that by then the joint group was producing an annual newsletter to keep members informed on meetings and other events. The pattern of holding at least two meetings a year was continued and in 1995 the group held a successful symposium at the IOA Autumn Conference in Windermere. By 1997 the joint group membership stood at 206 of which 75 were IOA members. That year a decision was made to hold the annual review meeting independently of the IoP Congress and to revert to a two-day event with the second day concentrating on contributions from and for younger members. In 1998 only 23 delegates attended the annual review meeting and that only increased to 35 for a meeting called *Physical Acoustics '99* the following year. Meanwhile, plans were being made to extend an invitation to colleagues in the Société Française d'Acoustique with similar interests in physical acoustics and in 2001 the first of a successful series of joint conferences known as AFPAC – Anglo-French Physical Acoustics Conference – was held at Wye College, Kent with 70 delegates and 33 papers. This was combined with the customary group AGM. The high level of presentations and the informal atmosphere both during and after the sessions made this event a great success and it was decided to continue it on an annual basis. Later in the year a one-day meeting was held on *Simulation and modelling in medicine*. The second AFPAC was held in 2002 in Wissant in France. No major conference was held in 2003 but the group organised a tutorial day, the format for which was seen as a pointer for successful meetings in the future. Indeed the annual programme for the next few years was centred both on the Anglo-French meeting, held alternately in each country, and on a tutorial and AGM one-day meeting. In 2006 the latter was enhanced by awarding the Bob Chivers Prize for the best journal paper in the physical acoustics area by a PhD student. Dr Chivers, who sadly died in 2004, had been a member of both the IOA and the IoP and had been instrumental in setting up the joint group following his appointment as the IOA's representative in 1987.

In 2008 David Cartwright, who had been group chairman for many years, stood down and Professor Andrew Temple took over. Sadly he died just two years later and was replaced by Professor Victor Humphrey, replaced in his turn in 2013 by Pierre Gelat. Before the AGM in 2013 it was realised that the original arrangement for two representatives from the IOA on the committee had not been maintained and despite the fact that over 70 members of the IOA signed up each year for the group no-one came forward to volunteer their services. Following discussions between the Presidents of the IOA and IoP a series of meetings was called to try and resolve the future relationship of the two Institutes with the group. At the time of writing this matter had not been resolved although it was apparent that there was continuing interest in both Institutes to maintain some form of relationship and certainly to support the area of physical acoustics.

Editor's note: The matter was settled during 2015 when the two Institutes decided to go their separate ways but with two representatives from the IOA on the IOP PAG committee to maintain liaison. The IOA PAG now has its own committee and programme.

Senior Members' Group

Ralph Weston

The Senior Members' Group (SMG) is in fact the youngest of all the groups and branches. The idea for a SMG began between some older members at the end of 2008, probably from discussions around the bar at the Autumn Conference which resumed at Euronoise 2009. An ad-hoc group met in April 2010 to form a committee and plan a future programme. A committee was formally set up in November of that year when Ralph Weston was appointed acting chairman.

An inaugural meeting took place in January 2011 at London South Bank University at which Bridget Shield, then IOA President, gave a lecture about her experiences in acoustics. This was preceded by our first AGM when Ralph Weston was confirmed as chairman.

The terms of reference were based upon those of the Young Members' Group. Membership of the SMG consists of senior and retired IOA members who are spread all over the country and overseas. Accordingly the following principles were approved. Communication between members and between committee members would be by email or other electronic means. The AGM is the only essential meeting to ensure conformance with the terms of reference. However, in order to attract sufficient members the AGM is joined with a presentation at the meeting. As the group has developed, committee matters have been routinely discussed by email so that the committee members do not have to travel to conduct business at a formal meeting. To keep costs to a minimum the SMG has managed to use sponsored venues and, more recently for the AGM, the IOA headquarters at St Albans. The meetings are held in the afternoons starting about 1pm. The intention is to enable members to travel out of rush hour and thereby qualify for cheaper rail fares. Where possible, meetings are preceded by a "meet-and-greet" light lunch so that older members get together with friends and old colleagues.

The SMG's main objective was to co-ordinate the skills and experience of members for the benefit of the Institute. The initial

activities included: offering assistance to implement continuous professional development; assisting in checking the new website; assisting the Young Members' Group; offering to review articles for *Acoustics Bulletin*; and encouraging older members to contribute to *Acoustics Bulletin* and *Acoustics Update*. The group has assisted with the Institute's history project under Geoff Kerry. It must be admitted that not all these activities have been fully achieved. The only item to fall was checking the website, but then the programme at the time was not completed. Progress can be slow, but after all, we are the "oldies".

In our first year there was only the inaugural meeting. Our second AGM was held at Ecophon, Tadley, Hampshire in January 2012 to which we invited Geoff Leventhall to give us a talk on low frequency noise that was fascinating to all. Ian Campbell asked for volunteers to act as mentors with the seminar component of the next Measurement and Instrumentation Group meeting, and five SMG members attended on 21 March. In autumn 2012 we managed a second half-day meeting on aircraft noise at Stansted Airport, organised by Ian Campbell, with Rupert Thornely-Taylor as the speaker. This meeting illustrated the problem of finding suitably sponsored venues, however, a number of younger members were welcomed and it did not cost them anything.

Our third AGM was held later in spring 2013 at IOA headquarters where a light buffet lunch was provided before the start of the meeting. Our speaker, Mike Wright, gave us a talk on musical acoustics that was of very wide interest. It was also broadcast on webinar so that members who could not be there were able to watch on their computers. Though this was an experiment, it is considered that this form of electronic communications should be used for SMG meetings in view of the geographical diversity of the senior members: we believe webinar or similar systems to be essential to bring members together.

Speech and Hearing Group

Gordon Hunter and Emma Greenland

The origins of the Speech and Hearing Group go back to the very early days of the Institute. The group's history can be divided into three clear phases - 1976 to 2001, a dormant period between 2001 and 2006, and activities from 2007 to the present. The period up to 1999 was comprehensively chronicled by Roger Moore in his article *Let's talk speech* for the Institute's 25th Anniversary Conference that year, and information provided by him concerning that period is gratefully acknowledged.

The Speech Group, as it was called originally, was first formed in December 1976 and was chaired by John Holmes (then of the Joint Speech Research Unit). It aimed to encompass a wide range of disciplines related to speech acoustics. Regular group conferences were held at Windermere, usually in the autumn, and the reputation of these conferences - from both scientific and social perspectives - endures to this day. The group collaborated on various activities with the equivalent Groupe de communication parlée of the Société Française d'Acoustique (SFA, the French national acoustical society), and this led to the establishment of European Speech Communication Association (ESCA) and ultimately the International Speech Communication Association (ISCA). These collaborations led to the now well-established Eurospeech and Interspeech conferences, which are considered amongst the leading international conferences in the fields of speech science and technology. Notable members of the group committee during the period 1976-1999 included the late John Holmes, Bill Ainsworth and Frank Fallside, and the still very much active Adrian Fourcin, Steve Young, Roger Moore, Stuart Rosen, Steve Cox, Pete Howell, Mark Tatham, Martin Russell, Andy Breen and Briony Williams. For many years Mark Huckvale edited the group's bi-monthly newsletter *Speakeasy*,

which contained a selection of serious and humorous articles, news items, job advertisements and letters from readers.

In Roger Moore's 1999 article he noted that the success of ESCA, the internationalisation of the field, and the emergence of parallel groups had put considerable stress on the group in recent years, and what had once been a tightly-knit but broad community had evolved into a diverse range of speech-related disciplines each with their own national or international society. After the Institute's 25th Anniversary, the group held just a couple more meetings - one at the University of Birmingham in December 1999, and the workshop on innovations in speech processing at Stratford-upon-Avon in April 2001. However, many of the speech technologists (who at that time formed the core of the group's membership) felt that their interests were now adequately served by other bodies such as the IEEE and the International Speech Communication Association (ISCA). As a result, the group fell dormant until the end of 2006.

IOA Council then approached members who were notionally still affiliated to the group to investigate interest in re-activating the group. An initial meeting was held in January 2007, involving two old stalwarts, Adrian Fourcin and Mark Tatham, and several much newer members. It was noted that the membership encompassed quite a broad range of disciplines, including audiology, speech and language therapy, speech intelligibility aspects of building acoustics, and even speech forensics, in addition to speech technology, so it was decided to rename the group Speech and Hearing to ensure as wide a scope of interest as reasonably possible. A provisional committee set-up and the re-establishment of the group and the membership of its committee were ratified at an AGM in January 2008. Three members of that committee, Emma Greenland,

Gordon Hunter and Derek Nash, have served on it ever since. Other long-standing committee members of the new era include Evelyn Abberton, Roz Comins, Phil Harrison, Graham Frost and Rob Conetta. The committee produced a mission statement for the group, noting its interdisciplinary nature. This states that: “The Speech and Hearing Group provides a forum for IOA members with an interest in acoustic aspects of speech and hearing. These include speech intelligibility, perception and production, hearing protection, audiology, assistive and other technologies for speech and hearing, and speech and language therapy.”

The group has organised a modest number of specialist meetings since then – notably *Speech and hearing in learning environments* in 2008, and *Tutorial workshop on speech recording and analysis* (co-organised by the Department of Speech, Hearing and Phonetic Sciences at UCL) – and has coordinated speech and hearing sessions at various Institute conferences, a joint conference with the SFA in France, as well as co-hosting several evening lectures with the

London branch. An invited talk on a speech and/or hearing topic has accompanied each year’s group AGM, and all of these to date – given successively by David Howard, Adrian Fourcin, David McAlpine, Roger Moore, Dominic Watt and Graham Frost – have been informative, accessible and well-received.

The most recent event was held at WSP in spring 2014 in collaboration with the Young Persons’ Group, which was a screening of the film *Lost and Sound* by Lindsey Dryden, a hearing-impaired filmmaker. This follows three people (a music critic, dancer and pianist) over three years as they gradually become deaf, and the film was extremely well received by its audience.

The challenges for an interdisciplinary group such as ours, outlined in Roger Moore’s 1999 article, still exist. Nevertheless, the diverse nature of the group can also provide opportunities for collaboration. With this in mind we remain optimistic about the group’s future, and we continue to plan speech and hearing related activities at and beyond the Institute’s 40th Anniversary Conference.

Underwater Acoustics Group

Paul Lepper

The Underwater Acoustics Group (UAG) is a highly specialised group within the IOA membership, involved in a diverse range of activities for the marine and inshore sectors. Since the Titanic disaster in 1912, sound energy under water has been used both to passively “listen” and actively “transmit and receive” in SONAR systems. This was initially done to detect objects under water (e.g. for anti-submarine warfare and collision avoidance). However, in the last two decades underwater acoustics has been used to learn more about the ocean environment and its occupants (acoustical oceanography), and most recently to assess and mitigate the hazardous effects of anthropogenic noise on aquatic life.

SONAR methods and systems underwent massive developments in both the First and Second World Wars. At the height of the Cold War, particularly huge efforts were made in understanding the physics of sound propagation in a highly complex environment, hand-in-hand with major advances in transducer and electronic systems and pioneering work in signal processing and propagation modelling. In the light of these rapid advances the number of internationally recognised experts and pioneers working in underwater acoustics grew, with the UK at the forefront of developments.

Early pioneers included Professor Hasan Berkay (President of the IOA, 1986–88; originator of the Berkay equation for nonlinear ultrasonics). He made major advances throughout his career in parametric generation based at Birmingham, later moving to the University of Bath. Another who started at Birmingham, and later moved to Loughborough University, was Professor Roy Griffiths, a leading light in sonar signal processing. A third pioneer, David Weston, was President of the IOA (1982–84) and winner of the Rayleigh Medal in 1970. He was also awarded the 1988 ASA Silver Medal in Acoustical Oceanography and Underwater Acoustics for “seminal work on the physics of explosive sources, scattering, and the horizontal refraction of sound”. These were just some of the UK-based internationally recognised experts in the rapidly evolving area of underwater acoustics during the 1960s, 1970s and since. These and many other notable alumni meant the original UAG played an active part in the Institute of Acoustics since its formal inauguration in 1974.

The era following the Cold War saw the massive development and use of military and civilian sonar systems, with advances in bubble and sediment acoustics and polar acoustics, for applications as diverse as seabed and oceanographic mapping, military and fisheries sonar, oceanography, meteorology marine exploration, device monitoring, communications, control, bio-acoustics and underwater noise measurement and assessment. Just as for the early pioneers, acoustics today seeks to exploit the most efficient form of energy transfer in the underwater environment and is therefore the most commonly used mode of a wide range of marine engineering systems for activities such as remote sensing, control and communications.

Many internationally renowned figures form part of the UAG’s historical and current membership. A prime example is Professor

Tim Leighton from the University of Southampton, known for his world-leading work on bubble and planetary acoustics. This work was recently recognised with a Fellowship of the Royal Society (2014) and a Fellowship of the Royal Academy of Engineering (2012), the Rayleigh Medal for acoustics (2014), the Helmholtz-Rayleigh Interdisciplinary Silver Medal awarded by the Acoustical Society of America (2012) and the R W B Stephens Medal of the Institute of Acoustics (2009) as well as many others.

In parallel with major advances in marine engineering and natural sciences, the last few decades have also seen a growing awareness of potential impacts on the natural acoustical environment. Today new research areas are opening up into the monitoring and mitigation of manmade underwater acoustical noise from almost all human offshore and near-shore activities including shipping, marine renewables, and oil and gas exploration; all these areas benefit from the wealth of membership expertise.

The UAG within has always organised – and still does – some of the leading international meetings and conferences in their specialised topics. These go back to the very beginning with underwater acoustics having featured in the Eighth International Congress on Acoustics held at Imperial College in 1974 alongside the formal inauguration of the IOA’s general and specialist meetings since. These meetings include some of the pioneering *Sonar signal processing*, *Advances in underwater acoustics* and *Sonar transducers* conferences regularly organised by group members, the long-running internationally recognised series of meetings such as the Institute of Acoustics conference series on *Synthetic aperture sonar and synthetic aperture radar* in Lerici, Italy, the *Bioacoustics and sonar signal processing* conference series held in Loughborough, meetings such as the 2001 IOA’s *Acoustical oceanography* held in Southampton, and *Ambient noise in northern European seas*, also held in Southampton in 2011.

Notably in 2012 the group, under the leadership of Chris Capus from Herriot-Watt University, organised the highly successful eleventh instalment of a long-running international conference, ECUA (the European Conference on Underwater Acoustics) in Edinburgh with more than 400 delegates. This long history and ongoing reputation for internationally-recognised meetings forms a major part of the group’s activities. To date the group has organised more than 50 international conferences within the IOA.

Another important historical role the group plays is in the recommendation to the Medals and Awards Committee of candidates for the prestigious A B Wood Medal. The candidates alternate each year between EU-based candidates and US or Canadian citizens, the latter being put forward by the Acoustical Society of America. This award is made annually in recognition of outstanding work in the field of underwater acoustics following the pioneering work in underwater acoustics and sonar by Albert Beaumont Wood (1890–1964). Other prizes administered by the group include the Springer Prize in Underwater Acoustics.

The membership continues to cover expertise in all aspects of these industries from defence, oceanography, marine engineering, physical, biological and natural sciences, environmental monitoring, systems developments and calibration, with participation from a wide variety of sectors including military, academic, government

and industry. Members' experience has been and continues to be instrumental in developing a wide range of UK and international standards including government guidance, BSI and ISO, as well as supporting the global community working in the international marine sector.

Young Members' Group

Angela Lamacraft

An informal Young Members' Group (YMG) has existed since June 2007. It originally acted as Council's appointed Senior Young Member Representative and Junior Young Member Representative to provide young members with a say in the way the IOA was run and a means of networking together. A YMG committee was formalised in June 2009 with Council ratifying terms of reference proposed by Louise Beamish. Louise took the chair and Emma Keon was secretary. It was the first group formed to engage young members of the Institute, and the only to feature representatives from each specialist group and branch.

