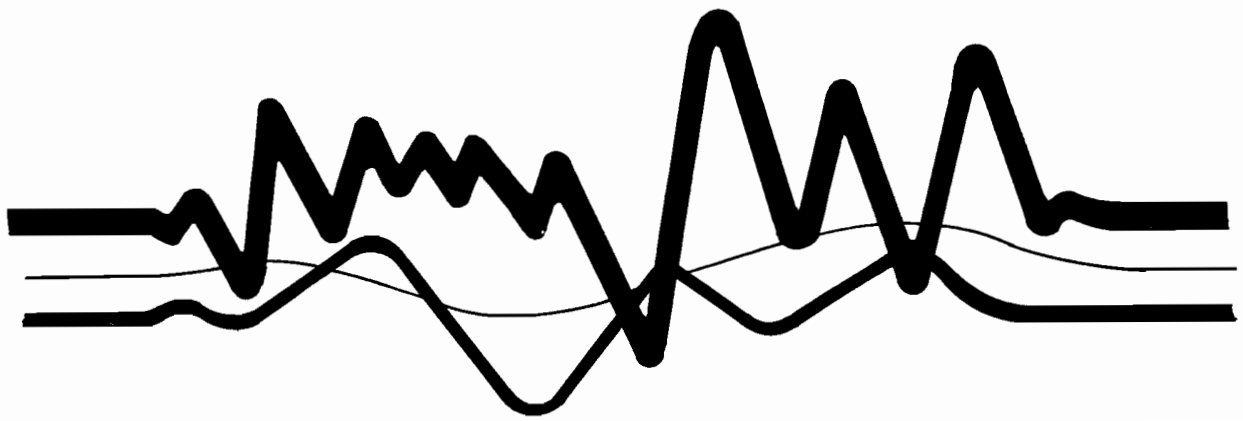
Marion Burgess

The Bulletin

OF THE AUSTRALIAN ACOUSTICAL SOCIETY

Volume 7,Number 1, April 1979



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Address for Correspondence to The Bulletin

Dr. R.J. Alfredson, Department of Mechanical Engineering, Monash University, Clayton, Vic., 3168.

THE BULLETIN
OF THE
AUSTRALIAN ACOUSTICAL SOCIETY

Volume 7, Number 1, April 1979

EDITORIAL

It was with reluctance that I accepted the position of Editor of the Bulletin for a one year period. The thought of three issues instead of the customary four suggested however that the business of obtaining copy might be eased and that it would not be necessary to pad out the Bulletin with articles I had written or had copied directly from other sources.

Of the 20 or so letters written to various individuals within the Society inviting copy, only two replied on time, and the great majority not at all. Still that leaves about 400 members who could have, on their own initiative offered something but chose to do nothing. Is the problem one of inferiority, or fear, or is the Bulletin seen as worthless, or somebody else's responsibility? Whatever it is, the problem is probably not unique to this Society.

This issue of The Bulletin has an obvious Melbournian flavour. As noted above it is the result of writing numerous letters and of being particularly persistent in telephoning. The support received from the Bulletin committee has been a constant source of inspiration.

The Bulletin exists for the benefit of the whole of the Society and not for a few members in Melbourne. I hope the next issue will be more balanced in its content with each State Division contributing some 6 pages - not blank.

Robin Alfredson
Editor

THE BULLETIN OF THE AUSTRALIAN ACOUSTICAL SOCIETY

Volume 7, Number 1, April 1979

- The Bulletin is published by the Australian Acoustical Society, Science House, 157 Gloucester Street, Sydney, NSW, 2000

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The Society values greatly the support given by the Sustaining Members listed below and invites enquiries regarding Sustaining Membership from other individuals or corporations who are interested in the welfare of the Society. Any person or corporation contributing $160.00 or more annually may be elected a Sustaining Member of the Society. Enquiries regarding membership may be made to The Secretary, Australian Acoustical Society, Science House, 35-43 Clarence Street, Sydney, N.S.W., 2000.

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NEWS & NOTES

INDUSTRIAL NOISE RESEARCH AT ISVR

As part of my sabbatical leave, I spent 5 months working with the "Industrial Noise Research and Development Group" headed by Professor E.J. Richards at the Institute of Sound and Vibration Research, Southampton University.

The group was organised 5 years ago by Professor Richards and has been funded by the "Science Research Council", "The Drop Forge Research Association", and "The Machine Tool Industry Association". As such it has to report back to each of these organisations on the work being done and submit proposals for future efforts in order to obtain money to remain in existence. As part of the interaction with the aforementioned benefactors, the group measured and analysed sound from "noisy machines" for specific industrial companies. This was done on an ad hoc basis. On the personnel side, the group had three Research Fellows, one Professional Officer, two Academics, and two Graduate Students. Thus a major funding effort (200,000 a year) was needed to support such a group interested only in industrial noise, and this task was shouldered by Professor Richards.

Currently the three major areas in which research is being conducted are General Industrial Noise, Drop Forge Noise, and the measurement of Radiation Ratio, as described below.

(a) Industrial Noise

Industrial Noise covers a broad range of noises such as that from lathes, compressed air, punch presses and drop forges. The ISVR group concentrated mainly on studying transient/impulsive noise sources such as punch presses, croppers, and drop forges, and on the optimum use of tool parameters to reduce punch press noise. This work was in addition to that being done at Paisely Institute of Technology, and that performed at North Carolina State University. The studies have shown that the rms of the transient sounds can be reduced by more than 10 dB in some blanking operations by changing the percentage clearance from about 20% to 4%. Peak sound pressure levels were reduced by about 15 dB for the same situation. Noise reductions of about 6 dB could be obtained by reducing the punch penetration from standard settings to the minimum possible value for blank ejection.

(b) Drop Forge Noise

Noise from drop forges falls into two categories a) solid body acceleration noise i.e. sudden movement of the hammer, and b) ringing noise. Both theoretical and experimental data have indicated that solid body acceleration noise to be of only minor importance for the daily noise dose of a drop forge operator. It is believed that ringing of the hammer and forge structure are the major sources of the noise dose of a forge operator. Analysis of ringing noise from forges is presently proceeding on two fronts, one being the development of a model drop forge and the second being the analysis of noise from actual operations.

The outcome of these efforts will finally determine the contributions of solid body acceleration noise and ringing noise to the daily noise dose of drop forge workers.

(c) Radiation Ratio Testing

Considerable effort is being directed to appreciating fully the features of ringing noise of plates, beams and other structural components of machines due to direct impacts or transferal bursts of vibrational energy from other sections of a built up structure. The amount of sound energy radiated by these substructural elements can be calculated if the radiation ratio and the mean square space averaged velocity of the structure are known as functions of frequency. The mean square space averaged velocity can be measured during the operation of a machine but the radiation ratio's have to be determined in a reverberation chamber. Radiation ratios for beams, and plates of various values of damping and construction were being determined for use in predicting sound radiation of these components. A theory for sound radiation from elliptical beams due to bending wave propagation, was developed, radiation ratios were calculated and the theoretical work was verified in reverberation tests. The theory was extended and verified for non-elliptical shaped beams such as I beams, these results will be available shortly.

(d) General Comments

The overall attitude of British industry to noise control research/funding is similar to that in Australia. It can be described simply as an Ostrich sticking its head into the ground. The possibility of possible conflicts between management and unions and resulting work stoppages, usually prevents the men on top from initiating any development effort. To quote Professor Richards "Investigating industrial noise is similar to investigating the Mafia, no one is interested". This attitude in due course will reap its own reward, that of further worker frustration which will generate further obstinance on the part of the management to do anything else but provide ear defenders. The way to industrial noise research is still open but better co-operation between management and labour is needed before the university can play its proper role.

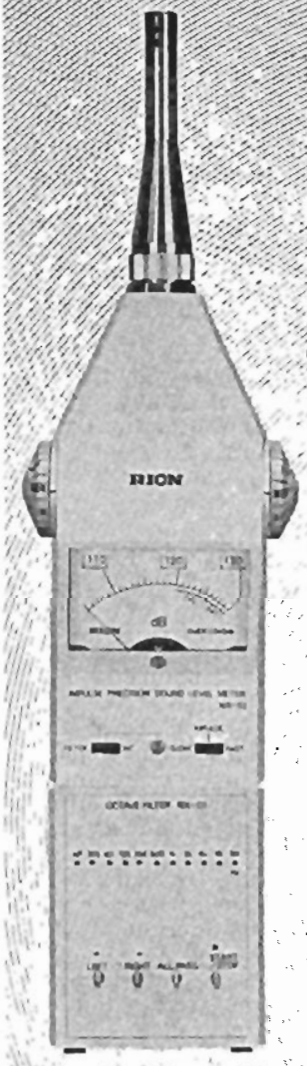
Leonard L. Koss
Monash University

NEW RELEASES!

The RION state of the art range of sound level meters offers a welcome alternative for convenient and effective sound level measurement. The range comprises four new instruments, the NA-21 and 61 offering the additional facility of impulse measurement. Utilising highly stable ½" condenser microphones on the precision NA-60/61 sound level meters, and 1" units on the NA-20/21, acoustic calibration is simply accomplished using companion pistonphones NC71,72. In conjunction with their 1/3 or 1/1 octave filter units, these instruments combine measurement versatility with simplicity of operation to give you a practical, economical solution to a variety of noise measurement problems

FEATURES:

- Measurement range 25 to 130 dB (A).
- True R.M.S. detector for handling signals of high crest factor.
- Large, easy to read linear scale meter.
- Designed for single hand operation.
- Internal calibration oscillator.
- Compact and light weight (800 gms).
- Available with 1/1 octave or 1/3 filter units.
- A, C and flat response.
- Fast/slow meter dynamic characteristics (Impulse Model NA21-NA61).
- AC output facility for level recorder, etc.
- NA 60/61 conforms to IEC draft type I, IEC Pub,-179 and 179 S. NA 20/21 conforms to IEC draft type II IEC Pub.–123.



Sound Level Meter Model NA61 with Model NX-01 Octave Filter Unit

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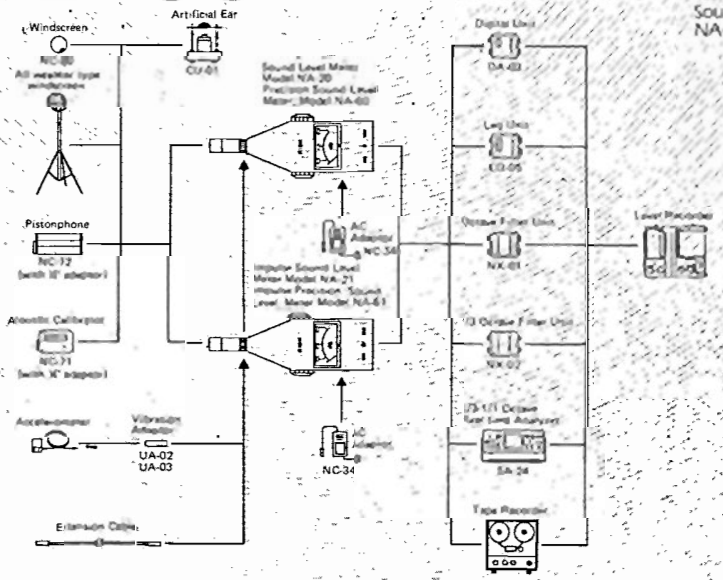

BLOCK DIAGRAM SHOWING POSSIBLE SYSTEM VARIATIONS USING ASSOCIATED RION INSTRUMENTS.