The group's *modus operandi* aims to bring together a diverse network of acoustics professionals in the early stages of their career, by promoting peer knowledge-sharing and peer support, providing a link to the knowledge of established acousticians and a platform for the continuing development of new and existing skills.

As well as being a good introduction to the IOA, the group organises a variety of activities such as presentations and architectural tours, and encourages input from members as to how best it can meet their needs.

At the time of writing the YMG had grown to 229 members. The committee, chaired by Angela Lamacraft with Emma Keon as secretary, currently has representatives on eight of the nine specialist groups and eight of the 11 regional branches as well as the Membership, Meetings and Publications Committees.

The group has had considerable success organising varied and well-attended events around the country and it is felt that the aim of engaging young members is currently being achieved. A selection of meetings and events held by the YMG over the years is given below.

In 2008/2009 while continuing to grow and gain representatives on each of the specialist committees, the group participated in the Big Bang Science and Engineering Fair and made a series of presentations at the London, Southern and Central Branches evening seminars on issues faced by young acousticians.

Still growing between 2009 and 2010, the group assisted in a student event at Euronoise 09 in Edinburgh. As this was Young Members' meeting this took the form of a tour of the city followed by drinks. It attracted a great deal of interest and had a high attendance. An article in volume 35 no 3 (May/June 2010) *Acoustics Bulletin* introduced the committee to the wider membership of the Institute. Towards the end of the year a questionnaire was circulated among young members of the institute in order to assess priorities as seen by those members.

In 2011 the first of a series of social events was held in London during the summer. Thanks to the Institute the group was given a modest budget to supply attendees with their first drink free of charge. This event proved very popular amongst the young members, allowing them to socialise and network with their peers in a familiar environment. The positive feedback encouraged the committee to continue along this theme.

Pre-dinner drinks were organised at Acoustics 2011 in Glasgow, and Christmas drinks in London. Surprisingly the drinks event in Glasgow was not very well attended owing to a lack of young members at conference. However the drinks in London before the Christmas period were a success.

Having grown to 116 members by 2012 since the group's inception, and now meeting quarterly, the committee organised two workshops on *Public inquiry: theory and practice*.

Through committee member David Trew's hard work and with help from senior members, these events took place in February in London, and in May in Salford, and were a great success. Feedback from attendees was very positive owing to the experience,

expert assistance and guidance provided by Andrew Raymond, Colin Waters and Ian Bennett.

This would be the start of collaborations between the Young and Senior Members' Groups: the Young Members hoped to learn something while the Senior Members hoped for someone to listen to their anecdotes. Also in March 2012 a pizza and pub quiz evening was held at a pub in Camden, sponsored by, and with questions from, Ecophon. This was well attended with a team of consultants from Hann Tucker Associates taking first prize.

March also saw a joint CIBSE Young Engineers Network and IOA YMG meeting *Reverse-engineering the violin* in London.

In November a one-day meeting *Basics of measurement - Practical implementations* was organised with the Measurement and Instrumentation Group, and was again well attended.

Webcast seminars (webinars) trialled by the institute were supported by members of the committee.

A Christmas drinks event, courtesy of the Institute, was held in December in London. Again this was well attended and provided a good environment for young members to socialise and get to know each other. The drinks topped off a busy and successful year for the group.

After a successful 2012 the group began setting plans in place to reach out and engage university students and encourage them into careers in acoustics. Founding chairman Louise Beamish stepped down in June 2013 and Angela Lamacraft was voted in by the YMG committee.

An informal YMG networking session and post-conference drinks event was held after the wind turbine noise Good Practice Guide launch in Bristol in March and another after Reproduced Sound in November.

A second collaboration with the Senior Members' Group was held in September at the Health and Safety Laboratory, Buxton. The half-day meeting included an overview of the HSE, a tour of the labs and a discussion.

A networking event, *The sky's the limit*, was held in Manchester later in September at the CIS Tower. This event was also supported by RTPI Young Planners, CIBSE Young Engineers Network, NOMA, Landscape Institute North-west, CIOB, ICE, UDG and ISE.

The first YMG event in 2014 was a ping-pong evening at Bounce in London, aimed at allowing young members to network in an informal setting. Later in the year a joint meeting with the Society of Light and Lighting and supported by the IOA Sustainable Design Task Force was held in June; a football team was entered in the Inter-Institution Sports Competition with ICE and IMechE in July; a tour was arranged of the 3D sound studio of Martyn Ware (of Human League and The Illustrious Company); a pub-style quiz took place at the 40th anniversary celebrations in October; there was a planning tutorial workshop in Birmingham, and an informal networking event was organised after a proposed Southern branch meeting at ISVR.

The committee have many plans for future events. Apart from providing more networking opportunities for younger members these include planning tutorial workshops and seminars on Noise mapping for the Environmental Noise Directive.

Spreading the knowledge: the Institute's education programme

The Diploma in Acoustics and Noise Control

Bob Peters and Keith Attenborough

Introduction

The IOA Diploma was started in 1975 to satisfy the educational requirements for Associate membership of the Institute. Since that date more than 2,000 candidates have gained the Diploma and have gone on to become Corporate Members of the Institute. The Diploma is offered currently at six higher education institutions in the UK, and through tutored distance learning supported by extensive course materials. The author has a long experience of teaching the IOA Diploma course, is the current Project Examiner, and has contributed to the distance learning notes.

The main pedagogical features of the course are described in this article, particularly the tutored distance learning version, which relies on printed teaching materials, supplemented by compulsory laboratory sessions (four days) and a programme of (optional) tutorials.

The statistics presented demonstrate the effectiveness of the course, and extracts are given from course materials, assignments, laboratory exercises, examinations and project investigations.

History

The 1970s in the UK saw an increase in public concern about noise in the environment and in the workplace. There were very few degree and postgraduate courses in acoustics and noise control in UK universities, and there was growing demand for further education and training in this area. Many higher education colleges and universities were attempting to meet this demand by providing a range of introductory short courses (typically three afternoons or evenings over about six weeks).

In 1974 the Control of Pollution Act was issued containing a section on the control of noise pollution in the environment, and the Health and Safety at Work Act of the same year produced guidance for controlling the noise exposure of employees in the workplace, based on the earlier 1972 Department of Employment Code of Practice for reducing the exposure of employed persons to noise. The introduction of these two pieces of legislation saw a further increase in demand for information and training about noise from those required to deal with them.

The IOA developed the Diploma course in response to these developments. The first cohort of students sat examinations in June 1978.

The curriculum at that time consisted of the study of a compulsory general principles of acoustics (GPA) module, which required 60 hours of study, together with any two from four specialist modules: architectural and building acoustics (ABA), noise control engineering (NCE), law and administration (LA), and transportation noise (TN), each module requiring 30 hours of study. The award of a Diploma required the achievement of passes in the GPA examination and in two of the four specialist modules, together with the successful completion of a project, which occupied 60 hours of study.

Laboratory work made up a significant part of study of these modules (up to 50% for GPA), but there was no assessed coursework. In later years three additional (optional) special modules were added in vibration control, measurement and instrumentation, and sound reproduction, and coursework assignments were included in the assessment of the modules. These arrangements continued until a major restructuring of the Diploma in 2008, described later.

Responding to change

Although the laws of physics and acoustics have not changed since 1978, there have been very many changes in other aspects of noise control: in the instrumentation available for the measurement of noise and vibration (in particular the introduction of digital signal processing); in methods of noise control (e.g. active noise and vibration control); in computerised noise prediction methods; and in legislation, regulations, standards, and codes of practice relating to the control of noise. The Diploma course has evolved in response to all of these changes.

The course is aimed at all who are, or who wish to be, professionally employed in the fields of acoustics and noise control, and it has attracted students from a wide range of backgrounds including engineers and technicians (particularly mechanical, production and building services engineers), mathematicians, physicists and other scientists, architects, builders, acoustical and environmental consultancies, local authority environmental health practitioners, and audio and sound reproduction technologists and engineers.

Revised Diploma 2008

The Diploma was restructured in 2008 to respond to changes in the national assessment and rating requirements of higher education in the UK, to ensure a postgraduate status that might provide better opportunities for Diploma holders, and also to rationalise the delivery of the modules. The vibration control, measurement and instrumentation, and sound reproduction special modules, which had attracted only a small minority of candidates, were discontinued and their content incorporated into four new specialist modules: architectural and building acoustics (ABA), environmental noise measurement, prediction and control (EN), noise and vibration control engineering (NVCE), and regulation and assessment of noise (RAN). The content of the GPA module was revised and extended, and the extensive programme of laboratory exercises were built into a laboratory module. Project arrangements were revised. In addition, the format of the examinations was modified to include a short section of compulsory short questions as well as the usual selection of optional longer questions.

Credit rating of the revised Diploma

It is considered by the IOA Education Committee that following the restructuring in 2008 the Diploma has a credit transfer rating of 90

credits (at level M) with the nominal ratings of individual components as follows:

- Principles of acoustics: 30
- Laboratory module: 10
- Each specialist module: 15
- Project: 20

Students may be able to use their Diploma to gain entry into various MSc courses in acoustics, with exemptions from some parts of the programme amounting in some cases to direct entry into the second year of a two-year part-time Masters course. Note: this was short of the 120 points needed to make it a full university PG Dip qualification which caused some concern amongst students unaware of the distinction.

The Diploma approach

The Diploma course aims to teach the practical application of acoustical principles to the control of noise. Most of the course members are working in this area, for example in local authority environmental health departments or with acoustical consultancy practices, and so the course is able to connect directly with their day-to-day activities. The students in turn are able to enrich the course by sharing these experiences during class discussions. It is therefore the applications of theory which are emphasised rather than the detailed derivation of formulae, although such derivations are always available to those students who wish to explore them. Emphasis is also placed on the assumptions of various theories and formulae because it is these that set the limitations of their validity when applied to practical situations. The course teaches various noise level prediction methods based on simplified and idealised models of noise propagation (free field, inverse square law, and diffuse sound fields, for example) which are the basis of current practice, and the limitations of these assumptions in practice are discussed. This emphasis on the practical applications underpins all aspects of the Diploma course: teaching, assignments, examinations and project.

Module content

General principles of acoustics (GPA)

This introductory module is the compulsory foundation for the Diploma study. The syllabus includes:

- The nature and behaviour of sound; frequency, wavelength and sound velocity; sound pressure; intensity and power
- The decibel scale: sound power level, sound intensity level and sound pressure level
- Sound propagation: the inverse square law and prediction of free field sound propagation
- The behaviour of sound waves: interference, reflection, refraction, and application to sound propagation outdoors and indoors
- Near fields and far fields of sound sources, directivity
- The behaviour of sound in rooms and other enclosed spaces: wave, ray and statistical approaches to room acoustics
- Sabine acoustics, direct and reverberant sound and reverberation time, Sabine's equation
- Sound transmission between enclosed spaces, and between inside and outside: sound reduction index; mass law; panel resonances and coincidence; double leaf partitions; airborne and impact sound insulation
- Vibration and structure-borne sound transmission: vibration displacement, velocity and acceleration
- The theory of a one-degree-of-freedom mass-spring-damper vibrating system; free and forced vibration; natural frequency; resonance; and the effects of damping
- The application of simple theory of vibration isolation and transmissibility
- The measurement of sound and vibration: microphones and sound level meters; their construction, properties and performance criteria; sensitivity; frequency response; linearity dynamic range, calibration
- The use of sound level meters and principles of good sound measurement techniques
- Frequency weightings and frequency analysis; time weightings F and S; measurement of time varying noise: L_{Aeq} , L_{max} , L_{A10} and L_{A90}
- The measurement of noise in the environment, workplace and indoors

- Building acoustics measurement: reverberation time and airborne and impact sound insulation
- Uncertainty in measurements
- Measurement of vibration: accelerometers and vibration meters and principles of use, calibration, attachment of accelerometers to vibrating surfaces
- Human response to sound and vibration, the ear and hearing, loudness, equal loudness contours, frequency weighting curves, phons
- Hearing disorders, conductive and sensory-neural hearing loss, presbycusis, noise-induced hearing loss; audiometry
- Control of noise exposure in the workplace: Action Values and Exposure Limits, use of hearing protectors.

Architectural and building acoustics (ABA)

This module builds upon the GPA and offers more detailed consideration of the theory and practice of room acoustics and sound insulation. The specific acoustics requirements of different types of space are considered, for example background noise level, reverberation time, speech intelligibility and privacy and the establishment of suitable criteria in each case. It covers how these criteria might be achieved through design of the space including shape, volume, and distribution of sound reflecting, absorbing or diffusing materials and surfaces, and separation and /or insulation from other spaces and noise sources.

The types of acoustic spaces considered include for example homes (living rooms and bedrooms), offices, school classrooms, performance spaces (theatres, concert halls, etc), workplaces, rooms for public and private meetings, places of worship, restaurants, cinemas, specialist acoustical test rooms (anechoic, reverberant, audio-metric), recording studios for radio and TV.

Other topics include: special acoustic parameters for evaluating the acoustics of auditoria and performance spaces, acoustical modelling of rooms (ray and beam tracing methods), noise from building services, remedial design to achieve improved sound insulation: isolated walls, floating floors, suspended ceilings and box-in-box spaces, and the use of electroacoustic techniques.

Noise and vibration control engineering (NVCE)

This module also builds on the material covered in GPA to consider methods of noise control relating to the source, transmission path, and receiver. Consideration of the mechanisms by which sound may be generated from vibrating surfaces, from impacts and from aerodynamic sources leads to a review of ways in which noise control at source may be achieved. The principles of sound absorption, insulation and isolation introduced in the GPA are reviewed, studied in further detail and applied to the design of standard noise control measures such as enclosures, silencers and barriers. The ability to diagnose sound sources and transmission paths, and to predict noise levels from various sources are important aspects of noise control and are discussed in this module. Other aspects covered include noise from fans and ducts in ventilation systems, noise from jets and exhausts, reactive silencers and active noise control, specification and measurement of noise emission from machinery, and of performance of noise control measures.

Environmental noise (EN)

This is an expansion of the previous transportation noise module to include all types of environmental noise. It covers noise from road, rail and air transport; noise from industry and commerce; noise from mineral extraction, landfill, construction and demolition sites; wind turbine noise; noise from entertainment and other leisure activities. In all cases the prediction, measurement, assessment and control of various types of noise are reviewed. The module includes a review of standards, codes and regulations governing control of environmental noise, of the various measures of environmental noise exposure and of current guidance on the impact on human health of exposure to environmental noise; as defined in the UK's Environmental Noise Directive, environmental noise regulations, noise mapping and action plans.

Regulation and assessment of noise (RAN)

The regulations module provides an overview of the European and UK national policy on environmental noise; reviews neighbour and

neighbourhood noise; the impact of planning and Building Control legislation on environmental noise; an overview of legal and administrative frameworks; the role of noise prediction and mapping for the control and assessment of environmental noise; an introduction to environmental impact assessment (EIA), Integrated pollution prevention control (IPPC), the Control of Noise and Vibration at Work Regulations; vibration legislation.

Full details of all these syllabuses including learning outcomes, learning objectives, acquired and transferable skills and indicative content may be found on the Institute website, which also includes a list of standards, codes and regulatory documents applicable to the study of each module.

Project

The purpose of the student project is to enable demonstration of the use of the skills and knowledge gained during the course in successfully carrying out an investigation to solve and report an acoustics-related problem, within a specified time scale.

Since the students will spend considerable time and effort in their project investigations the choice of topic is usually left to them, guided by their tutor.

Most projects are practically based and will involve some or all of the following stages: selection of topic area; research and literature survey; definition of aims and objectives; formulation of a methodology and time schedule for execution; gathering of data (noise or vibration measurements, or both); analysis of data; formulation of proposals; implementation, testing and report writing.

A list of titles of successfully completed projects is printed each year in *Acoustics Bulletin* and also in the current edition of the Diploma Handbook for students.

An example list of project titles for one academic year is given at the end of this section in order to show the wide variety of topics which have been investigated.

Laboratory

Although there will be some variation between different Diploma centres the programme of laboratory work will include a core of common experiments including: the use of a sound level meter to measure spectral based noise indices, NC, dB(A), dB(C) and measurement of environmental noise parameters for time-varying noise; building acoustics measurements: reverberation time, absorption coefficients, field measurement of airborne and impact sound insulation of walls and floors; measurement of sound power levels, measurement of vibration levels, evaluation of loudness and plotting of equal loudness contours, audiometry, performance of barriers and enclosures, standing waves and room modes, speech intelligibility, FFT analysis, and sound propagation (level against distance from source) both indoors and outdoors.

Students are required to keep a log book recording details of all experiments undertaken, and to write a formal report on four selected experiments for assessment purposes.

Modern sound measurement equipment is complex and although it is important to be able to use such instrumentation competently there are even more important underlying skills of good measurement procedure, such as calibration, where, when and what (noise parameter) *etc.* Emphasis in the laboratory module is therefore placed on good measurement techniques rather than a mere ability to programme and press the right sequence of buttons.

Module assessment

Each of the taught modules is assessed by a combination of examination (60%) and assignments (40%). The assessment of the laboratory module is based on the quality of three written laboratory reports (90%) and of the laboratory notebook (10%). Assessment of the project depends on the quality of the final report (80%), the project logbook (10%) and the initial project proposal (10%). Copies of the past three years' examination papers are made available to all students. Each candidate is informed privately of his or her module results at the beginning of September each year. A chief examiner's report containing an overview of the results for all centres is published each year in *Acoustics Bulletin*.

A course handbook (with separate versions for centre-based and

distance learning study) is issued to all students which contains information about all aspects of studying the Diploma including details of the assessment procedures.

Assignments

Students are required to complete two written assignments as part of the GPA module, and one for each special module completed. These assignments, although part of the course assessment process, are designed to add to the quality of the individual student's learning experience.

One of the GPA assignments usually involves an extended exercise involving a design calculation on some aspect of the syllabus, and the other assignment requires the student to research some aspect of acoustics which encourages reading and understanding beyond their course notes (including the distance learning notes described below). In the past, students have been required to investigate such topics as the calculation of noise radiation from a process plant installation, acoustics issues in schools, noise from glass bottle handling, underwater sound exposure of marine mammals, building acoustics, non-auditory effects of noise on human health, environmental noise and its assessment, noise from a small wind turbine, outdoor sound propagation, and the acoustics of woodwind musical instruments.

The special module assignments are written by specialists in their fields. Subjects have included:

ABA module: aspects of concert hall design, design of sound insulation of building conversions to meet Building Regulations requirements, acoustical design of a building and of a housing estate, measurement of sound insulation requirements to satisfy ISO140, and the acoustical design of the roof of Wimbledon Centre Court.

NVC module: performance of acoustic enclosures, noise impact assessment from a pumping station, assessment of noise from a sewage treatment plant, assessment of noise impact from widget engineering, helicopter noise transmission, control of noise and vibration from a floor-mounted machine, and the verification of noise predictions.

EN module: noise from a new tramway system (airborne noise impact assessment), noise from minerals extraction (code of practice), the assessment of construction noise, assessment of vibration from railways, and wind farm noise.

RAN module: assessment of vibration from railways, the EU Environmental Noise Directive and noise action plans, wind farm noise, regulation of construction noise, dose-effect relationships for night-time noise, the EU Physical Agents Directive and the Control of Noise and Vibration at Work 2005 Regulations, and the National Planning Policy Framework (NPPF).

Study by tutor-supported distance learning

For prospective candidates in regions where centre-based courses are not available or, in principle, for any candidate who can show due reason why he or she is unable to make use of an accredited centre in the usual way, there exists a tutored distance learning scheme.

Distance learning students are provided with a comprehensive set of printed notes for each module they study, and are allocated a course tutor with whom they may have contact with by email, phone, or face-to-face at tutorial sessions. As well as presenting the tutorials the tutor will be responsible for marking GPA assignments and examination, will provide guidance where necessary with choice of specialist modules and will act as tutor for project work, i.e. provide guidance with the selection of project topic, give continued support throughout including feedback on a draft report and final assessment of the final report.

The GPA notes are divided into 10 study units:

1. Basic concepts and principles
2. Measurement of time-varying noise and calculation of noise indices
3. The ear and hearing
4. Sound propagation,
5. Sound absorbers and room acoustics
6. Sound insulation
7. Vibration
8. Measurement and instrumentation
9. Noise control
10. Review and revision

A programme of 10 days of tutorial support is provided each year (October to May) consisting of five days for the GPA module, so that two units are covered in each tutorial session, with two days for each specialist module and a revision tutorial before the examinations in May.

The distance learning notes for the specialist modules also provide comprehensive coverage of the syllabus material and each contains a reference to material for further detailed study if required. In the case of the building acoustics and noise control modules, several case studies are included.

Although they are optional, the tutorials are usually well attended. As well as receiving help and advice from the tutor these sessions also provide an invaluable opportunity for the students to meet each other, to discuss the course and exchange experiences, and this process is encouraged so that the class may set up its own self-support groups. This process continues at the laboratory sessions. There is much valuable learning material available on line at various websites which can greatly enhance the material in the printed notes, and the distance learning students are encouraged to use this as a learning source. They are also provided with past examination papers which they are encouraged to use as a learning resource throughout the year, and not just as an aid to examination revision.

Distance learning students must attend a total of four days of laboratory classes at Liverpool (usually two sessions of two days each in November or December, and in January or February). During this

period they complete eight laboratory exercises and must keep a log book throughout, as well as writing a full report on four of them.

Students from outside the UK may also study for the Diploma by distance learning provided that they are also able to attend the four days of laboratory sessions (or where in exceptional cases arrangements can be made to do the laboratory work in their own country). They may join the tutorial sessions via the internet and have contact with their tutor by email and by telephone. Students from Dubai, Malaysia, Hong Kong, New Zealand, South Africa, Greece, India and the USA have studied for the Diploma in this way.

The requirements for the award of the Diploma are exactly the same for distance learning candidates as for all other students attending week by week at recognised diploma centres. The examinations, assignments, laboratory work and project requirements are no different.

Course results

Table 1 presents results in terms of percent pass rates for each module for the last ten years, taken from the report from the chief examiner or education manager published each year in *Acoustics Bulletin*. Also shown in brackets are the numbers of candidates sitting the GPA examination each year (because of the way the Diploma examination is structured, with some candidates taking course modules over two or more years, it is not possible to present a simple overall pass rate for each year). See Table 1.

Table 1: Module pass rates (%) for the years 2003 to 2013 inclusive

	GPA	PROJ	ABA	RAN/LA	NCE	EN/TN	Number of Diplomas awarded
2013	94 (108)		81	83	75	92	91
2012	80 (104)	83	79	77	81	91	91
2011	83 (110)	70	89	73	76	81	87
2010	68 (134)	64	72	72	66	86	86
2009	78 (144)	75	76	72	82	77	128
2008	90 (153)	85	87	86	85	80	156
2007	82 (137)	81	74	79	85	91	142
2006	79 (172)	79	74	84	75	84	115
2005	74 (145)	66	80	76	79	77	93
2004	83 (150)	82	83	74	76	74	99
2003	80 (138)	76	80	72	66	78	

Opportunities provided by the Diploma course

Many students study the Diploma whilst working in acoustics to improve their skills and knowledge as a form of career enhancement. It is the standard of qualification set by the IOA to become an Associate Member of the IOA (AMIOA) which with a further minimum of three years relevant work experience will lead to the opportunity to become a full Corporate Member of the IOA. Many job vacancies in acoustics specify the holding of a Diploma as a necessary condition of application. Other candidates not working in the field join the course to gain employment in acoustics as a career change and many have been successful. Others have used the Diploma as a pathway to further study for an MSc degree, and in a few cases for PhD study.

Diploma graduates who obtain three merits (including a merit in the GPA module) may be considered to have met the M-level educational requirements for achieving Chartered Engineer (CEng) status through the IOA. This also requires that the candidate has an accredited three-year degree in a relevant subject, or an equivalent qualification.

Access and recruitment

The normal minimum requirement for admission to the Diploma in Acoustics and Noise Control is a degree in a science, engineering or construction-related subject, or an Environmental Health Officer's Diploma. However, as part of the Institute's policy of open access, alternative qualifications with related professional experience may be acceptable and are considered on a case-by-case basis.

Although the course is promoted by the IOA and the individual centres in the usual ways, much recruitment is by word-of-mouth recommendation. As the careers of former students have progressed, they in turn have sent junior colleagues to study for the Diploma.

Course administration and quality control

The responsibility for maintaining the quality of the Diploma lies with the education committee of the IOA, which is ultimately responsible to Council. The day-to-day administration is carried out by full-time staff at IOA headquarters with academic support from the IOA education manager. A board of examiners consisting of a chief examiner, deputy chief examiner and specialist module examiners supported by the education manager is appointed by the education committee to oversee directly the assessment of the Diploma. The course syllabuses and the distance learning notes are reviewed and updated at regular intervals.

Concluding remarks

Over more than 35 years the Diploma course has successfully responded to many changes in the practice of acoustics and noise control, but still fulfils essentially the purpose for which it was introduced, which was to provide basic education and training for those seeking a career in acoustics and noise control, and a route towards corporate membership of the IOA. It has also served as a route into employment in acoustics and noise control for many seeking a change of career opportunity as well as a pathway to study for MSc and in some cases PhD studies. The Institute's commitment to open access and the introduction of the distance learning option have significantly increased access to these opportunities.

The views expressed in this paper are entirely those of the author, and not necessarily those of the Institute of Acoustics.

The IOA Certificate courses

Geoff Kerry and Keith Attenborough

Following the success of the IOA Diploma, the idea of introducing a short course covering a specific topic had been discussed by both the Education Committee and Council. An obvious candidate was a periodic update for those awarded the Diploma but it was thought that that was best achieved by running a one-day event. However, early in 1988 the impending publication of the Noise at Work Regulations galvanised minds because of the requirement that persons carrying out noise assessments should be competent to do so. There was however no clear definition of what a competent person should know other than what was to be written down in the Regulations. The Institute decided that whilst it was acceptable to allow those members who had a clear track record of carrying out noise assessments and control in the workplace to self-certify their competency, there was room to provide a short course for those members who were not sure, or were new to the task.

The objective of the course would be to provide basic training in assessing the risks and managing workplace noise, including a good knowledge of the principles and basic practice, whilst accepting that only knowledge gained actually carrying out the job with good supervision could lead to an acceptable level of competency. So after much debate Council approved the introduction of a Certificate of Competence in Workplace Noise Assessment (now the Certificate of Competence in Workplace Noise Risk Assessment) to be organised by the Education committee. By May 1989, the year of publication of the Regulations, eight of the Diploma colleges had run week-long courses and held an examination overseen by a newly formed Certificate Committee.

By 1991 it was clear that the workplace noise certificate course was a success and the Education Committee set up a working party to look into setting up a second certificate course in environmental noise measurement to be run along similar lines. Although 1992 saw early signs of a decline in enrolments to the workplace noise certificate course, the Certificate of Competence in Environmental Noise Measurement had its first successful batch of examinations in June 1993. The course was well established by 1995 when negotiations were successfully completed with the Royal Environmental Health Institute of Scotland to set up a joint Certificate of Competence in Environmental Noise Measurement.

The publication of the revised Schedule E to the Building Regulations in England and Wales, which introduced pre-completion testing of the sound insulation between pairs of dwellings also resulted in a demand for a suitable training course. Using a similar formula to the two other Certificates the Building Research Establishment hosted the first Certificate of Competence in Sound Insulation in 1998. Much debate arose as to whether this course (and indeed the other courses) should be referred to as Certificates of Competence since, as had always been agreed by the IOA, the courses were considered to be the first stage of a training programme leading eventually to competency once sufficient practical training had been undertaken. However, it was never seen as the Institute's task to supervise such practical training and, unfortunately, as far as the sound insulation Certificate was concerned, no other centre immediately took up the course. Since the only short course of practical training on offer in Building Acoustics was a non-IOA course run by Acoustics Associates, the ANC had encouraged applicants for its approved scheme to enrol, but by 2004 the IOA considered re-introducing its own course, this time in conjunction with the ANC: however, that was not to be. Finally, in 2012 Southampton Solent University decided to run a new Certificate of Competence in Building Acoustics Measurements: to date it is the only centre to do so. Enrolments have been limited since unlike the ANC course the CCBAM does not offer "competence" in pre-completion testing. On the other hand it is anticipated that there will continue to be a steady, if limited, interest in a more general course in building acoustics measurements.

A certificate course in the Management of Occupational Exposure to Hand-Arm Vibration was run for the first time in 2001 although it was 2005 before the Control of Vibration at Work Regulations came into force. Whilst seen as a somewhat specialised area within the remit of noise and vibration the course was run twice a year until 2009. Since then it has been run once a year in spring at just two centres.

The relationship with the Royal Institute of Environmental Health of Scotland was further enhanced in 2004 when, in response to the Scottish Parliament's introduction of the Antisocial Behaviour Regulations, the IOA and RIEHS jointly offered the rather

clunkily-named Certificate in Proficiency in Antisocial Behaviour etc (Scotland) Act 2004 Noise Measurements. This would enable Scottish local authorities to send their officers to attend these courses so that they could be authorised to enforce the legislation.

Each individual Certificate scheme has an appointed management committee and examination committee. Certificate courses are open to both members and non-members and represent one

of the many ways the Institute meets its obligations as a charity to provide adequate education and training in acoustics. Completion of any one course can be used by a candidate as part satisfaction of the requirements for Technician Membership of the IOA. The table provides a brief overview of the numbers attending and passing the various Certificate courses since 2001, together with a list of the centres approved to offer the courses in 2014:-

Certificate	ref	date started	total registered* 2001-2014	total passed 2001-2014
Competence in Workplace Noise Risk Assessment	a	1989	1117	918
Competence in Environmental Noise Measurement	b	1993	2494	2134
Course in the Management of Occupational Exposure to Hand/Arm Vibration	c	2001	298	217
Proficiency in Antisocial Behaviour etc (Scotland) Act 2004 Noise Measurements	d	2004	683	472
Building Acoustics Measurement	e	2012	60	54

Centres (certificate courses offered):

Bel Education (b,d), Birmingham University (b), Colchester Institute (b), Derby University (a,b,c), EEF Sheffield (a,b,c), EEF Melton Mowbray (a,b,c), Institute of Naval Medicine(c), Leeds Beckett University (a,b,c), London South Bank University (b), Moloney Associates (a,b), NEScot (b), RRC International (a), Shorcontrol Safety (a,b,c), Southampton Solent University (e), University of Strathclyde (b,d), University of the West of England (b)

*Includes re-sit candidates



A boat trip on Windermere during Acoustics 87



The Windermere Hydro Hotel



John Tyler, Acoustics Bulletin Editor 1987-1995



Delegates at Acoustics 88



A group of delegates at Inter-Noise 1996 enjoy an outing



1998 - Brian Peyton (third right), Mayor of St Albans, officially opens the office in St Peter's Street, St Albans



Mark Tatham (right), President 2000-2002, presents the Rayleigh Medal to Bill Ainsworth

Conference spotlight

Conferences have been a key element of the Institute's activities from its early days as part of its mission keep members abreast of the latest developments in their sectors and to enable them to meet

socially and share ideas and information. In this chapter we turn the spotlight on some of the milestone events over the past 40 years.

The Institute Spring Conference at Liverpool 1976

Roy Lawrence

The Institute's first Spring Conference was held at the University of Nottingham in 1975. When I complained about there being a lack of signs for delegates arriving late I suppose I could have expected the response from a sort of unofficial executive committee of the Institute Council: "If you think you can do better, why don't you organise the 1976 Spring Conference?"

The venue chosen was Liverpool Polytechnic's Byrom Street engineering and science campus. Glen Mylne, the Institute's energetic secretary, seconded under subsidy by the Institute of Physics from its staff at Belgrave Square in London, visited me at an early planning stage in Liverpool and explained in his forthright manner that he was eager for this conference to be a well-remembered one.

An excellent technical programme was assembled by the committee and I was left to worry about the rest of the show and how to occupy the delegates during their time off in the city.