For further information on the range of RION sound level meters contact:–

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ON THE MEASUREMENT OF THE SOUND OF THE HUMAN FOETUS

A minor project currently underway at Monash University is being conducted jointly by the Department of Obstetrics and Gynaecology and the Department of Mechanical Engineering. Essentially the project aims to obtain a better appreciation of the character of the sound radiated by the human foetus. The original thought was that much of the sound may be in the infrasonic region and this may contain useful information that at present is not being perceived.

To date a single trial has been carried out in the Anechoic Chamber of the Department of Mechanical Engineering on a patient who was at that stage estimated to be within two weeks of delivery. The chamber was needed to provide the required quiet environment.

A Bruel and Kjaer type 4146 microphone connected to a type 2631 microphone carrier system formed the basis of the measuring system. The microphone was placed close to the skin of the abdomen and maintained in that position by a specially designed holder. The signal from the carrier system was amplified (band pass 0 to 100 kHz) and stored in the HP21MX computer via the high speed analogue to digital converter.

A typical result is shown in Figure 1. It is immediately obvious that the signal is predominantly low frequency. Spectra, which are not shown, indicated that there was virtually no component above about 200 Hz and that the greatest amplitudes occurred at the lower frequencies say below 5 Hz. It is clear also that there is some periodicity about the pattern with a surge occurring roughly every 0.75 seconds. Such a surge of course would not be audible. It corresponds to about 80 beats per minute and is almost certainly associated with the pumping action of the mother's heart and arterial system. Much remains in the signal which is unexplained at this stage.

Inspection of the signal also shows that there are present, from time to time, small higher frequency ripples. It was decided to investigate these further by digitally filtering the signal so that only components above about 30 Hz were present. The result, shown in Figure 2, corresponds roughly to that part of the total signal which would be heard using normal listening procedures. The amplitude of the filtered signal is roughly 0.1 that of the original signal indicating that about 90% of the total signal goes undetected. A new periodic pattern now emerges with a period of about 0.4 seconds. This corresponds to about 150 beats per minute and is almost certainly associated with the heart of the foetus. This fundamental frequency (2½ Hz)would not be heard but what would be heard is the rapid oscillation shown in the figure each 0.4 seconds. Closer examination shows in fact that there is a second, smaller amplitude oscillation midway between the major oscillations and this produces the familiar 'lub-dub' sound of the heart.

A second approach that was used to appreciate the meaning of the total signal was that of playing the stored signal from the computer, at a speeded up rate, through a loud speaker system. Thus components which were previously inaudible, due to their low frequency, now became audible. Suggestions about the interpretation of the signal are welcome.

Dr. R.J. Alfredson,
Monash University

FIGURE 1

"SOUND" RADIATED BY ABDOMEN

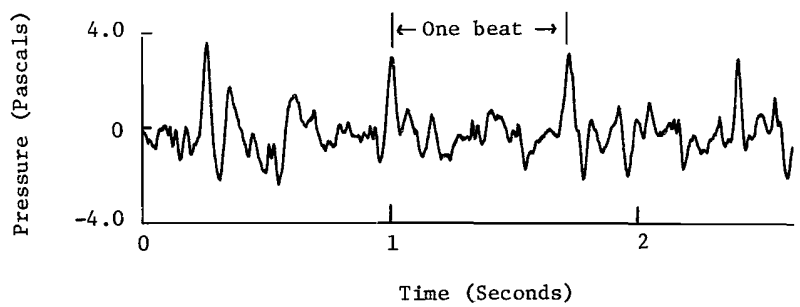
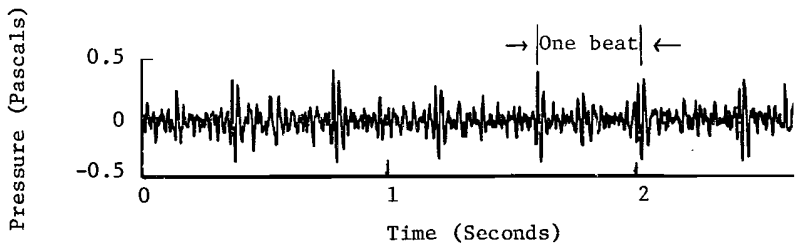


FIGURE 2

AUDIBLE SOUND RADIATED BY ABDOMEN



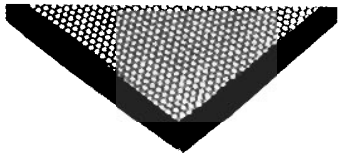
ABSORPTION

SOUNDFOAM

Urethane foam developed specifically to absorb maximum sound energy with minimum weight and thickness. Used to absorb airborne noise in industrial and EDP equipment, machinery enclosures, over-the-road and off-highway vehicles and marine and airborne equipment. Meets UL 94, HF-1 flame resistance test procedure.

SOUNDFOAM (Embossed)

The surface pattern increases sound absorption performance 25 to 35 percent in the most critical low and mid-frequency bands when compared to other foams of the same thickness and density. Ideal solution for low frequency absorption problem. Meets UL 95, HF-1 flame resistance test procedure.



CABFOAM

An outstanding sound absorbent foam with a tough, abrasive-resistant film surface designed specifically for use where unprotected foams won't hold up, and where appearance is important, such as in over-the-road and off-highway vehicle cabs and equipment enclosures.

SOUNDFOAM (With Films)

Highly efficient Soundfoam acoustical foams are available with a surface of Tedlar, metalized Mylar, urethane film or vinyl film. Surface treatment provides attractive appearance and resistance to various chemicals and sunlight.

SOUNDFOAM
(With Perforated Vinyl)

Provides a tough, handsome finish for use in vehicles and other places where appearance is important. Leather-looking surface is bonded to highly efficient acoustic foam.

DAMPING

GP-2 DAMPING SHEET

A thin (0.050") sheet of pre-cured damping compound with pressure sensitive adhesive backing. Easily and inexpensively die cut and shaped to fit and form to flat areas and simple curves.

FOAM DAMPING SHEET

Consists of a thickness of embossed foam bonded to a sheet of highly efficient GP-2 damping material. Provides a single solution to damping and absorption problems.

DYAD

A polymer specifically developed to provide effective constrained layer damping on thick, heavy, metal plates. Applied by cementing the polymer sheet to both the structure being treated and a metal constraining layer.

EPOXY 10

A quick curing resin based damping paste which can be applied by trowel or spray. Completely resistant to severe environmental conditions, including water, acid and alkalis. Popular for marine and outdor applications.

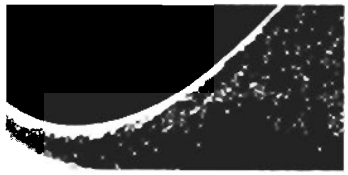
GP-1 DAMPING COMPOUND

A non-toxic, non-flammable plastic which is applied by trowel or spray. Cures quickly in air or oven. A thin coating on steel (1/2 to 1 times metal thickness) removes tinniness and ringing.

BARRIERS

SOUNDMAT LF

Soundmat LF is made up of a vibration isolation layer of foam, a lead septum sound barrier, and a layer of embossed foam to provide maximum absorption, together with noise attenuation.



SOUNDMAT FV

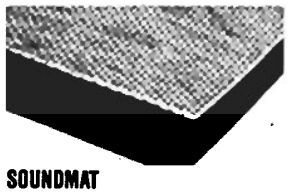
Soundmat FV has 1# limp mass barrier layer bonded to a 1/4 inch layer of acoustic foam. A heavy, scuff-resistant black vinyl skin is optional. Particularly for vehicle cab floors and bulkheads. Also used as pipe lagging.

SOUNDMAT FVP

Consists of a clossed cell, hydrolytically-stable foam isolator and a layer of open cell Soundfoam M, with a lead barrier between the two. The surface is a tough, wear-resistant 1# mass for additional transmission loss.

SOUNDMAT LGF

An acoustic absorption/barrier material with a lead septum sandwiched between two layers of inert glass fibers. Designed for "fire hazard" applications. Will not support combustion or sustain flame. Excellent resistance to organic and inorganic chemicals.



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(With perforated vinyl)

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TENTH INTERNATIONAL CONGRESS ON ACOUSTICS

Sydney, Wednesday 9 to Wednesday 16 July 1980

"ACOUSTICS IN THE 1980'S"

"Acoustics in the 1980's "is timely at the beginning of a new decade and especially fitting for the 10th Congress. Many changes have occurred in acoustics since the 1st ICA was held in Delft in 1953 and it is hoped that this Congress will provide opportunities for taking stock, appraising new initiatives in existing fields and also exploring the areas in which new developments are likely. Invited papers will be presented by distinguished acoustical experts and there will be ample opportunity for the presentation of contributing papers. It is also planned to hold a series of workshops in which panels of experts will discuss progress in selected fields of interest.

VENUE AND ACCOMMODATION

The 10th ICA will be the third held outside Europe, and the first to be held in the Southern Hemisphere. The Congress will be held at The University of New South Wales, which is located in Sydney, the harbourside capital of New South Wales and Australia's oldest city. A range of accommodation will be available at conveniently located hotels and also in University Colleges on the Campus.

EXHIBITIONS, TECHNICAL VISITS, SOCIAL ACTIVITIES

An Equipment, Materials and Instrumentation Exhibition will be held in conjunction with the Congress and visits to acoustic laboratories and other scientific facilities will be arranged. A full social programme, including a banquet, evening entertainment and excursions will complement technical sessions.

TRAVEL, TOURS, STOP-OVERS

The official overseas carrier for the Congress is Australia's national airline, Qantas, and Trans-Australia Airlines has been appointed official carrier within Australia. The expert staff of both airlines can provide practical assistance in planning itineraries, including stop-overs en route and pre-and post-conference tours within Australia. Contact your local travel agent or one of the many Qantas Offices around the world.

FURTHER INFORMATION

Please contact

THE AUSTRALIAN ACOUSTICAL SOCIETY,
10 ICA EXECUTIVE COMMITTEE,
SCIENCE CENTRE,
35-43 CLARENCE STREET,
SYDNEY, NSW, 2000
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SATELLITE SYMPOSIA

Adelaide, 7 - 8 July, 1980: Engineering for Noise Control.
Perth, 18 - 19 July, 1980: Basic Causes of Noise Deafness.

FIRST NOTICE
1979 SOCIETY ANNUAL GENERAL MEETING DINNER AND CONFERENCE

Victoria Division will host this year's A.G.M./ Dinner and Conference. These events will take place in Melbourne.

SOCIETY ANNUAL GENERAL MEETING AND DINNER

Date: Friday 21 September, 1979
Venue: Parkville (Location to be advised)
Functions: The Annual General Meeting of the Society will be held in the evening, and will be followed by a dinner.

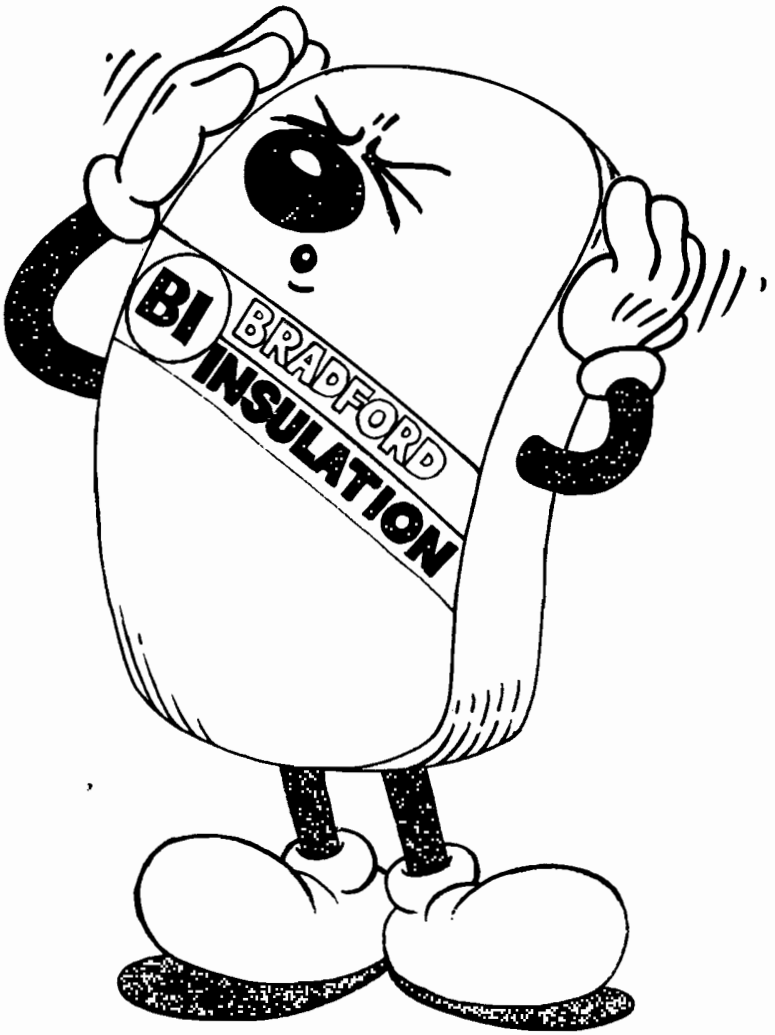
CONFERENCE "BUILDING ACOUSTICS DESIGN CRITERIA"

Date: Saturday 22 September, 1979
Venue: National Science Centre,
191 Royal Parade, Parkville.
Attendance: Attendance at the conference will not be restricted to Society members. It is hoped to attract interested people from the fields of architecture, building and hearing conservation.

It is envisaged that in the region of eight papers will be presented by invited speakers. They will deal with aspects of hearing conservation, airborne transmission and absorption, structure-borne transmission and building acoustics in general. Reference will be made to current standards and codes of practice. Lunch will be provided at the National Science Centre. It is anticipated that the conference will conclude by 4.30 p.m. Complete details will be distributed later regarding the A.G.M., Dinner and Conference, with provision of a Registration Form.

K.R. Cook
Convenor
Conference Sub-Committee

RINGING EARS?



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SOME IMPRESSIONS OF THE JOINT MEETING OF THE ACOUSTICAL SOCIETY OF AMERICA AND THE ACOUSTICAL SOCIETY OF JAPAN, HONOLULU, HAWAII, NOV. 27- DEC. 1 1978

This Meeting, the 96th held by the Acoustical Society of America, was the first to be held away from the US mainland. In fact, for once, the Australian contingent travelled a shorter distance than many of the East Coast Americans and Canadians. The total registration was, I believe, in the vicinity of 1000 people, about 200 of whom were members of the Japanese Society.

Although the meeting venue, the Sheraton Hotel on Waikiki Beach, might tempt a cynic to wonder at the seriousness of the delegates, a glance at the published programme would soon allay that fear. Some 68 sessions were programmed, with 7 to 9 sessions in parallel. The morning sessions commenced at what was to me the unheard of hour of 8 a.m.; there was a substantial mid-day break before the after sessions began at 2 p.m. The evenings, too were programmed for further sessions, or for open meetings of the various Technical Committees of the Acoustical Society of America. A technical exhibition was open from 6.45 a.m. every day, and as an encouragement to people to attend the first papers, a complimentary continental breakfast was served in the exhibition area (so I am told!). The only official night off was the evening of the Social Hour and Banquet - the latter consisting of a very elaborate Chinese banquet, interspersed with the presentation of awards to members of both Societies and a very interesting performance of traditional Hawaiian songs by the Prince Kuhio Hawaiian Civic Club Choral Group. In spite of the arduous nature of the meeting, the Hawaiian ambience and superb climate ensured that everyone relaxed and apparently thoroughly enjoyed it.

Some of the more interesting technical papers I attended included - the opening plenary session, at which Dr. James Flanagan and Dr. Tadamoto Nimura, the presidents of the two societies, spoke; and a Community Noise Legislation Workshop which was sponsored jointly by the Coordinating Committee on Environmental Acoustics of the ASA and Citizens Against Noise, Honolulu. The latter is the largest citizens group concerned with noise in the United States and it conducts a vigorous education and publication programme. Another speaker at this session was Barry Leshowitz who had just completed his period as Congressional Fellow with the U.S. Senate - he related his experiences and explained "What the Legislator Needs from the Acoustician". My interests were mainly in the Architectural Acoustics and Noise sessions, and I frequently had to make a difficult choice between papers presented in parallel. One unusual session dealt with the environmental design of spaces for the sensorially handicapped. The panel consisted of people from various disciplines and the discussion was fruitful - one speaker described a residential school for deaf and blind children, and the difficulties experienced in providing an adequate fire alarm system. The final choice was an adaptation of bed 'vibrators' to arouse children who neither hear nor see, if a fire occurs when they are asleep. The particular problems associated with open planning, either in classrooms or in offices were also explored.

In a session on road traffic noise and vibration over half of the papers were presented by members of the Japanese society, who showed particular interest in statistical studies and models and in the effects of buildings on traffic noise propagation. A US study of the effect of enforcing operational noise standards for trucks was also described. I was invited to present a paper in the session "Impact of noise on external living conditions: community response to environmental noise", on "Noise criteria for external living", and I was interested to find that some of our local problems are even more accentuated in Hawaii. Ronald Darby, a local consultant spoke of the particular noise problems of Hawaii -high density living in hotels and apartments coupled with the use of natural ventilation in private buildings and the need for large openings to allow the trade winds to provide cooling; the acoustic transparency of the buildings thus exacerbates the problems of noise from hotel mechanical plant, entertainment and the general exuberance of a transient holiday population. Other papers in this session dealt with some Japanese experiments regarding the loudness and annoyance rating of fluctuating noise, and a US study of the nationwide exposure of people to noise from mechanical sources, including transportation.

Two sessions were concerned with the design of multi-purpose auditoriums the Japanese acousticians are very active in this area, since about 20 new buildings of this type are constructed in Japan each year. Several speakers discussed the use of electroacoustics to overcome some of the inherent difficulties in this type of auditorium. Professor Schroeder presented two papers -on subjective evaluations of room response and on the design of walls and ceilings for efficient sound diffusion. Noise control in Hawaii is an ancient tradition; apparently noise was "kabu" at certain times of the year, and infringement carried the death penalty - presumably this would give our legislators impressive powers!

In all, the meeting was very worthwhile. It provided an opportunity for the Australian contingent (of about 6) to renew their acquaintanceships with their colleagues in Japan and North America, and to encourage them to travel just another 8 or 10 hours or so to reach Sydney for the 10th ICA.

Anita Lawrence
University of N.S.W.

THE INTERNATIONAL UNION OF PURE AND AND APPLIED PHYSICS

The sixteenth general assembly of the International Union of Pure and Applied Physics (IUPAP) was held in Stockholm 17-20 September 1978. The main business of the assembly was to elect the members of IUPAP's commissions for the next three years.

The commissions are listed below.

C1 Finance
C2 & C13 Symbols Units and Nomenclature and Atomic Masses.
C3 Thermodynamics and Statistical Mechanics
C4 Cosmic Rays
C5 Very Low Temperature Physics
C6 Publications
C7 Acoustics
C8 Semiconductors
C9 Magnetism
C10 Solid State Physics
C11 Particles and Fields
C12 Nuclear Physics
C14 Physics Education
C15 Atomic and Molecular Physics and Spectroscopy
C16 Plasma Physics
C17 Quantum Electronics

The new C7 Commission on Acoustics is

Chairman	R.T. Beyer	USA
Secretary	B.L. Clarkson	UK
Members	A. Barone	Italy
	C.G. Fant	Sweden
	L. Filipczynski	Poland
	K. Kido	Japan
	H. Kuttruff	FRG
	R. Lehmann	France
	L. Liamshev	USSR
	B.S. Ramakrishna	India
	J.A. Rose	Australia
	I. Rudnick	USA

J.A. Rose, organizer of the 1980 International Congress on Acoustics (ICA), and R. Lehmann, organizer of the 1983 ICA, are both members of the commission. The report of the retiring C7 Commission on Acoustics appears at the end of this article.

Seven Australians were elected to the commissions.

C.J. Thompson	C3
A.G. Fenton	C4
C.V.H. Wilson	C5
J.A. Rose	C7
G.K. White	C10
B.M. Spicer	C12
E. Weigold	C15

This was a big improvement over the four Australians on the previous commissions.

Australia is a member of IUPAP through the National Committee for Physics of the Australian Academy of Science. The Australian Acoustical Society has a representative on this committee. R.A. Piesse is the Society's current nominee. The Australian delegation to the IUPAP general assembly consisted of R.W. Crompton, who as Chairman of the National Committee for Physics was delegation leader, G.K. White and J.L. Davy.

The upper limit of the registration fee for IUPAP-sponsored International Conferences was raised to US $100 with this fee to include published proceedings. This was less than the US $120 which the C7 Commission on Acoustics had requested for the 1980 ICA in Sydney, but it was an increase over the US $70 which had been the previous limit.

The general assembly approved the appointment of ex-officio, non-voting members to Commissions to perform special tasks. This was done so that the Director of the Information and Co-ordination Service of the C7 Commission of Acoustics (F. Kolmer) could be a member of the commission.

Report to IUPAP

C7 Commission on Acoustics

1. Meetings of the Commission

The Commission has held meetings annually as follows:

1. 1976 March 2nd, 3rd in Madrid
2. 1977 July 3rd, 8th in Madrid during the 9th Congress
3. 1978 May 22nd, 23rd in Brussels

A joint meeting with representatives of Acoustical Societies and Acoustical Commissions of Academies of Science was held in Madrid on July 7th during the 9th International Congress on Acoustics.

2. The Ninth International Congress on Acoustics

The ninth Congress was held in Madrid 4-8 July 1977. The Congress was open to contributions from all branches of acoustics but special emphasis in the invited lectures was placed on the theme "Acoustics and Habitat: planning the acoustic environment". Three of the ten invited lectures and four sessions of contributed papers were devoted to this theme. The Congress was opened by His Majesty the King Juan Carlos I in the presence of 2,500 people.

The Congress was held in the Palacio de Congressos y Exposiciones which provided excellent facilities for the many parallel sessions, an extensive exhibition, and informal meetings of acousticians. There were 1280 participants with 192 accompanying members from 40 countries. 632 of the 855 contributed papers were presented orally in 13 parallel sessions. A one page resumè of each paper was

printed in the Conference Proceedings and made available two months before the Congress. This feature greatly improved the discussion which took place and helped participants to decide more clearly which of the many parallel sessions was of most direct interest to them. Contributors were invited to bring full versions of their paper to be made available on request through a photocopy service provided by the Congress. A total of 1200 copies of 177 full papers was distributed. The provision of this service counteracted the feeling of disatisfaction by some with the brevity of the one page resumés.