The Polytechnic's recently acquired conference and catering manager proved very helpful and arranged accommodation in the polytechnic student residences in the south end of the city for anyone who did not want to stay in a city hotel.

I drove to somewhere in the south of England to pick up a set of exhibition stands that the Institute of Physics had allowed us to rent from them. During the event these were assembled in a common room made available to the conference. The abstracts for the technical papers were printed and bound.

In the event the numerical support was as high as could be expected, there being 160 delegates, almost totally from the membership of the Institute, which stood at that time at about 600.

During the evening before the conference proper a coach tour was arranged of three Merseyside organs. Three coachloads of delegates first went to the enormous Anglican cathedral where Ian Tracy, the organ scholar, currently city organist, gave a recital on the massive Henry Willis organ. The party moved on through a few hundred yards via an inspection of the Royal Liverpool Philharmonic Hall to the Roman Catholic cathedral (known to the locals as the Roman Candle). Philip Duffy, then cathedral organist, explained that organists have to play music rather slowly because of the "eccentric acoustics", as he described it, of the cone-shaped space. An alternative explanation might have focused upon the large coupled volumes arranged around the periphery interacting with the basic conical space. The party then travelled along the East Lancashire Road to a church near St Helens where one of the delegates gave a description of a particularly interesting historical organ still working there. The tour finished with the coach party returning to a restaurant in the city's Chinatown. A 13-course Peking-style Chinese banquet was served at a cost of £3 a head; at that time Peking-style food was a new experience for almost all the delegates. Indeed it had only recently arrived at Liverpool's sizeable Chinese quarter. Mr Lau, the owner, gave a marvellous demonstration of noodle knitting as done

in China. It was interesting that the restaurant gave no discount for bringing 90 guests, but instead, certain special dishes were added to the menu.

After the first full day, Owen Doyle, the Lord Mayor of Liverpool, hosted a civic reception for all delegates after which the Lord Mayor, a former docker of Irish descent, invited all concerned to enter the council chamber where he gave a brilliant oration on the problems of keeping control of the motley array of city councillors. I have a clear memory of Professor Roland Dobbs, the Institute's incoming President, rolling in the aisles at the local humour.

Being near the waterfront at that time it was logical that the conference should finish off the day with a river cruise on a Mersey ferry. A buffet meal was served and Peter Moloney, a local celebrity and academic in the Department of Communication at the Polytechnic, launched into an after-dinner homily, mainly describing the good and bad features of the region and its people. It was going well and the delegates were visibly enjoying themselves when a man wearing an old mackintosh and wellington boots came up to Peter and tapped him on the shoulder, saying we've all got to get off. Was this Derek Guylar in a role as a straight man, most of us wondered - how did we get him - what is his fee going to be for this?

He took rather a long time to get his message over. It seemed that the original landing stage, composed of a number of wooden pontoons shackled together, had only recently been replaced by a similar arrangement made in concrete. We had noticed that the ferry boat was pitching rather badly through a swell that had developed on the river. It appeared that this swell was causing the chain of concrete pontoons to rise and fall and somehow allow water to enter the hollow concrete structures. Hence the cry "quick, get off now, the land is sinking!" The ferry duly tied up alongside the defective landing stage and in some haste we all got off on and headed for the Liver Building and home. All, that is, except Glenn Mylne and a future President of the Institute who shall remain nameless. They refused to disembark, probably not seeing things too clearly at the time, and the ferry crew insisted that they stayed on board for its final journey across the Mersey to Secombe.

I heard later that they had managed to get back across the Mersey somehow and finished up at the She Club in the centre of Liverpool. It appears that the duo started making some incautious remarks about the ex-docker who had so skilfully entertained them from the Lord Mayor's chair and some former colleagues of the Lord Mayor looked like reacting a little strongly. The future President had the forethought to pull out the personal invitation from the Lord Mayor to the civic reception with its bits of gold around the edge and showed it to the assembled crowd: from then on there was no problem.

Understandably, perhaps, the conference was much talked about for years thereafter.

The early Windermere conferences

Roy Lawrence

In 1979 I saw that the Spring Conferences were making a modest but useful financial surplus and concluded that there was enough new material being produced for a similar conference in the Autumn.

I looked for a venue outside universities, which were not generally available in term-time, and wondered if a Lake District hotel might attract enough delegates to generate some further modest positive cash flow.

I found a splendid hotel with view of Lake Windermere and progressed with arrangements for a November conference there. Some six weeks before the conference, the head office of the company which owned that hotel wrote to say that the local management had no right to agree terms that were so favourable to the Institute. This had included free use of public spaces, free use of the hotel's audio-visual equipment and a special cheap day delegate rate. All public spaces were now to be paid for by the half-day, the conference had to pay for the use of the AV equipment, again by the half-day, and the cheap delegate rate was withdrawn.

It was considered that the Institute had little clout (and no time) to retaliate but I had the good fortune to find a promising alternative in the form of nearby hotel, the Windermere Hydro. This was a former sanatorium, notable for having corridors two bath-chairs wide. This hotel offered an amazing deal which involved free use of the many public spaces, free audio-visual equipment, and single bedroom occupancy. Even if the conference failed to take all bedrooms, the hotel would not accept a second conference. Good day rates were offered and the bar was kept open until the last man standing at no extra charge.

That first Autumn Conference in November 1979 turned out to be a great success. The hotel laid on a bonfire, fireworks and mulled wine for bonfire night, and the food was excellent, especially the lunch-time buffets.

A variety of public spaces of different sizes and potential use was made available for the use of delegates. There was a social and family programme including a mandatory boat trip on the lake. There was

also sufficient public space to allow some to be allocated for a small manufacturers' exhibition.

An Autumn Conference was held in most years subsequently, normally being organised each year by a different specialist group. The largest conference in this series was a special Speech Group conference, held at the time when techniques in speech recognition were making particularly rapid progress. About 150 of the 240 delegates had to be found accommodation in hotels and bed-and-breakfast establishments around Bowness-in-Windermere.

Among some of the conferences that come to mind was one devoted to sound insulation in buildings, when we were allowed access to non-public spaces to carry out practical exercises for subsequent analysis. Another Autumn Conference involved delegates bringing their own sound level meters to make time-coincident measurements on a series of clay-pigeon shoots on the moors. Robert Craik performed an analysis of the results and wrote it up for *Acoustics Bulletin*.

After a few general Autumn Conferences I thought a conference on sound reproduction might well be of value and this was organised as the Autumn Conference in 1985. This proved popular and it was decided that this conference should be held every year as an additional event.

A series of lectures by distinguished guests was established for both series of conferences, which over the years included Professors Charles Taylor, Peter Fellgate, Richard Gregory and Drs David Pye, Murray Campbell and Leo Beranek.

The Autumn Conferences at Windermere were always regarded as a more informal type of conference than the Spring Conference, with an active social programme that included a free Saturday afternoon (normally including a boat trip on Lake Windermere and a visit to a local attraction such as Dove Cottage). There was an attractive rate for accompanying persons, which included a programme of tours, to encourage delegates to bring partners and indeed a number of children attended over the years.

Reproduced Sound reminiscences – a personal view

Bob Walker

As outlined by Roy Lawrence in the preceding section, the early RS conferences took place in the Hydro Hotel, Bowness-on-Windermere. Access for those travelling by train was by mini-bus from Oxenholme station, via about 12 miles of Lake District scenery and Kendal town centre.

The conference proper used to occupy two days and two half days. Arrival on Thursday evening was greeted with an elaborate buffet, with beautifully-prepared whole poached salmon and cold meats. The food standard (and quantity) was maintained throughout, until a buffet lunch on Sunday prior to delegates braving the rigours of the Sunday trains or the M6 motorway, clogged as it was by the traffic from Blackpool illuminations. Whichever way, six or even seven hours to "civilisation" in the South was not uncommon.

The Windermere conference was organised as two full days of presentations, breaks, exhibition and dinners on the Thursday and Friday. Occasionally, when Guy Fawke's night fell during the conference, the hotel organised a fireworks display and traditional bonfire night snacks. Saturday morning consisted of more papers and presentations. The afternoon was kept free for walking and sightseeing. One of the lake steamers was booked for those of a more sedentary bent. The boat had an open upper deck for the few hardy souls and a much more comfortable bar and jazz band in the lower saloon. That was rather more popular than the boat deck but the microphone and amplifiers for the band seemed a bit unnecessary in the 30-40 ft space! Nevertheless, many people left the boat after a few hours on the water in a slightly different state from that which they had boarded it. Sunday morning was more technical presentations until lunch.

In the evenings, particularly after the conference dinner on the Friday night, some sort of technically-relevant event was organised. That was usually in the ballroom, which also had a bar. At least that tradition has remained consistent throughout the entire history of the RS conference. The social aspects of delegates meeting up in informal groups and conversations have, from the beginning, been an important part of RS, as it is with other conferences and symposia. Always, after the formal event, delegates with musical expertise and instruments, and some without either, stayed together in the small bar, playing until sometimes almost breakfast time. The fortitude of the barman was always a wonder – he stayed with the bar until the last person dragged himself off (it was almost always men) and was (allegedly) there again at 7am for the start of the breakfast service. He must have welcomed the end of the conference in way that the delegates probably didn't fully appreciate!

Looking back, so much seems to have been lost in the modern world of hustle, bustle and the commercial pressure on delegates' time. In those bygone days (only 30 years ago), people had some time to travel, relax and take the time to savour life, the universe and the answer to the ultimate question.

Another of the family-friendly features of the Windermere conference now lost was the extensive social calendar for "accompanying persons". This comprised once- or twice-daily excursions to nearby tourist attractions. It wasn't always only the accompanying persons who took advantage of these outings – occasionally, some of the delegates found them irresistible as well. They were organised and run entirely by volunteers.

Eventually, the “charm” of the Windermere Hydro began to wear a bit thin – at least for some. The substantial numbers of delegates from abroad were also finding the additional day or two travelling compared to a more accessible location too much. It was also true that the Hydro began to demonstrate its lack of maintenance and update. Many delegates found that to be part of its charm, rather like a broken-down old car, but some insisted that they needed a modern hotel with all the modern facilities and without the creaking and uneven floorboards and bedroom doors that didn’t shut properly and couldn’t be locked. One American delegate was so offended that he and his wife de-camped to the “better” hotel at the bottom of the hill after the first night. The committee at the time decided that somewhere more modern, more central and easier to get to might be preferable.

Accordingly, in 1999, the conference was moved to Stratford-upon-Avon, chosen mainly because it might offer historic attractions to foreign delegates. In some people’s mind, this was a move for the worse and those people have never been happy with the move from Windermere. It remains an open question, but the organising committee repeatedly made the decision not to return to the Lake District. The old Hydro hotel has been completely refurbished since

those early days but the access difficulties and excessive travelling time remain as perceived obstacles. The Stratford location at least kept to the concept of a residential conference, with accommodation and conference facilities on the same site. This was always seen as an important aspect of RS and remains so. There have been a few departures, for special venues with particular electro-acoustic associations, but the conference venues remain mostly residential.

One of the reasons for a more central location was the increasing pressure on delegate’s time. At Stratford, the conference structure was altered to remove some of the social breaks and concentrate the official activities into just two full days, without the Saturday afternoon break and the Sunday morning formal presentations. The evening events and “socialising” remained. The accompanying persons’ events were also maintained for a time, but they gradually decayed away.

Thereafter, having made the break with the Lake District, it was easier to contemplate further moves. The conference moved through a succession of hotel venues of more-or-less the same modern style, to Oxford, Brighton and then Manchester. There were two non-residential conferences at the Sage, Gateshead and the Cardiff Millennium Centre to provide occasional speciality venues.

The organisation of Inter-Noise 1996: an IOA office point of view

Roy Lawrence

The Council of the International Institute of Noise Control Engineering made it known that they would welcome a bid for the 25th International Congress in 1996 from the United Kingdom, and that any such bid would be considered, alongside any others received, at the 1993 Congress to be held at Louvain in Belgium.

There was a suggestion that a venue outside London would be considered a plus point for the application. The reason offered for this restriction was that most of the potential delegates had probably been to London and would thus welcome the opportunity to visit to another part of the country.

During the 1995 Congress in Belgium there was a shortlist of three national societies. Bernard Berry, at that time chairman of the Institute’s Meetings Committee, gave a very polished performance supported by well-prepared visual aids, and at the end of that Congress it was announced that the 1996 event had indeed been awarded to the United Kingdom.

The basic physical requirements of a suitable venue were there should be as many as ten session rooms and a substantial exhibition space. In addition, satisfactory international transport links should be available and there should be provision for a Congress banquet. The Compendium of United Kingdom Venues for Conferences and Congresses was consulted, which yielded the surprising result that outside the London area there was only one venue that appeared to offer the physical requirements: that was the Britannia Adelphi Hotel in Liverpool, which seemed to be available for the dates in mind, 30 July to 2 August 1996. This was considered a promising possibility on the grounds that Liverpool, particularly (for example) through its links with the Beatles, had sufficient attractions to make it quite an interesting place for delegates and their accompanying persons to visit.

The Adelphi Hotel was for many decades the city’s premier hotel and was, for example, the hotel where the rather richer emigrants to America spent their last night in the UK before joining their ocean liners on the River Mersey. It was also rumoured to be the hotel at which the owners of the world-famous Grand National runners were accommodated, and stories circulated about hijinks after the race with the horses’ owners throwing the hotel management a few thousand pounds to repair the damage. The hotel, which had been through several changes of ownership, offered good transport links particularly because it was almost adjacent to Liverpool Lime Street main line station with an hourly service from London.

Wisely, as it turned out, the IOA Council decided to hold the Spring Conference at the hotel in 1995 to identify any difficulties that

were likely to arise from its selection for the international event in 1996. The delegates to that meeting found the arrangements generally disappointing. A worrying number of bedrooms had fittings that did not work properly, for example bedside lights, clock radios and bathroom accessories. The breakfast arrangements on the second day were far from satisfactory, with the coffee supplies being removed before all delegates had been served. Other problem points identified included the fact that the black-out curtains on conference rooms did not work properly, inhibiting the ease with which visual aids could be viewed. It seemed that although the Adelphi Hotel had adequate physical accommodation for such a complex undertaking, it did not seem to have a great deal of experience at managing events of the scale and complexity of an Inter-Noise Congress.

As a result of this general unease, the Meetings Committee requested CMMS (Cathy Mackenzie Management Services) to re-examine the national listing of conference and congress venues to be sure there was no better alternative that had been overlooked. To considerable surprise, one possibility that had escaped notice was a hotel in Blackpool, a lively holiday resort favoured, for example, by UK political party conferences and some 50 miles north of Liverpool on the Lancashire coast. The entry in the listing indicated an availability of up to 10 session rooms and that, superficially at least, appeared to meet the main physical requirements. However, an urgently arranged inspection visit showed that the claimed conference spaces were formed from one very large airport-like hanger with very high curtains subdividing the available space. The pictures of Lorry and Trailer of the Year Contest previously held there emphasised just how wrong the interpretation of the original information had been.

A further search for an alternative venue identified a university in Yorkshire which appeared to have sufficient capacity in terms of the number of lecture theatres and availability on suitable dates. An initial contact was made with the conference and banqueting manager of that university who happened to be a former employee of a hotel in Liverpool. He thought fit to contact his former hotel and informed the manager that the Institute was planning to move away from Liverpool altogether. On hearing that, the Lord Mayor of Liverpool, who had previously offered his support to the Congress as one of the largest ever to take place in Liverpool up to that time, convened within an hour a meeting of representatives of the many hotels that had hoped to pick up some business from this Congress, and set about finding what was going on.

The Adelphi Hotel was made aware of the unease over aspects that had arisen from the trial conference and at a meeting at our HQ

in St Albans the owners promised to introduce an immediate renovation programme for bedrooms and some of the public spaces. As a result of these changes and further encouraging negotiations with the hotel owners, the decision was taken to revert to the original choice of Liverpool as the Congress city. Information was routinely passed to the Institute of Acoustics office about a widespread programme of improvements being put in hand in the hotel. In fact during a review visit by CMMS personnel two representatives of the hotel owners were seen inspecting the work in hand and were heard to complain that they were having to undertake £2 million worth of improvements to bedrooms and public spaces on account of, as they put it, "the acoustics people".