Another innovation at the Congress was the special session arranged by each of the ICA Scope Working Groups (see section 7 below). These were very successful meetings and have suggested a pattern which should be followed at future Congresses. i.e. in addition to many parallel sessions of contributed papers from all branches of acoustics there is value in having a few sessions of integrated papers on topics of current interest.

In addition to the technical sessions there were five technical visits, three musical events and four social events.

Two satellite symposia were held in conjunction with the Congress. 1. Barcelona 1st, 2nd July - "Sound Recording and Reproduction". There were 7 specialised lectures, 110 participants and 26 accompanying members. 2. Sevilla 11th and 12th July - "Hearing and Industrial Noise Environment" including a special meeting on 'Impulsive Noise Hazards'. There were 12 specialised lectures, 144 participants and 39 accompanying members.

3. Joint Symposim with IUTAM

The Commission is sponsoring a symposium on 'Mechanics of Noise Generation by Fluid Flows' jointly with IUTAM and the AIAA. The meeting will be held in Gottingen 28 to 31 August 1979. Prof. E.A. Muller is Chairman of the Organising Committee.

4. Plans for Future Congresses

The 10th Congress will be held in Sydney, Australia, July 9th to 16th 1980. The general theme will be "Acoustics in the 80's". Satellite Symposia will be held in Adelaide, 7, 8th July (Industrial Noise Sources - Identification and Modification), and Perth, 17, 18 July (Basic causes of Noise Deafness). It is also hoped to arrange a meeting in New Zealand during this time period. The ISO and IEC have been invited to hold meetings of TC 43 and TC 29 committees in Australia at this time.

The Commission has accepted an invitation to hold the 11th Congress in Paris in 1983.

5. Information and Co-ordination Service

This service, which was started in 1969, has become an important part of the work of the Commission. Twice per year a list of Congresses and meetings on Acoustics throughout the world is circulated to Acoustical Societies and Commissions and the acoustical journals. A current list of all Acoustical Journals, Societies and Commissions is available. A new publication which gives a list of Officials of International and National Organisations in Acoustics has been approved by the Commission. The Director of the information and Co-ordination Service is Dr. F. Kolmer. The work is supported by the Czechoslovak Academy of Sciences.

The Commission considers that it is eseential to put this service onto a more formal basis and therefore requests IUPAP that the Director be appointed as an ex officio, non voting, member of the Commission in addition to the 10 members plus Chairman and Secretary. The responsibilities of the Director will be to run the Service and also provide the liaison with International and Subject bodies mentioned in 6 below.

6. Relationships with International Bodies

The Commission has received requests from the Federation of Acoustical Societies of Europe (FASE) and the International Institute of Noise Control Engineering for links to be established through nominated Commission members. A memorandum setting out the objectives and procedures for cooperation has been agreed. The Director of the Information and Coordination Service has been nominated as the person responsible for this liaison.

7. The development of special areas of acoustics by means of working groups

Following the UN Conference on 'Human Environment' in 1972, the Commission set up five working groups to report on Noise and the Environment to SCOPE. The subjects chosen for this activity were:

1. Hearing thresholds of isolated human populations
2. Sound propagation outdoors
3. Noise propagation in buildings
4. Effects of noise on wild life communication
5. Effects of noise on sleep

These working groups arranged special sessions at the 9th Congress. The success of these working groups has been reported to SCOPE. A proposal is being made to SCOPE for the publication of a monograph on Noise Pollution.

8. Liaison with ISO

The Commission has responded to invitations from ISO to appoint observers on the relevant Technical Committees. These observers are as follows:

Dr. H.G. Diestel TC 43 Acoustics

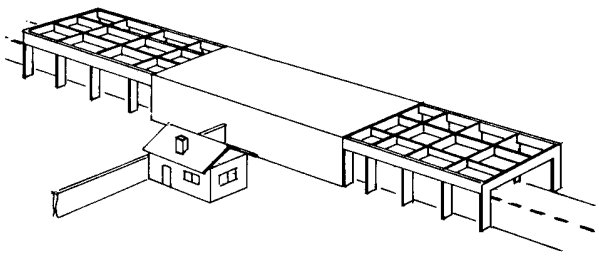
Prof R.T. Beyer TC 108 Mechanical Vibration and Shock

9. Finance

The Commission acknowledges the generous support which it has received from the organisations to which the members belong. Only in this way has it been possible for the Commission to hold its annual meetings and to perform the many tasks of co-ordination in this multi disciplinary field of acoustics. The IUPAP contribution has been used to provide a small amount of help to members' travelling expenses.

10. Registration Fees for major Congresses

Continuing inflation in the major industrial countries makes it impossible for a host country to plan a Congress for 1200 participants with a registration fee of $70 in 1980. The Commission requests that the upper limit on fees be raised to US $120 on the understanding that reduced fees will be available for bona fide students.



TUNNEL-WITH-HOLES TO CUT OUT NOISE

A French firm, in BP 1 516 676, offers a screed of mathematics to justify a proposal for economising on insulating buildings against traffic noise. Where a busy road passes near houses, the noise can be reduced most drastically by putting up a tunnel over the road. But tunnels are expensive to build and must be efficiently ventilated. The Société d'Etudes Générales de Constructions Industrielles et Civiles suggests that a great cost saving, with little loss of insulation, can result through erecting a "discontinuous tunnel" - which can be explained most simply as a tunnel with holes near its ends.

The firm's mathematics explains how a road can be covered by a continuous tunnel just long enough to throw a complete acoustic shadow over the building to be insulated. The tunnel is then extended at each end by a series of open arches. The space between the arches increases as their distance from the building increases. Because the noise nuisance from the road falls off with distance, the "discontinuous" tunnel extension is sufficient to shield the building from noise.

Reprinted from "New Scientist".

DOCTORS 'LOOK' INTO PATIENTS' EYES - WITH SOUND

US engineers have developed an ultrasonic imaging system which produces high quality, moving, pictures of the eye. Devised at Stanford University's Center for Integrated Electronics in Medicine, the equipment enables doctors to "see" into and behind damaged eyes which have become clouded by cataracts, haemorrhaging or detached retinas. For instance, it could allow medical staff to follow the flow of haemorrhaging or the pulsing of tumours. The system could also provide "pictures" of other organs such as the heart or thyroid gland.

The apparatus is much simpler than many general diagnostic ultrasonic systems, and should cost only about the same as conventional X-ray equipment, according to the project leader Dr. Alan Susal, clinical assistant professor of ophthalmology at Stanford. The scanning system is now in routine use at the Stanford eye clinic and, according to Susal, several companies are interested in manufacturing it commercially.

The equipment comprises an ultrasonic probe, a receiver, TV scan converter, microcomputer controller and a video display unit. The probe is made up of a linear array of 35 ultrasonic transducers which are electronically scanned every 5 microseconds. This produces dynamic real-time images at a rate of 60 frames per second, thus avoiding the flicker which is often associated with mechanically scanned systems. Push buttons in the hand-held probe allow for instant "frame-freezing", photographic documentation, or the activation of a videotape recorder.

The scanning operation provides a 256-line TV picture with full grey scale. The apparatus has two major advantages over other ophthalmic imaging systems. Because it employs high frequency ultrasonic signals (7.2 MHz instead of the usual 2 to 3 MHz) the images are of very high resolution.

Secondly, the electronic scanning means that the probe does not have to be moved over the surface of the eye, making it fairly simple to use. The probe can be placed directly on top of the closed eyelid, or it can be used with a water bath. This avoids the difficult and often dangerous procedure of introducing substances into the damaged eye.

The equipment has other applications as well as ophthalmology. It is being used in imaging the carotid arterial system, for research on strokes, or to "see" the hearts of infants. In the latter field it is difficult to produce good quality images using ordinary diagnostic systems because of the small size of the patient.

Further ultrasonic work at Stanford is concerned with devising a phased array system for deep body imaging of the abdominal region.

IMPROVED FAN FOR EVAPORATIVE COOLERS

An improved fan for a mobile evaporative cooler has been developed by the CSIRO, Division of Mechanical Engineering, in cooperation with a South Australian cooler manufacturer. The resulting cooler is quieter than conventional models, and circulates more air than competitive units for the same energy usage. Seeley Bros. of St. Marys S.A., who contributed a small research grant to CSIRO to assist the development work, is now manufacturing and marketing these units.

According to Mr. Don Pescod of the Division, main features of the redesigned fan assembly include shorter blades with less forward sweep, a better intake angle and closer blade spacing. The shape of the fan casing was also reworked to improve the uniformity and rate of air flow. In keeping with the company's present production requirements, the new design is suitable for injection moulding and occupies the same space as the original design.

Reprinted from CSIRO "EngEvents".

INTERACTION OF SOUND AND FLOW IN DUCTS

A lack of understanding of the interaction of sound and flow in ducts has led to some inadequate designs of noise reduction equipment in such areas as high-rise buildings, chemical plants and power stations. Altering the equipment after installation is very costly and can escalate the price from an initial value of 2 per cent of the installation cost up to 4 times that amount.

The CSIRO, Division of Mechanical Engineering already has considerable experience and success in the field of noise control with respect to specific problems such as airconditioner fan noise (EngEvents No. 2).

Scientists in the Division have now embarked on a research programme which approaches the study of sound and flow interaction in ducts at a fundamental research level. Dr. Andre Cabelli is developing a mathematical description of what happens to sound in a duct system when fluid is flowing in the duct. He will study the effects of different geometries, including bends and turning vanes. Mr. Ian Shepherd will be conducting an experimental programme to complement Cabelli's theoretical work.

While duct acoustics has been studied before at low frequencies where the sound wave behaviour is relatively simple, Cabelli and Shepherd hope to extend the understanding to higher frequencies where interactions are more complex; these frequencies are usually encountered in air and steam flow systems.

While this work is still at the basic research stage, the eventual increase in understanding will benefit designers of airconditioning systems, chemical plant and turbomachinery.

Reprinted from CSIRO "EngEvents".

DISTINGUISHED VISITOR

Professor E.J. Richards will visit Australia in April, following a two month stay with Professor Cliff Stevenson at the University of Canterbury. Professor Richards was born in Barry, Wales in 1914 and was educated at the Universities of Cambridge and Wales. He was a research scientist at the National Physical Laboratory, Teddington from 1939-45 before returning to industry as the aerodynamic designer of such aircraft as the Vickers Viscount and VC 10.

He became Head of the Department of Aeronautical Engineering at Southampton University in 1950 and established a strong research school in aerodynamic noise, subjective acoustics, audiology and engine noise. In 1963 he became the Founder-Director of the Institute of Sound and Vibration Research, and after a period as President of Loughborough University returned in 1975 to establish a Machinery Noise Group in the Institute. This group is now concerned with studying industrial noise in all its aspects, and its particularly concerned with the relation between noise and engineering design of new machinery, handling techniques and commercial jets.

He has served on and been Chairman of innumerable Committees on the subject of noise. He has been President of the British Acoustical Society, now the Institute of Acoustics and was President of the Eighth International Congress of Acoustics in London, 1974. He has been an acoustical consultant to a wide range of companies in both Europe and the USA.

Professor Richards has recently been elected to the Fellowship of Engineering, Britain's highest accolade in the field of engineering, also he has just been made an Honorary Fellow of the Institute of Acoustics in Britain.

While in Australia Professor Richards will give a course on machinery noise at Adelaide University and address Victoria Division of the Society on "Machinery Design to Reduce Noise. Some Basic Factors".

Antiphon noise-a

The best way to cut down the amount of noise in our environment is to attack it at the source, before it has had time to spread and become difficult to control. But selecting the correct noise control material for a particular source of noise (e.g. a machine or vehicle) often entails considerable difficulty. Even if one is quite knowledgeable about acoustics.

That is why we have prepared this guide, which covers most of our products. It is intended to help you select the combination or combinations of our products which will r type of noise control material is r combinations of different types c

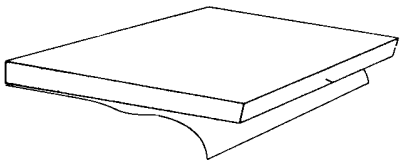
You will notice that we have categories that are normally use lation of air-borne sound, absorp structure-borne sound. Some of

Insulation of air-borne sound.

Every source of noise generates sound. Speaking very generally, one can say that air-borne sound is equivalent to air-borne oscillations propagated to your ear where they sometimes cause irritation. Noise. One way to reduce noise propagation is to screen the source with a wall. When the sound waves strike the wall, most of them bounce back towards the source. Only a part pass through.

This is insulation of air-borne sound. The sound-insulating capacity of a wall or a barrier increases with the weight per square metre and the frequency of the sound.

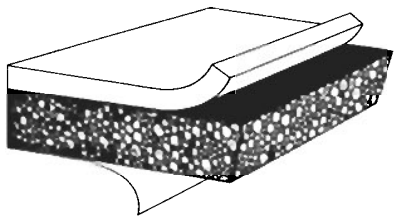
In order to avoid using an excessively heavy single sound-insulating wall, a double wall can be erected. In most cases (depending on frequency) a double wall gives better results.



For insulation of air-borne sound in light structures

Antiphon I 7.5-R is a noise barrier based on EPDM rubber. It is available with and without pressure-sensitive adhesive. It resists aging very well and is highly resistant to chemicals, solvents and mineral oil. Temperature range: −30 °C to +110 °C. Also suitable for compression moulding.

Antiphon I 7.5-R is intended for lightweight structures of wood, plastic and the like as well as structures made of sheet metal up to about 3 mm thick. It is used, to cite a few examples, in hoods for engines in boats and vehicles and for stationary machines. Also used on floors, doors and walls in engine compartments in vehicles of all types.

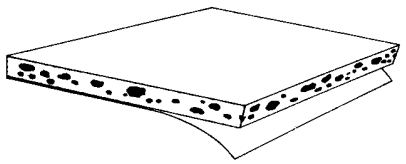


A barrier that creates a double wall

Antiphon AI 7.5-R is the same barrier as I 7.5-R, except that it is provided with a layer of flexible foam. Here, the foam functions simply as a decoupler between application surface and barrier.

This barrier is available with or without pressure-sensitive adhesive.

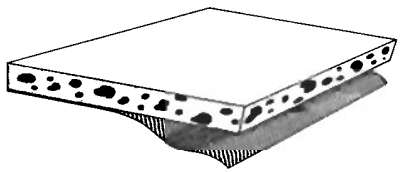
Antiphon AI 7.5-R is used primarily for heavier structures made of wood, plastic and sheet metal for example. Applications: see I 7.5-R.



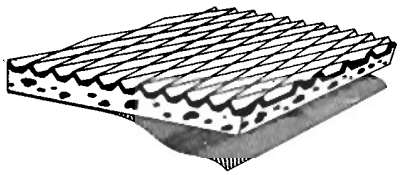
Decorative barrier which also functions as a sound-insulating curtain

Antiphon I 7.5-P is made of vinyl and resists oil and chemicals. The barrier should be glued to the application surface. Ambient temperatures can range from −25 °C to +100 °C.

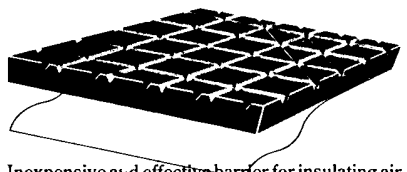
Used for structures on which an attractive surface is required. This barrier is highly flexible and easy to bend around corners and the like. Applications: see I 7.5-R.



The glass-fibre reinforced version of this barrier, Antiphon I 5.5-P, is intended for hanging freely as a sound-insulating curtain.



Also available with wear-resistant layer of black corrugated PVC, intended as a floor covering.



Inexpensive and effective barrier for insulating air-borne sound and damping structure-borne sound

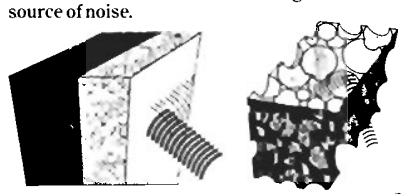
Antiphon LI 7.5-B is a bitumen-based barrier coated on one side with polyethylene film and on the other with pressure-sensitive adhesive (also available with heat-sensitive adhesive).

The film protects against solvents and mineral oil. Temperature range: −20 °C to +120 °C.

Used with structures of sheet metal up to about 3 mm thick, e.g. engine compartments; also vibrating machinery and kitchen sinks.

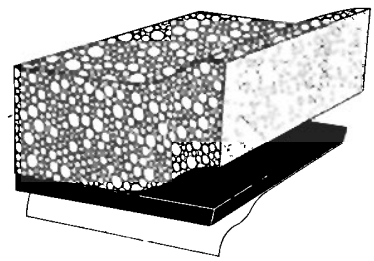
Absorption of air-borne sound.

The noise that is reflected from walls, floors and ceilings in a room – large or small – is added to the direct air-borne sound emanating from a source of noise.



Reflected sound can be reduced by covering a sound-reflecting surface with a sound-absorbing material. Foam with open cells or mineral wool are suitable. When the sound waves pass through the absorbent, friction converts the sound energy to heat, thus reducing the noise.

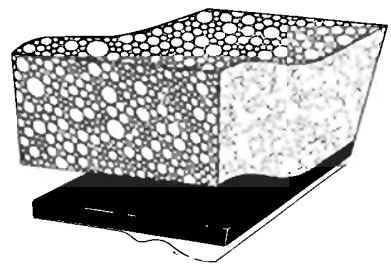
The sound-absorbing capacity of a material increases with the thickness of the material and the frequency of the sound.



Our least expensive absorbent

Antiphon LDA is a polyurethane foam absorbent provided with a damping pad for structure-borne noise and pressure-sensitive adhesive. Also available without pad or adhesive.

Withstands temperatures ranging from −30 °C to +90 °C. Used in environments in which ease of cleaning and fire-resistant properties a not important. Ideal, for example, for office machines and data processing installations.



Absorbent for areas with fire hazards

Antiphon LDA S is intended especially for environments that require an absorbent that is difficult to ignite. Fulfils the fire-protection standards of various automobile manufacturers.

Similar in other respects to Antiphon LDA

SOUNDGUARD *Acoustical Engineers* **PTY. LTD.**

batement guide.

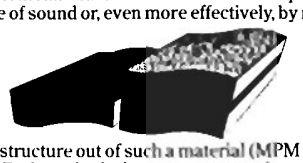
our individual needs. Often, a single ɔugh and it is necessary to use ucts.
ɛd our products into the three ı discussing noise control: insu- air-borne sound and damping of ɔducts are intended only for ab-sorption, for example. Others are effective against both air-borne and structure-borne sound.

If you would like more information about any of our products, request the appropriate product sheets. If you are having difficulty in selecting the correct product using this guide, contact one of our specialists. He will be able to assist you in finding an economical solution to your noise problem. Regardless of what you are manufacturing.

Damping of structure-borne sound.

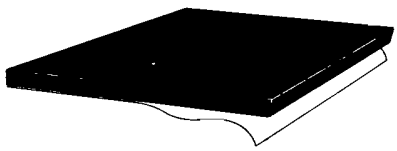
Structure-borne sound, like air-borne sound, comprises oscillations, the only difference being that the oscillations are propagated through solid material such as steel, plastic, concrete or wood.

Structure-borne sound is generated, for example, by machinery. The oscillations are propagated to fixtures, e.g. hoods, and radiated to the air as noise. This is reduced by providing the sheet metal with a material that will dampen this type of sound or, even more effectively, by making



the structure out of such a material (MPM panels).

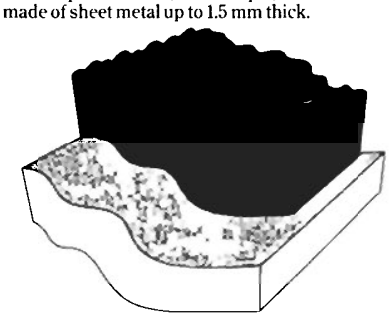
Both methods dampen structure-borne sound by converting oscillatory energy to heat. It is important that all damping materials follow the motion of the application surface. This is achieved by gluing the material to the surface or by building it into the structure.



Fast, inexpensive way to provide damping for plastic and sheet-metal structures.

Antiphon pads 1 and 13 are coated with pressure-sensitive adhesive. Antiphon 13 dampens structure-borne sound somewhat better than Antiphon 1.

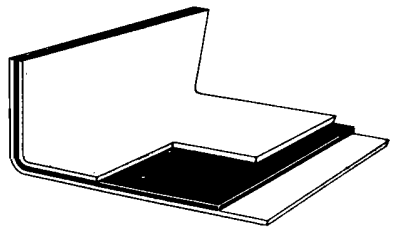
These pads have no odour. They resist aging well and withstand temperatures between −30 °C and +90 °C. They are impregnated to make them water repellant. Used, for example, for structures made of sheet metal up to 1.5 mm thick.



The spray-on structure-borne sound dampener

Antiphon D 444 is a water-based dispersion of synthetic resins and an extender. It is sprayed on to sheet-metal structures in order to reduce the amount of sound emanating from them. Dries in air. Resists water, solvents and mineral oils. Withstands temperatures of up to +60 °C (+180 °C for short periods).

Used on doors, ceilings and walls in fan rooms and vehicles for example. Also engine hoods, refuse chutes and within the shipbuilding industry.



Metal panels with built-in damping

Standard Antiphon MPM panels consist of two cold-rolled passivated and electrogalvanized sheets of steel with a sandwich layer of thermoplastic material. The panels are available in different thicknesses. MPM panels are also avilable in other materials, e.g. stainless steel and aluminium.

Designers find using MPM panels the most effective way to dampen structure-borne sound.

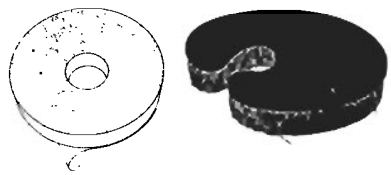
MPM panels can be processed in almost the same way as ordinary sheet metal. They can be welded, bent, cut etc. without diminishing their damping properties. Moreover, MPM panels provide noise damping that lasts as long as the sheet metal itself – without maintenance.

Antiphon MPM panels are used as a structural material to provide damping of structure-borne sound and insulation of air-borne sound in vehicles, ships, boats, materials handling machines, construction machines etc. They are also used in combination with a sound absorbent in hoods for machine tools, presses and printing machines.

Adhesive-coated sealants.