The Liverpool City Department for Tourism had offered assistance with arrangements but this also seemed to make for some difficulties. For example, each time CMMS personnel visited Liverpool they found they were dealing with a different person who needed briefing from scratch and confidence was not of the highest. Because of this uncertainty CMMS rather unwisely took the decision that they would manage the delegates' hotel reservations. In the fullness of time this proved to be a very heavy burden upon CMMS with its limited staff resources but excellent work was done by the small team led by Linda Canty.

Seeking ideas about the sort of small details that could be important for a satisfactory Congress, as well as taking the opportunity to publicise the 1996 Congress, staff and members of the Organising Committee made a point of attending the 1994 and 1995 Congresses and other major events in the acoustics world.

Amongst the points noted from attendance at these events, it was clear that speakers were having difficulties moving overhead transparencies smoothly onto and off the overhead projectors provided. Audible warnings intended to indicate to speakers the passage of time during their allocated slot appeared to be a little confusing. It was ironical that for a meeting on noise control engineering, noise from people standing around the doors into session rooms, which remained open, penetrated sufficiently into the audience to be a distraction. Noise breaking into lecture spaces from the exhibition areas was found to affect intelligibility. The observations made at these conferences led to the introduction of a number of features to ensure that the same sort of problems would not arise at Liverpool. The observation about the overhead projectors resulted in the design and manufacture of a metal-based framework for each session room which would allow speakers to slide their overhead transparencies smoothly onto the projector and back again onto an adjacent surface.

The need for an efficient timing mechanism had already been identified. A number of innovations were tried out which eventually resulted in each conference room being furnished with a microcomputer driving a set of three coloured lights indicating the passage of time. The time control was absolute and would allow for no time slippage in the whole programme. The development of the software for control of the timing mechanisms was most generously supervised by Dr Alfred Vella, head of computing at Luton University, who saw this as an opportunity to demonstrate his involvement in the development of useful software for real activities, and Rob Hill of AIRO, who produced the entire working system.

A very extensive advertising campaign was initiated and it was soon evident that there was the potential for a very successful Congress, at least in terms of the numbers attending. There was an initial response to the call for papers of more than 900 abstracts and eventually around 650 papers were assembled into a very complete and logical programme by the Technical Programme committee under the chairmanship of Nicole Porter, which was a record number of papers for the Inter-Noise series. The programme was designed to run in 10 parallel sessions continuously over the whole time of the Congress and in addition, over 50 informal poster presentations were given in three sessions over the three days.

The preparation of the printed proceedings was a large and time-consuming task carried out mostly by Alison Hill as proceedings editor, who was at that time in charge of the Institute of Acoustics library. This amounted in total to a boxed set of six books which turned out to be quite heavy at around 6kg. A number were delivered direct to the hotels where large numbers of delegates were staying and a posting facility was organised at the end of the conference to save delegates having to carry them home.

A pocket-sized programme card was prepared which was of valuable assistance to delegates when planning their daily programme, together with a summaries book in A4 format prepared by its editor, Rob Hill. This book contained hundred-word abstracts provided by the individual authors on something like seven hundred computer disks from every conceivable source (including a few with viruses in residence), an innovation which had not been tried before at an Inter-Noise Congress.

Another new feature at this conference was the printing of the national flag of each delegate on his or her badge. A mug was designed and manufactured as a souvenir of the event for each delegate and for delegates' convenience a black shoulder bag with personalised luggage label was provided along with a clipboard.

At Liverpool, storage space in a dockside warehouse was acquired at a reasonable rent and that extra space proved very useful for assembling delegates' packs and so forth, work which was done by the staff with the valuable help of a group of IOA Diploma students from London South Bank University together with Distance Learning students who had volunteered to help as stewards at the Congress. On the day before the commencement of the Congress proper, preparation at the hotel went forward smoothly. Partial enclosures incorporating sound absorbing surfaces had been designed and were built on site for each session room by Iain Critchley. With the hotel's permission, additional sound insulation material was introduced in situations where there was a possibility that sound from the exhibition areas might penetrate into those rooms.

The view was taken that the identification of individual conference rooms should aid navigation around the fairly complicated structure of the hotel. For this reason the hotel's own naming of conference spaces was abandoned in favour of a simple number from one to 10 mounted on a very high post that allowed it to be seen over a wide area. The manufacture of this additional hardware was undertaken at an offsite location near the Institute's office in St Albans.

A large exhibition was created in the grand reception hall of the hotel, based on a shell structure provided by a firm from Manchester. These spaces had sold out on the first day of priority booking to IOA Sponsor Members and because of extra demand overflow exhibition space had to be prepared in other rooms and corridors around the lecture areas. The exhibition was scheduled only for the first two days of the Congress proper following a pattern that had been found successful at a previous Inter-Noise Congress in California. The empty space that was created in the main hall was used for poster sessions on the third day.

A large banner advertising the event was hung along the front façade of the hotel and a welcome desk was set up to assist international visitors in nearby Liverpool Lime Street station. On the day before the start of the Congress the office staff at St Albans commenced the move of all the necessary materials to the Liverpool site, but Lukman Miah, a junior clerk at the office, was left behind to look after such matters as might arise. He was given the task of arranging the loading of all the developed hardware onto a lorry bound for Liverpool. When the 3-tonne lorry that had been ordered arrived it proved too small but fortunately Lukman used his own initiative to order a 7.5-tonner from the same company.

About 1,000 bedrooms, all that were available within the city, were taken up along with some overflow space in the halls of residence of the two city universities. Some delegates had to stay at a hotel as far away as the East Lancashire Road. Private buses were extensively used to bring in delegates from the hotels around the city and all the various eating places in the hotel were closed to the public for the duration of the Congress.

As more than 1,200 delegates and accompanying persons from 40 countries arrived at the hotel, they were taken on a city orientation tour of the Liverpool area. The itinerary included visits to the immense Anglican cathedral and the no less spectacular wigwam-shaped Roman Catholic cathedral. Several sites relevant to the Beatles, including Penny Lane, were also included.

The bus tours finished outside the concert hall of the Royal Liverpool Philharmonic Society for the opening ceremony where music was provided by a string quartet from the Liverpool Youth Orchestra. The Lord Mayor of Liverpool, Councillor Frank Doran, gave the welcome to Liverpool and highlighted some of its features of interest. Then followed the more technical welcomes in the persons of Professor John Tarn, Pro-Vice Chancellor of the University

of Liverpool, Professor Dr Ing Jens Blauert, Chairman of the board of the European Acoustics Association, Dr Volker Irmer, a member of DGE11 at the European Commission and Professor Bill Lang, President of International INCE. There followed the presentation to Professor Lang of an Honorary Fellowship of the Institute of Acoustics after which he gave the first of the three distinguished visitor lectures. The other distinguished visitor addresses were given by Professor Philip Nelson of ISVR on the subject of acoustic prediction, and by Professor Keith Attenborough of the Open University on natural noise control, on the first and second days respectively of the Congress proper.

The technical programme ran almost without a hitch and the technical sessions were extremely well supported. During the Congress, coffee was provided at many locations around the hotel. As the weather was promising to be quite warm, the hotel provided lime juice cordial and chilled water outside each session room. To enable the technical programme to run all day without breaks, a continuous buffet service was provided from 1140 to 1400 in various rooms, including the hotel's basement nightclub.

The congress banquet was held in the magnificent St George's Hall which was only five minutes' walk from the conference venue. Delegates were led there in groups by the stewards wearing distinctive T-shirts and baseball caps, to the amusement of some locals. At

the banquet Peter Moloney, a well-known local academic and raconteur, gave an entertaining review of what makes Liverpool a particularly special city, highlighting its special mix of people with Irish, Welsh, Scottish and English descent not encountered elsewhere in the United Kingdom. Following the dinner there were various addresses by Bernard Berry, Professor Bill Lang, Anita Lawrence from Australia, Per Brüel of Denmark and George Mailing of the USA. Additionally the guests were entertained by one of the city organists on the grand Henry Willis organ.

Twenty-four hour security around and inside the Congress was provided by an outside company employing ex-policemen who carried out their function in a satisfactorily discreet manner. The social programme for delegates and accompanying persons included a coach trip to a mediaeval banquet at Ruthin in North Wales, a ferry cruise with buffet on the River Mersey, a banquet at a restaurant in nearby Chinatown and a visit to an exhibition about the slave trade at the Liverpool Museum. Four visits to Chester, one to Manchester's Bridgewater concert hall and one to Manchester International Airport, several Beatles tours, and a visit to Martin Mere Nature Reserve were also arranged.

During the closing ceremony, sponsored by Brüel & Kjaer, the Hungarian Acoustics Society issued a warm invitation to Inter-Noise97.

The 1977 FASE Symposium: how an Institute disaster was averted

Roy Lawrence

This symposium was the first international conference organised by the Institute and was on behalf of the now-defunct Federation of Acoustical Societies of Europe, FASE.

It is not now clear to me how the fledgling Institute of Acoustics came to be involved in the organisation of this symposium. Certainly its title was decided to be *European noise legislation* and space was somehow reserved at the lower level of the prestigious Wembley Conference Centre in London. A considerable amount of exhibition space was also reserved. For reasons that are set out below, this event turned out to be the most problematic the Institute has undertaken in the whole of its history to date.

Probably because I was the organiser of the Institute's 1976 Spring Conference at Liverpool, I was made a member of the organising committee for this event under the chairmanship of Roy Waller, who was Vice-president for meetings at that time, along with Professor Ron Hinchcliffe, two men from a ministry, who seemed to act as observers, and maybe others.

At one of the committee meetings getting near to the time of the conference, the chairman presented graphical projections showing a worryingly low level of interest from potential delegates at that time, indicating that the whole event was heading for severe financial problems. The committee had difficulty identifying a practical way forward. Roy Waller expressed his concern in an article for *Acoustics Bulletin* in July 1977, arguing that the Institute's entire financial resources would be committed to this venture for a significant period of time. The problem was not just covering the large monetary deposits required for the spaces at Wembley, but the low level of interest shown so far. The problem could only be minimised by achieving a large number of registrations (and early registrations in particular). In addition, it was clear that without the promise of a large number of conference registrations there were likely to be problems filling the exhibition space.

It seemed to me that it was not a good idea trying to interest European acousticians and that instead we should go for national and regional legislators and administrators throughout Europe. There was, however, no clear idea of how they could be contacted in sufficient numbers to be worthwhile.

Time was getting short and a disaster was looming. Foolishly I said we had not had a family holiday that year and we had intended to go camping around Europe. It seemed that if I chose the itinerary carefully I could visit a number of government departments around

Europe and seek their help. This came to pass. Officials at various environmental departments were approached by simply arriving unannounced at the front door; there were offers of help everywhere we went. We visited Bonn, Dusseldorf, Cologne, The Hague, the *Kampf dem Lärm* publishers in Germany, and Paris. There I mistakenly went to the Ministry of the Interior and was interrogated in a blockhouse at the entrance by security personnel while a fleet of black Citroën ID19s swept out through the gates with guns bristling — there was apparently some unrest in the country at the time. By contrast I later received the red carpet treatment in person from Thierry Chambolle, the French Minister for Roads and Bridges, at the Department of the Environment.

I came back from the trip with very useful address lists and promises of further lists, and they were all contacted. In the event, disaster was averted and over 200 participated. They were mainly from European countries but also from USA, Hong Kong, Australia and Libya. Many disciplines and interests were represented. There were acousticians of course but also industrialists, academics, clinicians, administrators, local and central government officers, politicians, research workers and lawyers.

The proceedings were launched by the Minister of State the Rt Hon Denis Howell MP with a review of United Kingdom progress on the environmental scene.

Foreign affairs: *the international perspective*

Early international involvement

Alex Burd

The Institute has always had a full involvement in the various international groupings that have existed in Europe and more widely.

Douglas Robinson, who conveyed the invitation to host the 1974 eighth International Congress, which led to the formation of the IOA, was the UK representative on the International Union of Pure and Applied Physics (IUPAP). The International Commission on Acoustics (ICA) was established in 1951 as a sub-committee of IUPAP and was upgraded to an affiliated commission in 1996; in addition to Douglas Robinson, several others including Brian Clarkson, Peter Lord, Chris Rice and Phil Nelson have held positions within the ICA.

The International Institute for Acoustics and Vibration (IIAV), which arose following a successful conference on *Sonically induced vibrations of structures* held at Liverpool University in 1969, was formed by Malcolm Crocker and was supported by the British Acoustical Society. The Institute continues and organises an annual International Congress on Sound and Vibration. However, in the fullness of time it was felt that the IOA should support only one international institution and this would be the ICA.

FASE, the Federation of the Acoustical Societies of Europe, was formed in or about 1974. It was an entirely voluntary, unfunded organisation which achieved success in achieving cooperation throughout Europe, in particular in providing a bridge between East and West during the latter part of the Cold War.

A second grouping, the European Acoustical Association (EAA)

was formed in 1992, largely by the German and French acoustical societies, after several trials to change the structure of FASE to make it more modern and a more active tool of communication.

The IOA was offered the presidency of FASE in 1996 and was subsequently represented by Dr Bob Chivers. He was appointed with the express intention of working towards the integration of FASE and EAA but this was to be achieved without any disadvantage to the eastern societies. After a period of sometimes heated discussion, it was agreed at a meeting of FASE in St Petersburg in September 1996 that formal integration of the two bodies would take place in January 1997; EAA was asked to make specific arrangements to accommodate the EAA (Eastern European Acoustical Association) as had been done by FASE. A history of FASE over its 25 years of existence was to be published by EAA and arrangements were to be made to preserve the original basic documents of FASE.

One of the major activities of EAA was the publication of *Acta Acustica/Acustica* (AAA) and this was to lead to serious financial difficulties. The publication was eventually taken over by Hirzel Verlag. There appeared to be a serious lack of financial control and the services of the IOA – which appeared to be the only society with an infrastructure (office or secretariat) – were offered to improve the situation. The IOA was asked to assist in gathering advertising for AAA to offset costs: the success of *Acoustics Bulletin* in attracting advertising was noted.

International affairs 2006-2014

Bill Davies

From 2006 the international relationships of the IOA could be characterised as settling down to a “business as usual” approach. The Institute was represented at the regular meetings of the European Acoustics Association (EAA), the International Institution of Noise Control Engineers (I-INCE) and the International Commission on Acoustics (ICA). For the most part, these groups trundle on, organising annual or triennial large conferences. Financially, the most significant relationship was (and remains today) with the EAA.

The EAA needs to take significant subscriptions from its member national societies to fund its activities, the most expensive of these being its academic journal, *Acta Acustica united with Acustica*. Before 2009, the EAA calculated its subscriptions on a flat-fee basis. This benefited the larger societies like the IOA and DEGA, its German equivalent. In 2009, the EAA decided to begin calculating subscriptions based on the total membership of each national society. They informed the IOA that the subscription should increase from €3,650 to €22,000 with immediate effect! The IOA Council took

a bullish stance on this, not least because it was felt that the AAA journal was not very relevant to most IOA members. The Institute differs from most of the other European societies in having a predominantly practitioner membership rather than an academic bias. Of course, the Institute protested vigorously and an active period of negotiation with the EAA in 2009 and 2010 resulted in a compromise figure with a two-year transition period.

The EAA subscriptions increase had the effect of making Council wonder again if EAA membership was of sufficient benefit to IOA members. In 2010 Colin English was proposed for a seat on the EAA Board, and once elected, he soon set about raising the IOA's concerns about the relevance of the EAA academic journal to practitioners. Soon afterwards a new online journal, *Acoustics in Practice*, was announced with Colin as Editor-in-Chief. The new journal was to be aimed directly at practitioners and would report new work in manufacturing, consultancy and policy. The first issue was published in July 2013 and seems to be very successful already in the wide

dissemination of practical topics in acoustics, a success achieved with modest expenditure.