Withstand heat, cold, salt water and chemicals. Available by the metre or ready-stamped

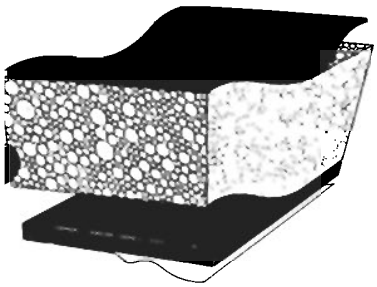
Even if a structure has been provided with optimum noise control, a tiny crack is all that is needed to ruin everything.



Antiphon Scasoflex and Scasotite are intended specially for sealing structures – both with and without other types of noise control. This material has no odour, it is self extinguishing and displays excellent resistance to aging and various chemicals. Withstands temperatures ranging from −25 °C to +90 °C. Available by the metre or ready-stamped (any desired shape) in sheets of different thicknesses. Coated with pressure-sensitive adhesive.

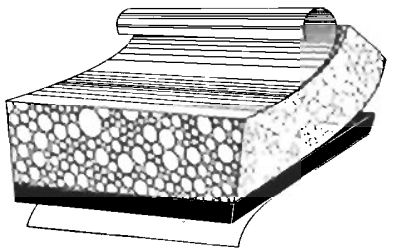
Attractive and easy to keep clean

Antiphon LDA V 2 consists of absorption foam ɔombined with a damping pad. This pad is coated with pressure-sensitive adhesive. Also available without damping pad and without adhesive.



The foam has a facing of strong, perforated PVC film which is easy to keep clean. The PVC film is available in several colours. Withstands temperatures between −30 °C and +90 °C.

Antiphon LDA V 2 is used, for example, for nternal lining of vehicle cabs and personnel ooms.



Noise absorbent which repels everything except ise

ntiphon LDA S-E is built up of flame retardant foam with a facing of aluminized polyester film plus a damping pad with pressure-sensitive adhesive. The ambient temperature can range from −40 °C to +120 °C.

The chemically bonded (not glued) film is impervious. As a result, this absorbent is ideal for environments which impose stringent hygienic and cleanability requirements. Used, for example, for internal, fireproof linings in hoods and housings in engine compartments in boats, compressors, snowmobiles, oil burners, fans, machines used in the food industry, hospital equipment, etc.

Also available without damping pad. This variant, designated Antiphon LA S-E, is approved by automobile manufacturers, the National Swedish Institute for Materials Testing, the National Swedish Administration of Shipping and Navigation and Det Norske Veritas classification society for use in engine compartments in ships and automobiles for example.

One of the widest ranges of noise-control materials on the market.

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Australia's widest range of Noise Control Products and Services

FORTHCOMING SPECIAL COURSES IN ACOUSTICS

(a) University of New South Wales
11-12th July 1979.

Road Traffic Noise: Measurement, Assessment, Prediction and Control. - A workshop.

A two day workshop for professionals concerned with traffic engineering, highway design, local and regional planning and environmental noise. The workshop is preceded by a one day introductory course on Tuesday 10th July for those workshop participants having little or no previous experience in traffic noise measurements.

Fees. Two day workshop $80.00 which includes lecture notes, refreshments and lunches. Enrolment limited to 30. Introductory course $40.00 which also includes lecture notes, refreshments and lunch. Maximum enrolment of 10.

Further information can be obtained from:

Secretary,
Graduate School of the Built Environment,
University of New South Wales,
P.O. Box 1,
KENSINGTON, 2033

(b) Monash University
28th May-1st June

'NOISE AND ITS CONTROL'

A one week intensive course offered by the Department of Mechanical Engineering and designed for engineers and architects in industry and private practice who are becoming or who will become involved in the control of noise and vibration. The course combines lectures in the principles and practice of noise and vibration control with 'on hands' experience in the use of vibration, sound measuring and analysing equipment. Topics include Fundamentals, Measurement and Analysis of Noise, Hearing and Effects of Noise, Building Acoustics, Vibration Control, Noise Sources, Noise Control, Case Histories.

Fee: $305.00 which includes two texts, trade literature, refreshments, and lunches. Enrolment is limited to 30. Be early.

Further Information can be obtained from:

The Secretary,
Centre for Continuing Education,
Monash University,
CLAYTON, VIC., 3168

GOSSIP

It is about sixteen years since the first formative meetings of the Acoustical Society were held in Victoria; in all that time Victoria has not had a woman member. Now Victoria has gained not only its first woman member but a very distinguished member in CAROLYN MATHER. Carolyn has moved from the Public Works, Perth to the position of Chief Noise Control Officer with the Environment Protection Authority, taking up her appointment in January this year.

BRUCE KING has also moved to Melbourne. Having for many months flown from Adelaide each Monday and returned each Friday he decided it would be easier to commute from the suburbs of Melbourne than from Adelaide. Bruce, of course, is half owner (with MIKE SMITH) of Vipac and Partners: not to be confused with Vipac Laboratories which is wholly owned by Mike Smith.

You will probably say that my next item is old hat which only goes to show that sometimes I am slow to learn the gossip. But did you know that last June the Roger Wilkinson Consulting became WILKINSON MURRAY CONSULTING PTY. LTD. The Wilkinson and Murray representing ROGER WILKINSON and BARRY MURRAY respectively.

Recently, the acoustical societies of America and Japan held a joint meeting; what to us would be a seminar or conference on an ICA scale. Attending that meeting were KEN COOK, JOHN DAVY, ANITA LAWRENCE and CLIFF WINTER, all needless to say members of the A.A.S. As this meeting was held at HONOLULU there was no excuse for any of them not to have a good time.

JOHN DAVY (from CSIRO Highett Melbourne) also visited acoustical Laboratories in Europe, Canada, U.S.A. etc.

Some years ago there was a sudden proliferation of acoustical consultants in Sydney; now in Melbourne we appear to be having a sudden proliferation of acoustical or noise control equipment manufacturers. The latest is Sound Control Pty. Ltd. formed by ALAN DODSON in Melbourne. At a later date Alan tells me he plans to move to Sydney and to appoint agents for his products in other states.

If this column degenerates to such trivia as a report that the Schurmann's pet rabbit got away then you will know that it is YOUR FAULT. If you hear of an A.A.S. member starting a new venture, taking on a new partner, having a bust-up with his partner or similar, ring me on (03) 791 6033 or write to me C/o Sound Attenuators Australia Pty. Ltd., 9 Patrona Street, Dandenong, Vic., 3175.

Graeme Harding

DIVISION REPORTS

(a) SOUTH AUSTRALIA

Course in Psychological Acoustics

A recently formed private company, the S.A. Music and Audio Education Centre Pty. Ltd., has constructed courses in Sound Engineering and Electronic Music Synthesis, the first to provide prospective sound engineers with a background for their industrial apprenticeships in record production, broadcasting, film sound-track production and sound reinforcement and the second to enable students to obtain a theoretical and practical understanding of electronic music techniques and synthesis equipment.

The Company principals have recognised the need for an understanding of the perception of sound and to meet this have introduced a course in Psychological Acoustics.

Consisting of ten lectures and commencing during February 1979, this introductory course will embrace topics such as the anatomy and physiology of hearing, psychophysics, the effects of noise on man and hearing, perception of sound, musical perception, hearing measurements, speech production and perception, the psychoacoustics of sound recording and reproduction; studios; theatres and auditoria. The aim is to give students a basis and sense of direction for further study in the field and a practical idea of the uses of the subject.

The syllabus was designed by ABC engineer, Donald Woolford, a Member of the Society, who will present the lectures in collaboration with Keith Chiveralls and Dr. John Ingram, both Society Members and Mrs. Linda Penny, who are lecturers in Communication Disorders in the Sturt College of Advanced Education in South Australia.

(b) VICTORIA

Three major items have been the subject of much activity during the past month or so. The first of these is the visit to the Victorian Branch by Prof. J. Richards of the Institute of Sound and Vibration Research of the Southampton University. His invited lecture "Machinery Design to Reduce Noise" will no doubt attract a large audience.

The second item of interest has been the Program for 1979. Although not complete it will include:

(a) a visit to the CSIRO to view acoustics and solar energy work (February)

(b) The Victorian Annual General Meeting together with a panel discussion on sound transmission/sound insertion loss methods for use in laboratory and field. (June)

(c) An inspection of a television station (August)

(d) The Society's Annual General Meeting and conference (September)

(e) A joint meeting with the Audiological Society- "Interpretation of Hearing Conservation Regulations" (October)

(f) Annual Dinner and Wine tasting (November)

There are two workshops also planned (May and August) with their subjects being centred on standards and E.P.A. regulations.

The third activity to receive considerable attention has been the planning for the conference associated with the Society's Annual General Meeting. This Conference will be held in Melbourne on Saturday 22nd September, 1979. The theme will be "Building Acoustics Design Criteria".

Details are given in the first announcement published elsewhere in this issue of the Bulletin.

(c) NEW SOUTH WALES

No report received.

(d) WESTERN AUSTRALIA

No report received.

STATEMENT OF INTENT

For the next three years the Bulletin will come out on time with whatever material there is to hand. The Bulletin Committee expects to receive some news from each Division for each issue of the Bulletin. Deadline dates are given on the back cover. Don't be caught napping next time. THE BULLETIN DEPENDS ON YOU.

STANDARDS & REGULATIONS

COMMENTS ON SAA DOCUMENT DR78 156

On 23 October, 1978, the Australian Acoustical Society Victoria Division held a Workshop Study to consider a Draft Australian Standard currently open for public review. The Draft Standard was DR78 156, "Draft Australian Method for the Measurement of Reverberation Time in Auditoriums".

At the Workshop session, attended by fourteen members, copies of SAA Document DR 78 156 and of brief comments on it were available. The comments comprised five suggested points for discussion, and covered

(a) The use of T or greek tau as symbol for reverberation time,

(b) averaging to be done in the T and not the decay-rate domain.

(c) questioning of the need for T to be measured in each of the "empty", "studio" and "occupied" states,

(d) preference, when maximum accuracy is desired, for steady state rather than impulse excitation, and

(e) possible alternative wording for Clause 4.2.3 to describe the three main types of instrumentation likely to be used.

Discussion at the Workshop session covered various aspects of the Draft Australian Method for the Measurement of Reverberation Time in Auditoriums. It was agreed (almost unanimously, with one abstention) that there was a clear need for a Standard Method for the Measurement of Reverberation Time. The remaining discussions covered many aspects of the proposed standard method but were largely concentrated on characteristics of the sound source.

At the outset there was a plea for reasonable simplicity and avoidance of undue complexity both in the standard methods and in their description.

In the FOREWORD there appeared to be insufficient statement as to why reverberation times need to be measured, and as to which people use such measurements and for what purpose. There was also a query as to why this standard method for measuring reverberation times should be limited to auditoriums and not extended to other types of rooms also.

The provisions of CLAUSE 4.2.1 were discussed at length.

It was agreed that excitation using steady state random noise is to be the preferred method; the test method should be clearly stated.

The advantages of steady state over impulsive excitation were seen to be that

(a) there is greater overall control of the test conditions,

(b) the sound excitation can be built up to a maximum, and

(c) with repeated tests, the standard deviation of decay time observations is less.

However, the use of impulsive noise excitation significantly reduces the costs of reverberation time tests, especially if tests are required with the auditorium in empty and occupied states. The duration of testing is reduced through the use of a broad band source. The effective frequency band of a starter's pistol shot is of the order of 150 to 8000 Hz; with a large firework ("bunger"), the signal to noise ratio is improved by about 10 decibels and satisfactory low frequency response is extended to about 80 Hz.

Concerning types of sound source, this section contains some inconsistency, contradiction and looseness. Preferred test methods and sound source could be clearly specified. "Pseudo-random" as well as "random" type sound sources could be specifically mentioned and included in 4.2.1 (a). There appeared to be no consistent explanation as to why broad band random noise, organ tones and orchestral instruments (also in CLAUSE 4.3.1) were included while pulse-glide and warble tones were excluded.

In CLAUSE 4.2.3 it was considered that the second paragraph of section (b) ought to be included as an explanatory note. Both here and elsewhere it was considered that use of the words "shall" and "should" be carefully re-examined. "Shall" was considered obligatory, "should" indicated guidance, while "may" also could sometimes be more appropriate.

In CLAUSE 5.1 it was considered that not only should there be provision for the reporting of mean values of reverberation time but also of the corresponding values of standard deviation and number of observations (as recommended, for example, in BS2846, "Guide to Statistical Interpretation on Data" or ISO 2602-1973, "Statistical Interpretation of Test Results").

In general, the intent and structure of the Draft Australian Standard was approved; the suggestions for clarification and improvement are as described above.

Report prepared by C.L. Fouvy
79 Feb 20

ENVIRONMENTAL NOISE CONTROL COMMITTEE AUSTRALIAN ENVIRONMENT COUNCIL

On the 17th September, 1975, a meeting of State Noise Control Officers in Melbourne formed the Interstate Noise Control Liaison Committee. The two major objectives of this Committee were to enable the ready interchange of technical information relating to noise control and to attempt to gain uniform technical content in noise control legislation throughout Australia.

The Committee met on nine occasions between 1975 and 1978, and played a major role in the development and implementation of current environmental noise control legislation. A summary of 'Environmental Noise Control Legislation in Australia' was published by the Committee during October 1976 and this document is shortly to be updated.

To facilitate meetings, and to formalise the Committee, it was proposed to include the Interstate Noise Control Liaison Committee of technical advisers within the structure of the Australian Environment Council working groups. This proposal was discussed at the tenth meeting of the Australian Environment Council in Brisbane on 22nd September 1978 and it was resolved that Council approve the incorporation of the Committee within the AEC structure of working groups responsible to Council through Standing Committee. The Committee was to be known as the Environmental Noise Control Committee.

The first meeting of the Environmental Noise Control Committee was held in Adelaide on the 14th and 15th of December 1978. Members present at the meeting were Mr. G. Stafford, Department for the Environment S.A., Mr. A. Day, State Pollution Control Commission N.S.W., Mr. R. Law, Environment Protection Authority Vic., Mr. S. Gisz, Department of the Capital Territory A.C.T., Mr. P. Isaks, Department of Environment, Housing and Community Development A.C.T., and Mr. R. Caruth, Department of Public Health W.A., Dr. G. Cleary, Division of Noise Abatement Qld., and Mr. R. Langford, Department of Environment Tas. were unable to attend the meeting.

The Committee established terms of reference and administrative procedures to be forwarded to Standing Committee for verification, and discussed a wide range of noise problems including domestic airconditioners.

Because of the problems facing both manufacturers and legislators in controlling the level of noise emitted from domestic airconditioners, and the need for a standard noise specification, a working group has been established. The members of the working group are Mrs. V. Bray, State Pollution Control Commission N.S.W., Mr. R. Law, Environment Protection Authority, Vic., and Mr. R. Caruth, Department of Public Health W.A. Other members may be appointed at a later date and industrial representatives may be co-opted.

The next meeting of the Committee is to be held in Perth on the 14th and 15th June, 1979.

Garry Stafford
Chairman
Environmental Noise Control Committee

STANDARDS ASSOCIATION OF AUSTRALIA REPORT

Revised standard

AS 1269-1979 Code of practice for hearing conservation (known as the SAA Hearing Conservation Code)

sets out recommended practice for establishing a hearing conservation program to protect persons who are occupationally exposed to noise. It is in five sections, covering responsibility for implementation of the program, noise measurements, evaluation of noise, engineering noise control, and hearing protection program. Appendices cover evaluation of noise exposure in terms of equivalent continuous sound level, guidance in instrumentation and the use of instruments in the measurement of noise exposure, methods of calculating the noise reduction provided by hearing protection devices, incidence of hearing impairment in workers exposed to noise, Committee AK/3: Supersedes 1269-1976.

New standard

AS 2221, Methods for measurement of airborne sound emitted by compressor units including primemovers and by pneumatic tools and machines

2221,Part 1-1979 Engineering method for measurement of airborne sound emitted by compression/ primemover units intended for outdoor use.

Describes a method for determining mean sound level and mean band pressure level of airborne sound. It is an engineering method which requires a controlled environment for repeatable results. Committee AK/9/1: Public review draft DR 77097.

The following two drafts are available for public comment:

DR 79 003, Methods for the measurement of airborne sound from railbound vehicles.

This draft sets out proposed methods of measurement of

airborne sound for the determination of A-weighted sound level and sound spectrum emitted by all kinds of vehicles operating on rails or other types of fixed tracks, when the vehicles are in motion and when they are stationary. The draft includes an appendix which describes procedures for additional optional measurements of airborne sound which may be used, where required, for stationary vehicles. Committee AK/10: Comment closes on 30 April, 1979.

DR 78156, Method for the measurement of reverberation time in auditoriums. This draft describes a method for the measurement of reverberation time, which is useful in assessing the acoustic performance of auditoriums. Latest date for comment is 31 March 1979.

The above two drafts are available free of cost for the purpose of study and furnishing comments to the Standards Association of Australia.

The following are some of the important activities of the Acoustics Standards Committees dealing with individual projects in progress.

Committee: AK/1 - Terms, Units and Symbols

Chairman: A.K. Connor

The committee is currently engaged in the revision of AS 1633, Glossary of Acoustic terms. A draft revision will be issued for public comment later this year.

Early suggestions for addition of new terms or modification of existing terms are welcome.

Committee: AK/2 - Instrumentation and Techniques of Measurement

Chairman: R.A. Piesse (National Acoustic Laboratories)

Deputy Chairman: P. Dubout (CSIRO, Division of Building Research)

The committee has finalised the document which will be titled 'SAA Guide for the Use of Sound Measuring Equipment, Part 1 -Portable Sound Level Meters.' This document is intended to provide guidance on the proper use of sound level meters for providing objective sound measurements according to standardized procedures. Guidance is given in this publication on types of sound level meters, types of sound and how they are identified, measurement techniques and the reporting of the information obtained. This document was issued earlier for public comment as DR 76115. Part 2 of this publication, which is yet to be prepared, will deal with the use of equipment for recording and analysis of sound signals.

Another project which is being studied by this committee is the further processing of a document relating to personal noise dosemeters in the light of public review comments received at the public review stage when it was issued for public comment as DR 77096.

The other important projects of this committee under consideration, and under varying degrees of progress include the following:

Pressure calibration of microphones by the reciprocity technique

Pure tone audiometer for advanced audiological use

Background noise levels for audiometer rooms

Methods of measurement of airborne sound emitted by machines (revision AS 1217 in line with the work of ISO/TC 43 on this subject)

Sound level meters (revision of AS 1259, Parts 1, 2 and 3 in line with the work of IEC/TC 29 on this subject)

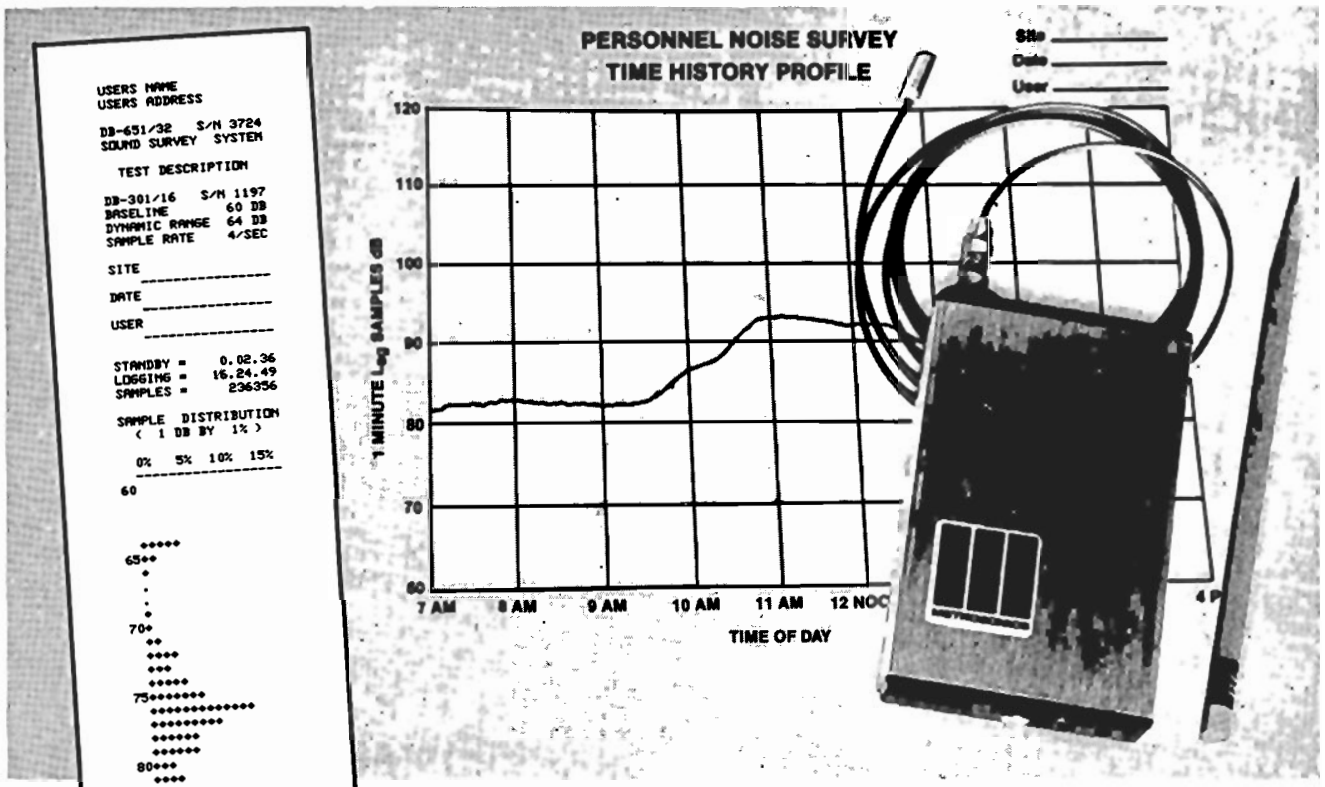
Performance requirements of tape recorders for recording and replaying acoustical/signals in the acoustical measurement system.

Committee: AK/3 - Hearing Conservation

Chairman: Dr. A.G. Cumpston (Department of Public Health, W.A.)

As reported earlier the revision of AS 1269-1976 has just been published as AS 1269-1979, and for a short account of the scope of this revision see the article by Dr. A.G. Cumpston in the SAA Monthly Information Sheet. January 1979, page 16.