The international conference scene saw some shifts over this period. Following the successful Euronoise in Edinburgh in 2009, it became fashionable for pairs of national societies to stage joint conferences. Part of the attraction might, of course, be the sharing of the financial risk in mounting these increasingly large and ambitious events. Thus we saw the 2010 Spring Conference taking place in Liège as a joint event with the Belgian acoustics society, ABAV. The success of this prompted the IOA to repeat the trick in April 2012,

this time hosting *Acoustics 2012* in Nantes jointly with the Société Française d'Acoustique (SFA). The occurrence of another Acoustics 2012 in Hong Kong a month later should perhaps spur us to be more imaginative with our conference names!

It seems likely that the international work of the Institute will continue to grow. The major conferences become more numerous, ever larger and ever longer in preparation. As I write this in 2014, the ICA is starting to decide on a location for its conference in 2022 (unlikely to be Qatar!), but before we reach that distant horizon, we will be working towards the proposed International Year of Sound in 2019.

The European Acoustics Association

Peter Wheeler

The European Acoustics Association (EAA) was formed in 1992 by several national acoustical societies, with the intent to organise conferences and to establish a European journal of acoustics in which researchers could publish. It was formed as an EEIG – a European Economic Association – a legal term for a grouping of the 11 individual organisations which were collectively liable for the organisation's financial viability and who would therefore underwrite any financial demands on the organisation. The Executive Director, or manager, was Manel Zacharia of the Société Française d'Acoustique.

Over the next few years, the EAA organised various conferences and established *Acta Acustica*, which was published by Hirzel Verlag of Germany.

When Roy Bratby joined the IOA as Chief Executive, he quickly recognised that as one of the major societies in the EAA, and one which held substantial funds in its everyday operations, the IOA was exposed to significant financial risk. At the 1998 EAA General Assembly, the IOA proposed that a committee be established to assess the risk management of the EAA. The committee consisted of Manel Zacharia, the controller at the time, Ian Campbell, André Cops, Antonio Perez-Lopez and Peter Wheeler.

The IOA accepted the task of running the EAA, with Peter Wheeler, who had recently retired from his post as Pro-vice-chancellor at the University of Salford, as Executive Director. Options for viable financial models for EAA were assessed and all 27 member societies were invited to vote for their choice. More than half of the member

societies responded, of which two opted for the UK model of a charity. The others all opted for the "Association" model.

This latter form was therefore adopted as the planned future model and draft Statutes for the new Association were developed. The Statutes provided for Full and Associate member societies, and for the possibility of Sustaining (corporate and industrial) members and individual memberships, the latter where a national society was not in existence.

Full member societies had an obligation to support the work of the EAA by making an annual financial contribution based on a *per capita* membership fee. These fees were set in the range of €4 to €6 per member of the society, with an upper limit on payments equal to the fees for 500 members in the society.

At the 2001 conference in Rome, the new Association was set up under Spanish law with the unanimous support of the 18 societies present. A change to the Statutes was proposed and it was agreed to have two Vice-presidents. The new Board for the Association was made up of the President, Volker Mellert (Germany), and Vice-presidents Andrea Paolini (Italy) and Truls Gjestland (Norway).

The brief final General Assembly meeting of the EAA EEIG was held in 2002 in Seville. The assets of the EEIG were liquidated and a sum of €7,281 held in the EEIG account was transferred to the EAA Association account in Madrid.

The remaining assets and necessary records were transferred to the EAA Permanent Secretariat.

Acta Acustica continues to be published by Hirzel Verlag.

The IOA and international conferences – a short overview

Geoff Kerry

The phrase "it's in the DNA" can certainly be applied to the IOA when it comes to organising conferences, especially in the way many attract delegates from overseas even when not specifically aiming at doing so. An inherent quality in planning and executing conference programmes has been the key to a range of successful conferences covering the many disciplines in acoustics over 40 years of the Institute's existence.

As has been indicated elsewhere the need for good planning which led to the highly successful ICA conference held in London in 1984 planted the seed from which the IOA grew. In 1985 the Institute picked up where the British Acoustical Society (BAS) left off by taking over the organisation of the successful series of Spring Conferences which were to remain the main annual IOA conferences for many years. In 1978 the first IOA autumn conference was held in Windermere and following the appointment of Cathy Mackenzie as secretary and with considerable input from Roy Lawrence the Windermere conferences were developed and in 1985 the first of the Reproduced Sound conference series was held there. To organise the technical programmes for all these conferences, expertise was drawn from the specialist groups, an inherent part of the Meeting

Committee's policy. Indeed, specialist groups had been involved in conference planning from the start, with the Underwater Acoustics Group, initially as a group within the BAS, assisting with the 1974 ICA programme along with representatives from the other early groups, Music, Speech, Aeroacoustics and Industrial noise. All these annual conferences, essentially aimed at our own IOA membership, at least initially, invariably attracted a growing number of international delegates.

One of the first international conferences to be organised after the formation of the IOA was the FASE (the Federation of European Acoustic Societies) symposium on European noise legislation held at the Wembley Conference centre in 1977. Of a more specialist nature, in 1988 the Institute organised Speech '88 also on behalf of FASE. Although not initially a member of I-INCE (International Institute of Noise Control Engineering) a chance meeting at Inter-Noise '79 in Warsaw with its President, Professor Ingerslev, led Roy Lawrence to persuade the IOA not only to join but to organise the 1983 Inter-Noise in Edinburgh which had 700 delegates from 38 countries. Perhaps the most significant International conference hosted by the IOA was Inter-Noise '96 held in Liverpool. For four days starting at

the end of July, the Britannia Adelphi Hotel was besieged by 1,200 delegates from 43 countries. If the hotel and Liverpool itself felt under some pressure from the largest conference hosted in the city for many years, it didn't show thanks in part to the tremendous amount of planning that the IOA organising team put in but, no doubt, also to the local people who are more than used to coping in extreme circumstances.

The Underwater Acoustics Group continued to organise several successful conferences at various venues in the UK, all with an increasing international interest and in 2006 held a conference on Synthetic Aperture Sonar and Synthetic Aperture Radar in the Villa Marigola in Lerici, Italy. With others following at the same venue in 2010 and 2014 these have now become a successful international series. The annual Reproduced Sound conferences led to the formation of the Electroacoustics Group and in conjunction with the head office team this group has now organised more than 30 annual conferences always with a strong international presence. The Building Acoustics Group continued to contribute periodically to both Spring and Autumn conferences, as did Speech, Music, Industrial Noise and more recently Environmental Noise, Physical Acoustics and Measurement and Instrumentation Groups. In 1992 the Auditorium Acoustics series of conferences was started in Birmingham and was an immediate hit. Concentrating on venues with recently finished or refurbished auditoria, initially in the UK, this series, again supported by an increasing number of international delegates, has now moved abroad, the last four being held in Copenhagen, Norway, Dublin and in 2015 Paris.

Euronoise held at Imperial College London in 1992 was a new venture initiated by the IOA with the expectation that the idea would be picked up and conference held at different venues throughout

Europe in years when Inter-Noise was being held in the USA. The first conference had 250 delegates from 25 different countries and following a series of successful conferences, now designated a "product" of the EAA, in various European cities, the Euronoise conference came back to the UK in 2009 when it was held in Edinburgh with 700 delegates. In 2010 the Spring conference entitled *Noise in the built environment* was hosted jointly with the Belgium Acoustic Association at the University of Gent and in 2011 the international ICBEN (International Commission on the Biological Effects of Noise) conference was hosted by the IOA at Imperial College and in 2012 the 11th ECUA (European Conference on Underwater Acoustics) conference, part of the European Marine Science & Technology (MAST) programme, was hosted in Edinburgh following two years of planning.

It takes a great deal of effort to organise a successful conference, much of the technical content is carried out by a team or teams of volunteers from the specialist groups often augmented by prominent acousticians from both within the UK and abroad, depending on the nature and target audience of the conference. The detailed planning of the conference itself, its location and facilities required and social programme is also run by a team which includes volunteers from the membership but the day to day work is down to the office staff. IOA conferences, benefitted from the start from the expertise that Roy Lawrence and Cathy Mackenzie developed and have continued with the enthusiastic support of the office staff led by Linda Canty and supported by successive Chief Executives. More detail is provided in the specialist group histories with a few personal reminiscences in the separate box articles. Full reports can be found in the *Acoustic Bulletins*, most of which are now available on line via the IOA website.

The past is another country: some international reminiscences

Bernard Berry

This contribution deals mainly with my work in connection with international conferences, from the process of bidding against other national societies for the opportunity to host such events to the work of organising the events.

My earliest personal involvement in major conferences was as a mere delegate to the ICA in London in 1974, which conveniently was the year of formation of our Institute. At the time I had been on the staff of the National Physical Laboratory for only four years and was working with the late Professor Douglas Robinson on the topic of unified noise indices. Douglas was heavily involved in the organisation of the event and other colleagues were plotting out the technical programme from the abstracts submitted.

It is hard to imagine nowadays, but back then, even at the place which gave birth to many of the elements of modern computing, there were no word-processors and of course no email systems with which to communicate with the authors of papers and other members of the organising team. In one of our offices the walls were adorned with many A3 size thick cardboard panels with hand-written titles and authors of papers, arranged into the various sessions. Somehow these lists were transformed into the major event which took place at Imperial College London the summer of 1974.

Another recollection of that event, something which may well have influenced me in what was to come in later years, was the opening ceremony held in the Royal Albert Hall, where even the hundreds of delegates were rather lost in the vast expanse of plush red velvet seats. One of the key speakers welcoming delegates was the MP Denis Howell, later Baron Howell of Aston Manor. He became famous a few years later when he was made "Minister for Drought" in the long hot summer of 1976 – an appointment which triggered massive rainfall.

Moving forward nearly 20 years we come to the real involvement of yours truly on behalf of the Institute in setting up an international event. By 1992 I was chairman of the Meetings Committee. Geoff Leventhall, who had been my predecessor in that role, had the bright

idea of setting up a new series of conferences to be held in European venues in those years when the annual Inter-Noise event was to be held outside Europe. Geoff and Roy Lawrence came up with the idea and name of Euronoise. With typical energy and enthusiasm Roy was soon into the process of deciding a venue – Imperial College London – and I experienced my first hands-on experience of putting together a technical programme. The event was held in the late summer of 1992 and attracted about 200 delegates, with 120 papers being published in three volumes.

One important lesson I learned was the need to have a well-defined structure for the technical sessions well before beginning the process of inviting the submission of papers. It is interesting therefore to read, as I recently did for the first time, the description of the event on the website of I-INCE-USA.

"The Proceedings are attractively printed from author-prepared manuscripts and presented in a readable format. If such an inference may be drawn from the Proceedings, it appears that Euronoise '92 more than achieved its objective of bringing together European acousticians and noise specialists in order to exchange ideas and views on the European scene. For the reader who was not present at Euronoise '92, it is not an easy task to find one's way around in the Proceedings in order to locate papers of interest. There is neither a subject index nor an author index, and the volumes are not subdivided by subjects. The 11-page table of contents is all that the interested reader has to go on. The individual papers are not classified either by subject or by session. Nonetheless, the Proceedings contain a valuable insight into the state of the technology of noise control development on the European scene."

Euronoise '92 is important in other ways, as 1992 was also the year in which the European Acoustics Association was formed. Subsequent years saw a certain amount of tension between various national societies over the ownership of the Euronoise brand. It is now firmly a part of the EAA conference programme, but the IOA can take pride in the certain knowledge that it was made in the UK.

In 1993 the Institute received an invitation from the International Institute for Noise Control Engineering (I-INCE) to submit a proposal to be the host country for an Inter-noise conference to be held three years later. The IOA had organised an Inter-Noise in Edinburgh ten years previously; that conference saw me presenting an Inter-Noise paper, and chairing a session, for the first time.

Looking back it is now clear that the competition among national societies to run an Inter-Noise conference was much less then. Nevertheless we decided that it was worth putting some effort into producing a professional proposal, which was to be submitted to the Executive Board of I-INCE just before the 1993 conference in Leuven in Belgium. Roy Lawrence had already decided there was only one UK city on the list – Liverpool – and he also came up with idea of using the unique Adelphi Hotel. It should be remembered that in those distant days, except for a few in London, there were no major conference centres with the facilities required for an international congress, and we had already decided against a university-type venue. Whilst the hotel had some limitations, and a certain air of faded Edwardian elegance, it did have the physical space and a distinct character.

Together with Cathy Mackenzie and Roy, and with the help of a graphic designer, I put together a glossy brochure on all aspects of the event. This was duly submitted to I-INCE in the USA; I also put together a 20-minute slide presentation (no PowerPoint then). I think it may have helped that at the time NPL was going through a major process of commercialisation, with competitive tendering for research contracts – prompting the succinct remark from Geoff Kerry “Welcome to the real world”. For my part I went for a tourist weekend in Bruges, calling in at the Inter-Noise 93 conference only briefly to make our presentation to the Board. I recall waiting outside the meeting room with two other contenders, a Russian professor who was holding a single A4 page, and another foreign gentleman of a nationality I have long since forgotten. Two days later, an excited Cathy Mackenzie phoned me to say we had been chosen to host Inter-Noise 96. By sheer coincidence, a certain young lady called Nicole Porter, then a newcomer to my staff at the NPL, was in the office at the time. She very soon found herself designated Technical Programme Manager.

The next two years saw the 1996 conference take shape, and I introduced the key difference that there was to be a major reliance on invited papers: we identified a hit list of about 30 world experts on different topics and asked to each find ten authors for invited papers. As a direct result of that simple change from previous practice, the eventual programme for 1996 was the biggest in the 22-year history of Inter-Noise, and the attendance exceeded 1,000 for the first time.

Those intervening years also saw the need to promote the event – and our own Institute – at Inter-Noise 94 in Yokohama, and at Inter-Noise 95 in Newport Beach, California where white baseball caps with the Inter-Noise 96 logo, particularly as modelled by Keith Attenborough, were a popular item. We also arranged for the Los Angeles office of the English Tourist Board to provide life-size cardboard cut-outs of an English policeman and a Tower of London Beefeater to stand by the IOA desk at the 1995 conference. These were very popular with Japanese delegates wanting photos, and they mysteriously disappeared on the final day of that event.

The Inter-Noise 96 event itself, over which I presided as general chairman and IOA President, was fully documented by John Tyler in *Acoustics Bulletin* vol 21 no 5 (September-October 1996) and, whilst not without its imperfections, can certainly be considered a technical and social success. I also like to think that it helped in the promotion of the IOA, nationally and internationally.

A direct consequence of leading the organisation of an Inter-Noise congress is that you join the Executive Board of I-INCE for a period of six years after your own event, primarily to pass on your experience to others for future annual events, but also in more general aspects of the work of I-INCE. I enjoyed that work greatly and reported regularly to Council in my time as President (1996-98), and Immediate Past President (1998-2001). I was also very fortunate in that my successor as President, Ian Campbell, with IOA Council approval, created in 2001 the new post of Vice-president, international relations.

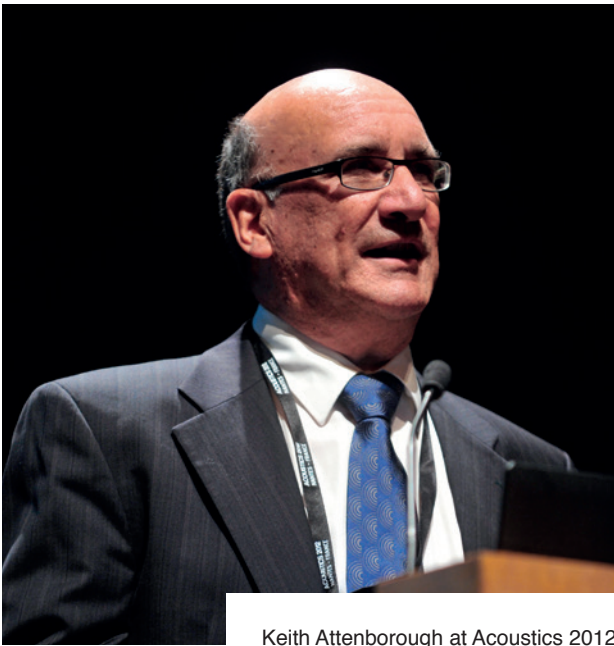
And so it was that in 2001, with the help of Roy Bratby and others, that I was involved in putting together another conference proposal – this time looking six years ahead for the 2007 ICA. I took the

basic template I had used in 1996, but this time with the chosen venue of the Edinburgh International Conference Centre. The proposal was submitted to the ICA Board in the summer of 2001 at the ICA in Rome, but missed out by a narrow margin: the winning bid from Spain apparently undercut our estimated conference registration fee.

However, the investment was not in vain, since five years later, at the Euronoise 2006 conference in Tampere, Finland, I found myself making a successful presentation to the EAA Board on behalf of the IOA to host another Euronoise in 2009, this time in Edinburgh. What a difference ten years makes! The process of putting together Euronoise 2009 now benefitted from all of the technological developments since 1996, with a conference web site, web-based submission of abstracts, papers and presentations, and web-based tools for constructing the documentation for the technical programme. At the heart of the plans was that same idea of maximising the number of invited papers in carefully structured sessions. Again the result was a record number of Euronoise delegates and papers.

The event was also another chance to raise the international profile of the IOA and to make yet more international friends. The traditional Scottish ceilidh at the dinner at Murrayfield stadium contributed to this process – and also provided a unique opportunity to see Presidents and former Presidents wearing kilts.

In these personal reminiscences I have tried to give a flavour of the events in which I was involved over 35 of the 40 years of this Institute's history. Of course, other international conferences have taken place since my own swansong in 2009, and the Institute goes from strength to strength in terms of its international image and profile. Based on the long experience we have, I have every confidence the IOA will go on to bigger and better things. Who knows, maybe another ICA, in 2024, to celebrate our golden jubilee!



Keith Attenborough at Acoustics 2012



Bob Peters addresses Acoustics 2013 in Nottingham



Delegates absorb a point at Acoustics 2013 in Nottingham



2013 - Richard Collman tests a You're Banned rig



2014 - Rob Hill (left) receives an Honorary Fellowship from William Egan, President 2014-16, at the 40th Anniversary Conference



Register of Members



The changing face of Acoustics Bulletin

IOA history timeline

The Physical Society		
1946		Acousticians at Physical Society (PS) propose forming an acoustics group
1947		Acoustics Group of the Physical society officially inaugurated
1951		International Acoustics Congress (ICA) established
The Institute of Physics (IoP) & The Physical Society (IP&PS)		
1958		Physical Society amalgamates with Institute of Physics (IoP) to form IP&PS
1963		Publication of Noise Final Report of the (Wilson) Committee on the Problem of Noise (Cmd 2056)
Society of Acoustic Technology		
1963	<i>EJ Richards</i>	Inauguration of the Society of Acoustic Technology
1965		Provisional Council of the British Acoustical Society
British Acoustical Society (BAS)		
1966	<i>RED Bishop</i>	Inauguration of the BAS, IMechE provides secretariat from Birdcage Walk, London
1967		
1968	<i>EJ Richards</i>	Proposal that UK should host 8th ICA, NE Branch of BAS inaugurated
1969		Rayleigh Medal introduced, Southern Branch of BAS proposed, International Institute of Acoustics & Vibration (IIAV) inaugurated
1970	<i>DG Tucker</i>	BAS Silver Medal (now Tyndall), AB Wood Medal (from IP&PS)
1971		Working party set up to discuss forming new institute, Sixth form lectures established
1972	<i>WA Allen</i>	Aerodynamic noise group inaugurated,
1973		Preparatory Committee (May), Provisional Council (September) of the Institute of Acoustics, ANC established
Institute of Acoustics (IOA)		
1974	<i>RWB Stephens</i>	Inauguration of IOA, IoP provides secretariat from 47 Belgrave Square, London, Committees - Membership, Publications, Meetings, Medals & Awards and Education, 8th ICA Imperial College London,
1975	<i>WA Allen</i>	First IOA AGM, legislative committee set up, Underwater, Industrial Noise and Musical Acoustics Groups formed
1976	<i>CR Dobbs</i>	First edition of <i>Acoustics Bulletin</i> , IOA Professional grades introduced, Speech, Physical Acoustics and Building Acoustics Groups formed
1977		Diploma in Acoustics and Noise Control agreed by Council, Diploma Advisory Board replaces Education Committee
1978	<i>P Lord</i>	First results from Diploma examination, Careers booklet published,
1979		Move of secretariat from IOP to Cathy Mackenzie Management Services (CMMS) in Edinburgh, Cathy Mackenzie becomes secretary, IOA joins International Institute of Noise Control Engineering (I-INCE), First Windermere Conference held
1980	<i>BL Clarkson</i>	Sub-committee looks into IOA future policy on G and B, Professional register of consultants published
1981		South West, North West and Yorks and Humberside Branches formed, Noise Advisory Council disbanded, Education Committee re-established
1982	<i>DE Weston</i>	Hong Kong and East Midlands Branches formed, Stephens Lecture inaugurated, Noise Council proposed, Sixth form lectures re-established
1983		Inter-Noise '83 held in Edinburgh, VP Groups and Branches established, Scottish Branch launched
1984	<i>HG Leventhall</i>	Council agrees to go forward with application to Engineering Council, Code and Rules for Members agreed, Electronic administrative records started

1985		Finance Committee set up, First meeting of joint IoP/IOA Physical Acoustics Group, Separate division to be set up for Engineering Council registrants, G&B constitutions amended, First Autumn conference on Reproduced Sound, First bi-annual G&B Representatives meeting, First Reproduced Sound conference
1986	<i>HO Berkday</i>	Diploma Distance Learning Scheme piloted, Launch of Noise Council in House of Lords, Scottish Branch formally approved
1987		Institution-affiliated status granted by Engineering Council and Engineering Division set up, Acoustics Index launched, London Branch formally approved (to replace London Evening Meetings)
1988	<i>CG Rice</i>	Eastern Branch formally approved, FASE Speech 88 Edinburgh, G and B finances revised
1989		Certificate of Competence in Workplace Noise, Associate Member Grade introduced, Executive Committee set up, Head office moves to St Albans, Keith Rose appointed Advertising and Exhibition Manager, New Sponsor grades introduced
1990	<i>MS Ankers</i>	<i>Acoustics Bulletin</i> increased from four to six issues per year, RWB Stephens Archive proposed following his death in August
1991		Underwater electroacoustic transducers book published, First edition of <i>Register of Members</i> published, Bulletin Editorial Board set up
1992	<i>PD Wheeler</i>	Euronoise Conference, publication of new European Journal discussed with European Societies, European Acoustics Association formed, Electroacoustics Group formed, Environmental Noise Group established
1993		Additional staff appointed following head office move to Agriculture House, Concern over overlapping roles of EAA and FASE, Certificate of Competence in Environmental Noise, Diploma Distance learning package agreed, Revised Code and Rules of Conduct published, Working party on CPD
1994	<i>AN Burd</i>	Midlands Branch formed, Hong Kong IOA formed, First IEng registrations
1995		RWB Stephens lecture upgraded to medal status, Business Review committee established, M&I Group established
1996	<i>BF Berry</i>	Post of VP Engineering established, Grade of Institutional Subscriber established, Post of VP International Liaison established, Inter-Noise '96 Liverpool - a resounding success
1997		HQ staff now employed directly by Institute, Cathy Mackenzie appointed Executive Secretary and Chief Executive (CE) on transitional contract, Roy Bratby appointed Deputy CE in June, then CE in November
1998	<i>IJ Campbell</i>	Council concerned over liabilities if EAA set up as an EEIG, HQ move to St Peters Street, Review of Education policy. Last autumn conference at Windermere Hydro, Noise Council wound up, Irish Branch inaugurated
1999		25th Anniversary conference, Professional Development Committee set up, EAA secretariat established at IOA offices, Second issue of <i>Buyers' Guide</i>
2000	<i>MA Tatham</i>	New CPD scheme, Revised Code of Conduct, Research Co-ordination Committee set up, Education Manager appointed
2001		Plan to reconstitute EAA acceptable to Council, Peter Barnett Memorial Award, Website committee, Distinguished service award. Course in Hand-Arm Vibration
2002	<i>G Kerry</i>	Strategic development Group set up, EPSRC theme day, Industrial Noise Group re-constituted as the Noise and Vibration Engineering Group (NVEG), Dennis Baylis appointed Advertising Manager following death of Keith Rose, Professional Development Committee subsumed into Membership Committee. Peter Barnett Memorial Award, Noise Control in Pubs and Clubs Guide published
2003		Award for Promoting Acoustics to the Public, Technician Member, AB Wood Medal extended to include European candidates, Engineering Medal, Membership passes 2,500
2004	<i>AJ Jones</i>	Archive arranged at Southampton University, Website development approved, Engineering Council granted five year extension, Charity Commission approved changes to Articles, Silver Membership certificate, Publicity and Information officer appointed, Proficiency course in Anti-social Behaviour Noise Measurement inaugurated
2005		Young Person's Award for Innovation in Acoustical Engineering, Central Branch proposed, Changes to Council rules, Young Members representative on Council
2006	<i>CE English</i>	Roy Bratby retires and Kevin Macan-Lind appointed Chief Executive, Membership questionnaire analysed, Membership manager appointed, International meetings in Denmark & Italy organised, First Gerry McCullough memorial lecture
2007		Acoustic Ambassadors initiative, Membership and Publications Managers appointed, New members starter packs introduced, Proposals to revise Diploma syllabus, EAA awards, proposal to change website supplier
2008	<i>JF Hinton OBE</i>	Charitable grant fund set up, Young Members Group proposed, Reserves Policy amended, Council to be more pro-active with CPD, Diploma restructured
2009		Membership in excess of 3,000, Euronoise 2009 record no of delegates, RS celebrates 25th conference, Yorks and Humber-side becomes Yorks and North East Branch, Young Members' Group inaugurated, IOA History booklet proposed, New website goes live, Agreement with IIAV, Charities Commission require maintenance of risk register, Welsh Branch inaugurated
2010	<i>TJ Cox</i>	John Connell awards supported, More publicity given to Council nominations, Meetings policy under review
2011		Five year strategic plan published, Scottish Building Regs. PCT scheme introduced, 10th IC BEN Conference, new member survey proposed, IOA asked to compile Wind Farm noise guidance, Senior Members' Group inaugurated, STEM Acoustic Ambassadors scheme school activity kits, History Committee set up
2012	<i>BM Shield</i>	HQ moves to St. Peter's House, Victoria Street, Articles changed to allow serving formal notices by electronic means, and an increase in Honorary Fellows, Kevin Macan-Lind resigned as CE and Roy Bratby appointed as temporary CE, Sustainable Design Task Force set up. Building Acoustics Measurements course approved
2013		Allan Chesney appointed CE, Strategy meeting held, Committees to have management of their budgets, New website and IT systems, RAE Equal Opportunity Concordat signed, Diversity Working Group set up, Webinar licence approved, Student electronic magazine, IOA GPG to application of ETSU-R-9 published, Film <i>In Pursuit of Silence</i> to be sponsored, New TOR for regional branches agreed, IOA join Parliamentary and Scientific Committee
2014	<i>W Egan</i>	40th Anniversary Conference, Leo Beranek guest speaker

Institute of Acoustics - Honorary Officers

President	
1974-75	Dr R W Stephens
1975-76	Mr W A Allen
1976-78	Prof E R Dobbs
1978-80	Prof P Lord
1980-82	Prof B L Clarkson
1982-84	Dr D E Weston
1984-86	Dr H G Leventhall
1986-88	Prof H O Berktaý
1988-90	Mr C G Rice
1990-92	Mr M S Ankers
1992-94	Prof P D Wheeler
1994-96	Mr A N Burd
1996-98	Mr B F Berry
1998-2000	Mr I J Campbell
2000-02	Prof M A Tatham
2002-04	Mr G Kerry
2004-06	Dr A J Jones
2006-08	Mr C E English
2008-10	Mr J F Hinton OBE
2010-12	Prof T J Cox
2012-14	Prof B M Shield
2014-16	Mr W Egan

Honorary Secretary	
1974-77	Dr A E Brown
1977-83	Dr F Fahy
1983-89	Mr R C Hill
1989-95	Dr D C Hothersall
1995-2001	Dr A J Jones
2001-07	Dr R J Orłowski
2007-10	Prof V F Humphrey
2010-13	Dr N D Cogger
2013-	Mr R Richardson

Honorary Treasurer	
1974-79	Mr R M Taylor
1979-81	Dr H G Leventhall
1981-85	Dr R Lawrence
1985	Mr R Harrison
1985-90	Dr G M Jackson
1990-92	Mr G Kerry
1993-98	Mr G Kerry
1998-2000	Mr K A Broughton
2001-07	Mr K A Broughton
2007-09	Mr A W Somerville
2009-15	Dr M R Lester
2015-	Mr D Wallace

Vice-Presidents	
1975-76	Prof P Lord
1976-78	Prof B L Clarkson
1976-81	Dr M E Delany
1974-77	Mr R A Waller
1977-81	Dr R Lawrence
1978-82	Prof D J Johns
1981-83	Dr H G Leventhall
1981-85	Mr T Smith
1982-84	Mr J Bickerdike
1983-88	Mr M Ankers
1984-86	Dr J Bowsher
1985-90	Mr G Kerry
1986-88	Dr J N Holmes
1988-94	Prof P Lord
1988-94	Dr W A Ainsworth
1990-92	Dr B V Smith
1992-98	Dr R J Peters
1996-98	Prof P D Wheeler
1998-2002	Mr D G Bull
1998-2000	Prof R G White
1996-98	Prof M A Tatham
2001-07	Mr B F Berry
2000-04	Mr C E English
2002-05	Mr I J Campbell
2004-10	Dr B McKell
2005-11	Mr S W Turner
2007-10	Prof B M Shield
2010-	Mr R A Perkins
2010-	Dr W J Davies
2011-	Mr G Kerry

Institute of Acoustics' medals and awards winners

Rayleigh Medal

John William Strutt, Third Baron Rayleigh (1842-1919) is remembered as a most versatile physicist, both as an experimentalist and as a theoretician. A graduate, fellow and finally Chancellor of Cambridge University, he was elected early to Fellowship of the Royal Society of which he was President from 1905 to 1908. He received the Nobel Prize for physics in 1904.

Rayleigh's work covered practically every branch of physics and

he was the co-discoverer of the rare gas argon. In acoustics, he published over 100 articles and his book *The Theory of Sound* remains a landmark in the development of the subject.

The Rayleigh Medal, of gold-plated silver and bearing the portrait of Lord Rayleigh is awarded without regard to age to persons of undoubted renown for outstanding contributions to acoustics. The award is normally made to a UK acoustician in even numbered years.

Year	Award winner				
1969	E Meyer	Germany	BAS	1994	E F Evans UK
1970	R W B Stephens	UK	BAS	1995	R H Lyon USA
1971	S S Stevens	USA	BAS	1996	K Attenborough UK
1972	R E D Bishop	UK	BAS	1997	L Bjorno Denmark
1973	P V Brüel	Denmark	BAS	1998	W A Ainsworth UK
1975	P H Parkin	UK		1999	G C Maling USA
1977	L M Brekhovskikh	USSR		2000	V V Krylov UK
1978	E G S Paige	UK		2001	H Tachibana Japan
1979	E A G Shaw	Canada		2002	P A Nelson UK
1980	P E Doak	UK		2003	H Fastl Germany
1981	K U Ingard	USA/Sweden		2004	A Cummings UK
1982	G B Warburton	UK		2005	H Kuttruff Germany
1983	E J Skudrzyk	USA/Austria		2006	M Barron UK
1984	J E Ffowcs-Williams	UK		2007	M Howe USA
1985	P J Westervelt	USA		2008	C H Harrison UK
1986	E J Richards	UK		2009	C Hansen Australia
1987	M R Schroeder	Germany		2010	R J M Craik UK
1988	D G Crighton	UK		2011	J S Bradley Canada
1989	H E von Gierke	USA		2012	Y W Lam UK
1990	F J Fahy	UK		2013	Jacques Guigné Canada
1991	M A Heckl	Germany		2014	Timothy Leighton UK
1992	Sir James Lighthill	UK		2014	Leo Beranek USA
1993	M A Bruneau	France			

Tyndall Medal

John Tyndall (1820-1893) was active in acoustics before Rayleigh, and Rayleigh actually succeeded Tyndall as Professor of Natural Philosophy at the Royal Institute.

Born in County Carlow, Ireland, he studied chemistry, physics and mathematics at Marburg University (under Bunsen) and was elected a Fellow of the Royal Society in 1852. Later he investigated the acoustic properties of the atmosphere and his volume of lectures

On Sound has been reprinted many times.

Tyndall was a distinguished experimental physicist but is remembered primarily as one of the world's most brilliant scientific lecturers.

The medal named after him, a silver gilt medal, is awarded to a citizen of the UK, preferably under the age of 40, for achievement and services in the field of acoustics.

Year	Award winner			
1975	M E Delany		1996	S N Chandler-Wilde
1978	H G Leventhall		1998	J E T Griffiths
1980	R K Mackenzie		2000	Y W Lam
1982	F J Fahy		2002	T G Leighton
1984	R G White		2004	T J Cox
1986	J G Charles		2006	K V Horoshenkov
1988	M F E Barron		2008	J Kang
1990	N G Pace		2010	O Umnova
1992	S J Elliott & P A Nelson		2012	C Hopkins
1994	R K Moore		2014	S Dance

AB Wood Medal

Albert Beaumont Wood was born in Yorkshire in 1890 and graduated from Manchester University in 1912. In 1915 he became one of the first two research scientists to work for the Admiralty on anti-submarine problems and he later designed the first directional hydrophone for use in submarine detection.

He was well known for his many contributions to the science of underwater acoustics and for the help he gave to his younger colleagues.

The A B Wood Medal and Prize, instituted after his death and as a result of the generosity of his friends on both sides of the Atlantic, is aimed at younger researchers whose work is associated with the sea.

The Silver Medal, parchment scroll and cash prize were awarded from 1970, prior to the formation of the Institute of Acoustics, by the Institute of Physics. The award is made alternately to acousticians domiciled in the UK and in the USA/Canada.

Year	Award winner			Year	Award winner	
1970	B S McCartney	UK	IOP	1993	M D Collins	USA
1971	R E Apfel	USA	IOP	1994	T G Leighton	UK
1972	B Ray	UK	IOP	1995	N C Makris	USA
1973	M C Hendershott	USA	IOP	1996	Not awarded	
1974	Not awarded			1997	G B Deane	USA
1975	Not awarded			1998	M A Ainslie	UK
1976	P A Crowther	UK		1999	M V Trevorrow	USA
1977	P R Stepanishen	USA		2000	G J Heald	UK
1978	A D Hawkins	UK		2001	J A Colosi	USA
1979	P H Rogers	USA		2002	S D Richards	UK
1980	I Roebuck	UK		2003	A P Lyons	USA
1981	R C Spindel	USA		2004	E Pouliquen	UK
1982	M J Buckingham	UK		2005	A Thode	USA
1983	P N Mikhalevsky	USA		2006	Not awarded	
1984	M J Earwicker	UK		2007	P S Wilson	USA
1985	T K Stanton	USA		2008	J Bell	UK
1986	P D Thorne	UK		2009	K Sabra	USA
1987	D Chapman	Canada		2010	M Zampolli	Europe
1988	V F Humphrey	UK		2011	K Becker	USA
1989	M G Brown	USA		2012	J Smith	UK
1990	A P Dowling	UK		2013	B T Hefner	USA
1991	M B Porter	USA		2014	A von Benda-Beckmann	Europe
1992	C H Harrison	UK				

RWB Stephens Medal

The RWB Stephens Medal is awarded in memory of Dr RWB Stephens, the first president of the Institute of Acoustics. His key interests lay in physical acoustics and ultrasonics but he influenced generations of students through his continuing work in education.

The medal is awarded in alternate years for outstanding contributions to acoustics research or education.

The winner of the medal would normally be invited to give a lecture at either the Spring or Autumn Conferences.

Year	Award winner
1994	J Blauert
1995	A Lara-Saenz
1997	R C Chivers
1999	D C Hothersall
2001	H G Leventhall
2003	G R Watts
2005	M Vorländer
2007	M Griffin
2009	T G Leighton
2011	B M Shield
2013	R Peters

IOA Engineering Medal

The Institute of Acoustics Engineering Medal is awarded on a bi-annual basis to registered engineers at Chartered, Incorporated or Engineering Technician grade in recognition of their outstanding contribution in the field of acoustical engineering.

Year	Award winner
2004	R W Harris
2006	B Hemsworth
2008	R G White
2010	A T Fry
2012	D T Sugden
2014	A Dowling

The Peter Lord Award

The Peter Lord Award is awarded annually for a building, project or product that showcases outstanding and innovative acoustic design. It will be presented to the team or individual responsible for the acoustic design, and will consist of a plaque to be displayed on the winning construction or project (where possible), together with a trophy and certificate for the winning team or individual. Peter Lord, a former IOA President who died in 2012, was a hugely influential

figure in UK acoustics, being a driving force behind the setting up of the Institute, founder of the Applied Acoustics department at the University of Salford and first editor-in-chief of *Applied Acoustics*.

Year	Award winner
2014	University of Sheffield, School of Architecture

Honorary Fellowships

Honorary Fellowships are awarded to distinguished persons intimately connected with acoustics, or a science allied thereto, whom the Institute wishes to honour for exceptionally important services in connection therewith, and any distinguished person whom the Institute may desire to honour for service to the Institute

or whose association therewith is of benefit to the Institute, shall be eligible to become Honorary Fellow of the Institute.

The total number of Honorary Fellows shall not exceed 2% of the number of persons elected as Corporate Members of the Institute.

Year	Award winner	Year	Award winner
1974	W P Mason USA	2000	A J Fourcin UK
1975	H Bagenal UK	2002	A Burd UK
1975	D G Tucker UK	2003	C G Rice UK
1977	R W B Stephens UK	2003	P E Doak UK
1977	L Cremer Germany	2004	R G White UK
1977	R B Lindsay USA	2004	J G Walker UK
1978	Sir James Lighthill UK	2004	L L Beranek USA
1978	W A Allen UK	2005	H G Leventhall UK
1978	E J Richards UK	2007	B M Shield UK
1980	J Lamb UK	2007	P D Wheeler UK
1980	W Taylor UK	2007	E R Dobbs UK
1981	F Ingerslev Denmark	2008	B F Berry UK
1985	C A Taylor UK	2008	M S Ankers UK
1985	Sir A B Pippard UK	2008	I J Campbell UK
1986	P V Bruel Denmark	2008	D G Bull UK
1986	C M McKinney USA	2008	G Kerry UK
1989	M E Delany UK	2008	A J Jones UK
1992	P Lord UK	2008	M A Tatham UK
1993	B L Clarkson UK	2009	B Berglund Sweden
1993	D W Robinson UK	2010	L Cauty UK
1994	A R Dove UK	2010	C E English UK
1994	G H Vulkan UK	2011	K Attenborough UK
1995	J M Bowsher UK	2012	S W Turner UK
1995	J N Holmes UK	2012	J Hinton UK
1996	D T Sugden UK	2013	R Bratby UK
1996	W W Lang UK	2014	T Cox UK
1998	C M Mackenzie UK	2014	K Dibble UK
1998	F J Fahy UK	2014	R Hill UK
2000	R Lawrence UK		

Peter Barnett Memorial Award

Inaugurated in 2001 by the Electroacoustics Group, the Peter Barnett Memorial Award honours Peter Barnett who died the previous year. This award recognises advancements and technical excellence in the fields of electroacoustics, speech intelligibility, and education in acoustics & electro-acoustics and is awarded annually. Peter had a wide range of interests in acoustics but primarily in

the fields of electro-acoustics and speech intelligibility. A stalwart of the Reproduced Sound series of conferences, he was known for his mathematical approach to problems. The award is a silver miniature "Head and Torso Simulator" or binaural head. Periodically an additional award is made to students working in the field of electroacoustics.

Year	Award winner	Year	Award winner
2001	H Steeneken/T Houtgast	2002	W Ahnert
2003	F F Li (Student Award)	2003	P A Mapp
2004	J A S Angus	2005	P V Bruel
2006	E Start	2007	G Bank
2008	D Griesinger	2009	N Thiele
2009	E E Greenland (Student award)	2010	L L Beranek
2011	R W Walker	2012	P Brown
2013	L G Augustina	2014	M Hawksford

Award for Promoting Acoustics to the Public

The Award for Promoting Acoustics to the Public was created to encourage activity that generates greater awareness of the importance of acoustics outside the acoustics' fraternity, that is to people without acoustical expertise. The award may recognise either a single piece of outstanding work or sustained long-term activity. The closing date for submissions is 31 May annually, but an award will only be made in any given year to a worthy recipient. Nominations may be made by third parties or by the individual concerned, in either case with documented evidence of the work involved. The award itself is an engraved glass trophy, which together with a written citation will normally be presented at an Institute conference.

Year	Award winner
2005	B E Bird
2006	W Sadler
2007	D B Sharp
2008	R A Collman
2009	T J Cox
2010	M Stevens
2011	S Dorney
2013	G Memoli
2014	A Krasnic

Award for Services to the Institute of Acoustics

The Award for Services to the Institute was introduced so that the Institute could publicly acknowledge the debt owed to individual members who have provided sustained assistance over the years in some way with the running of the Institute. The award is a simple

memento with a written citation and is preferably to be presented at a conference. There is no time scale or limit on the numbers of this award.

Year	Award winner	Year	Award winner
2002	D G Bull	2002	J Tyler
2002	D Connor	2002	K Dibble
2003	J Miller	2003	R Hill
2004	S G Chiles	2004	P E Sacre
2005	P F Dobbins	2005	J Sargent
2006	R Walker	2007	M E Fillery
2007	J G Charles	2008	R G Tyler
2008	A E Watson	2008	K A Broughton
2008	R J Peters	2008	J R Dunn
2009	B F Berry	2009	P A Mapp
2009	P T Freeborn	2009	A J Garton
2010	S Omasta	2010	O Hetherington
2010	B McKell	2011	A Jellyman
2011	T Clarke	2011	J Steadman
2012	I Bennett	2012	D Baylis
2012	B Tunbridge	2013	A Mornington-West
2013	D Sproston	2013	J Lee
2014	J Bowsher		

The IOA Young Person's Award for Innovation in Acoustical Engineering

The IOA Young Person's Award for Innovation in Acoustical Engineering is awarded every two years. It is designed to recognise excellence and achievement in acoustical engineering among those who are aged under 35 or early on in their careers in industry. It departs from the usual format in that it is also intended to increase awareness of the value of acoustic engineering and technology to the community at large.

Year	Award winner
2005	A Hurrell
2007	C Cousins
2011	G Zepidou
2013	M Simon

Professor D W Robinson Prize

The Professor D W Robinson Prize is made jointly with the Institute of Sound and Vibration Research in memory of the late Douglas Robinson and it is presented annually to the writer of the best ISVR MSc dissertation on a topic in the human aspects of sound or audiology.

Year	Award winner
2000	YH Tsui
2001	S Blandy
2002	A Dyer
2003	J Bevan
2004	T Draper
2005	HY Loo
2006	W Ellis
2007	J Sandhu
2008	A Wheatley
2009	G Court
2010	N Crowe
2011	P Firth
2011	D Lumb
2012	S Meehan
2014	L Evans

Examples of IOA Diploma project titles

(Published January 2013, for 2011-2012 year)

Hearing protection in the live event industry	Evaluation of noise generation at children's outdoor play areas
Movable walls: production methodology	Comparison between an EBM-PapstRadiCal and a standard centrifugal fan
Noise levels from kerbside glass collection	Determination of transmission loss performance of elastomeric materials
Drive-by test at Donington race track	Review of strategies to abate noise nuisance caused by licensed premises
Suitability of BB93 to assess existing school buildings	Railway noise and annoyance from a London overground railway line
Critical assessment of noise impact of bird scarers	Noise exposure and small scale agriculture
Friction modifiers and acoustic roughness of rails	Assessment of effect of wind on road traffic noise at a site for housing development
Tonal correction feature of BS.4142	Sound control of noise from a church
Classroom acoustics and BB93	Measurement of train wheel screech affecting a block of flats
Comparison of predicted and measured reverberation time	Review of the Microgeneration Certification Scheme & protection against noise disturbance
Airborne noise and impact testing	Real noise in an average home and its annoyance factor
Measurement of low level noise	An investigation into noise from power shower pumps
Drifting at Santa Pod raceway	Measurement and analysis of noise and vibration impacts of speed humps
Assessment of perception of movable walls	Evaluation of mobile phone acoustic measurement app technology
Speech intelligibility in masonic temples	Investigation into sound propagation from an outdoor concert
Relationship between music type and annoyance	An exploration and definition of the purpose of music in shops
Noise impact of night time deliveries	How the edges of a material affect the measured absorption coefficient
Impact sound insulations: direct-to-joist solutions	Alternative noise mapping using measured noise and GPS points
Application of Noise Act 1996 to licensed premises	Influence of topography on commercial aircraft noise in the Calder valley
Sound Insulation investigation of a recording studio	The sound insulation properties of music teaching and recording facilities
Effects of placing acoustic weather louvres within near field of a plant room sources	Acoustic assessment of a huddle-hub

A study of acoustic characteristics of commercial extraction systems	Improving the concentration, productivity and staff satisfaction in an open plan call-centre through better acoustics
Hand-arm vibration assessment of grounds maintenance equipment	Using a head and torso simulator (HATS) to measure speech intelligibility
Comparison of methods for calculating wind turbine noise levels	Reducing noise from a high output data projector
Assessment of ETSU averaging periods	Comparison of attenuation provided by communication ear plugs (CEP) in combination with a Mk4B4L flying helmet, and CEP alone
Urban and rural environmental noise exposure	Evaluation of novel sound attenuation measures for rifle fire
A comparison of BS 5228-1 measurement data with real life noise levels	A comparison of noise generated in Watford town centre by two methods of street cleaning
An assessment of predicted noise associated with a residential development in a remote rural environment and the use of PAN1/2011's Technical Advice Note as appropriate qualitative planning assessment	Likelihood of annoyance from gas utilisation plant derived low frequency noise
Wind turbine directivity	Investigation into the effectiveness of a range of outdoor microphone windshield protection systems and their effect on noise levels obtained when in use
The effect of noise exposure from regular attendance at music entertainment venues on noise induced hearing loss among young adults	An exploration of alternate methods of acoustical analysis
An investigation into the potential risks to pedestrian health and safety caused by 'silent running' electric vehicles	What are good quality acoustics: objective and subjective assessments of smartphone audio playback
Sound transmission through varying apertures of sash windows	Noise control of basement supply fans
Performance of noise barriers of different designs	An investigation into noise from whole house ventilation and heat recovery system and its effect on background noise in an open plan office
Audibility of a domestic smoke alarm in a single level property	An assessment of a low-frequency noise complaint
The effectiveness of wooden clapper boards as an impulsive source	Calculating the sound power of an engine
Effect of resilient mounting of a light switch on impact sound through a wall	Skateboard noise in relation to noise nuisance
Accuracy of sound level meter phone apps compared with B&K 2250	Evaluation and comparison of low cost iPhone noise meter apps for use in initial assessments of noise problems
Comparison of measured and predicted wind turbine noise	Project for the Live Music Act 2012
Multi-cellular array technology in modern concert systems	A study of reverberation time and speech intelligibility in a reverberation room used for conferencing devices
Effectiveness of a barrier in attenuating petrol generator noise	Noise in open-plan offices
Sound reduction through an open window	A noise assessment after relocation and redesign
The variability of bus noise levels	Performance of a partial enclosure: a CNC router office layout case study
Assessment of the acoustics of a room to be used as both a Cinema and a Lecture Theatre	Amplitude modulation in large wind turbines



 Institute of
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