This committee is closely associated with the Working Group 19 of the ISO TC 43/Sub committee 1 responsible for the revision of ISO 1999, the equivalent ISO standard to our AS 1269, Hearing Conservation Code. It is expected that the benefits of this international work will be available for reviewing AS 1269 -1979 later. The ISO work on the development of an objective test for assessment of the attenuation loss for hearing protectors and the simplified method for measurement of this loss for quality control purposes for certain types of protectors are under study by the committee. It is proposed to prepare a commentary to AS 1269-1979 to provide guidance in interpretation of the various provisions of this Code, which is most widely used for regulatory purposes among all the Acoustics standards.



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Important data such as Time History Profiles, Amplitude Distribution Histograms and concurrent computations of L_{eq}, L_{OSHA}, exposure coefficient at both 85 and 90 dBA criteria, L_{10}, L_{max} and many others are automatically produced.

How the Metrologger Works

Patented digital sound level detector circuits, operating over a wide user selectable 64 dB range, provide extensive sound amplitude coverage. An internal programmable microcomputer controls all system functions of digital sampling, data logging, math processing and external interfacing.

User plug-in Program Modules contains the computers instruction set defining all test parameters. Change the Program Module, and the Metrologger performs a different measurement task. A variety of Program Modules in the Program Library make the Metrologger multifunctional and prevents obsolescence.

Data Readouts

The db-651 Metroreader is the first of a group of Metrologger compatible interfaces. This desk top analyzer interrogates the logged data, identifies the serial number and program module, then prints out the data and computed designators in a concise format by an internal printer.

Interfaces from the db-651 to X-Y plotters and other computer systems are available if further analysis are required. Planned additions to the Metroreader family include battery operated portable units and modern-links to remote computer facilities.

The Optimum Exposure Monitor

Metrologger/Metroreader system is a significant advance in noise monitoring instrumentation. Combined features of size, computer performance and automatic printout make the system ideal for any personnel or environmental noise measurement program.

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Committee: AK/4 - Architectural Acoustics

Chairman: Dr. Carolyn Mather (E.P.A., Victoria)
Deputy Chairman: R.D. Buntine (R.M.I.T. Melbourne)

This committee has finalised the following two standards, which will be published shortly:

Methods for field measurement of the reduction of airborne sound-reduction of airborne sound transmission in buildings.

Methods for determination of sound transmission class and noise isolation class.

Mention was made earlier of the draft method for the measurement of reverberation time for auditoriums (DR 78156).

The other important projects of this committee under consideration and under varying degress of progress include the following:

Method of testing duct liner material and prefabricated silencers for acoustical and airflow performance

Method of laboratory measurement of airborne sound attenuation of ceilings between two rooms.

Plumbing and drainage noise

Acoustical requirements for speech privacy and speech intelligibility.

Repeatability of test results

Committee: AK/5 - Community Noise

Chairman: Prof. Anita Lawrence (University of N.S.W.)

Deputy Chairman: W. Davern (CSIRO Division of Building Research)

The committee is at present engaged in the revision of AS 1055-1978, Noise assessment in residential areas, taking note of international and local developments in this area, including the work on the revision of ISO 1996, the equivalent ISO standard to our AS 1055. In fact this committee actively contributes to the work of Working Group 18 of ISO TC 43 Subcommittee 1 which is engaged in the revision of ISO 1996, referred to earlier. In connection with the revision of AS 1055, the various considerations being taken into account include the relationship between human reaction and noise, automatic data collector system of digital and analogue types, objective assessment criteria, relationship between simple sound level meter measurements and those made by sophisticated systems and monitoring. Work is being taken up shortly to study traffic noise aspects.

Committee: AK/6 - Aircraft Noise

Chairman: Dr. Rory Willis (Consultant Surgeon, Melbourne)

Deputy Chairman: J.A. Rose (National Acoustic Laboratories)

This committee is engaged in keeping a watching brief on the international work in this area and review of ISO work in this area on a regular basis. This committee also participates jointly in the projects with other Acoustics standards committees. It is recalled that such joint work with Committee AK/4 resulted in the publication of AS 2021-1977, Code of practice for building siting and construction against aircraft noise intrusion.

Committee: AK/7 - Noise in Ships

Chairman: Capt. David Wharington (Department of Transport.)

This committee has finalised the standard on Recommended noise ratings of various areas of occupancy in vessels and this standard is in course of publication. This committee has taken up work on the preparation of a standard for recommended noise levels emitted by vessels in ports and harbours.

Committee: AK/8 - Noise from Agricultural and Earthmoving Machinery

Chairman: W. Brown (Department of Agriculture, Victoria)

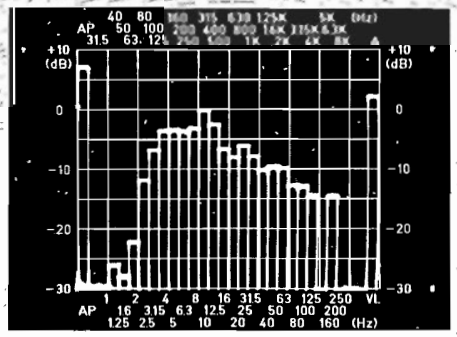
This committee is engaged in the preparation of a method of test for airborne sound from lawn mowers and edge cutters, taking into account the work of ISO/TC 23 in this area.

Committee: AK/9 - Noise from Pneumatic Tools and Machines

Chairman: R.B. King (Consulting Engineer, Melbourne.)

As reported earlier, this committee was responsible for the publication of AS 2221, Part 1-1979, Engineering method for measurement of airborne sound emitted by compressor units intended for outdoor use and Part 2 of the standard dealing with the measurement of airborne sound emitted by pneumatic tools and machines will be published shortly. This committee is working on a Code for noise control on construction and demolition sites, generally following BS 5228. Among the other projects, this committee is engaged in, mention may be made of the following:

Measurement of sound power levels of compressors.



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ii) 1/3 octave High Frequency 31.5-8kHz (25 bands)
iii) 1/1 octave High Frequency 31.5-8kHz (9 bands)

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Makes photographic records and night viewing possible.

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This can be achieved with instantaneous hold facility or "Automatic Hold" as determined by pre-set level control.

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This is possible by means of the optional external battery pack or car battery and gives up to approximately 8 hours' operation.

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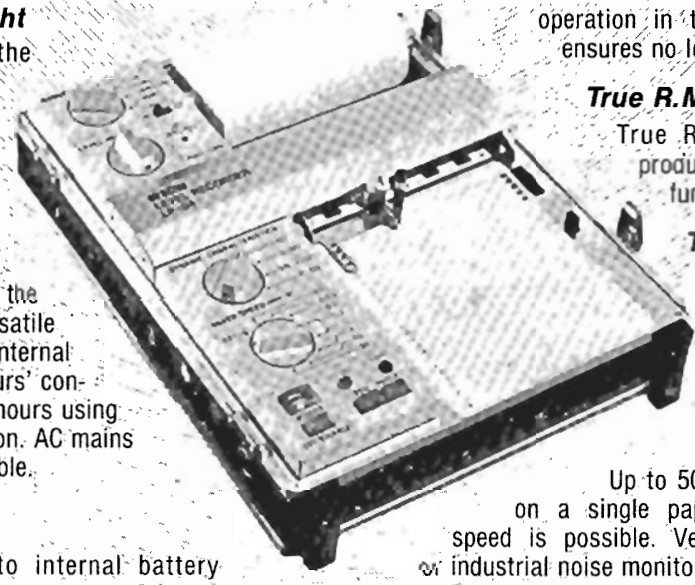
Weighing only 4.5kg, the LR-04 makes an ideal companion instrument to the SA-24 Real Time Analyser for all on-site or bench analysis.

Mains or Battery Operation

Three power options make the LR-04 one of the most versatile level recorders available. Internal batteries give up to 10 hours' continuous operation and 20 hours using external battery pack option. AC mains may be used where available.

No Loss of Records Due to Mains Failure

Automatic changeover to internal battery operation in the event of mains failure, ensures no loss of record continuity.



True R.M.S.

True R.M.S. recordings can be produced in addition to AC linear function.

Two Pen Speeds

Constant or exponential to IEC-179. Ideal for impulsive input levels.

Continuous Long Term Measurement

Up to 50 days' continuous recording on a single paper roll using the slowest speed is possible. Very useful in environmental or industrial noise monitoring situations.

For further information on the extensive Rion range contact:

WARBURTON FRANKI

• ADELAIDE 356-7333 • BRISBANE 52-7255 • HOBART 23-1841
• MELBOURNE 699-4999 • PERTH 277-7000 • SYDNEY 648-1711
• AUCKLAND N.Z. 79-7781 • WELLINGTON N.Z. 698-272

WF620/78

Measurement of sound power level of pneumatic tools and machines.

Maximum permissible sound power levels (and rating) of pneumatic tools and machines and compressors.

Committee: AK/10 - Noise from Railbound Vehicles

Chairman: Dr. R.G. Barden (Consulting Engineer, Melbourne)

This committee was responsible for preparing the draft methods for the measurement of airborne sound from railbound vehicles issued for public comment as DR 79003, which was reported earlier.

The work of all the Acoustics Standards Committees continues to be coordinated under guidance from the Acoustics Standards (AK/-) Committee, which is also assisted by an Executive (AK/-/1). Dr. R.G. Barden (Consulting Engineer, Melbourne) and Mr. H.V. Taylor (Acoustics Consultant and Consulting Architect, Melbourne) are the Chairman and Deputy Chairman of both the Acoustics Standards Committee and the Executive.

General

Most readers of this Bulletin use most of the Australian standards in Acoustics in their every day professional 'involvement. The Association gratefully welcomes suggestions for improvements to published standards and for preparation of new standards from persons experienced and knowledgeable in Acoustics.

A report of the international activities in the field of acoustics standards was reported by this writer in this Bulletin, Vol. 4, No. 2, June 1976 and a more recent report on this subject prepared by the Acoustical Society of America (ASA) was featured in this Bulletin, Vol. 6, Numbers 1 and 2, March/June 1978. All the Acoustics Standards Committees take note of the above developments carefully in preparation of Australian standards.

Queries relating to international and national standards on Acoustics, if any, may be addressed to the writer at the Head Office of the Association at 80 Arthur Street, North Sydney, NSW, 2060.

R. Nagarajan
Engineer-Secretary
Acoustics Standards Committee

BOOK REVIEWS

"APPLIED ACOUSTICS" G. PORGES

Edward Arnold Publishers, London 1977, 180pp, Index, Bibliography. Price $ (Soft cover)

(Alternative Review)

The above book was written to introduce Engineers and Scientists to the basic concepts of acoustics and noise control. As with the writing of any book on this broad topic the Author has to emphasise certain aspects of the material and ignore others. I believe the Author covered the correct subject matter which included the derivation of the wave equation, subjective acoustics, basic concepts of transmission of sound through ducts and walls, and elementary noise control topics. The book was very readable although the figures in Chapters 1-3 could have had more explanatory captions and a few typographical errors, e.g. Horizontal AHS of Figure 4.1 could be misleading.

On specific items, the concept of impedance was treated very late in the text and its place in the field of acoustics was not emphasised. In Chapter 2, the old octave band system was emphasised at the expense of the new centre frequency system. In Chapter 3 the spherical wave equation could have been derived in spherically symmetric co-ordinates which would be more palatable for the beginner. A table or figure relating phons (noys) amplitudes to subjective judgment should have been provided. As a combination of different topics Chapter 4 was well done. The critical frequency for a wall should have been discussed and a formula for its value given in Chapter 5. Although the Author treated low frequency propagation in ducts in a comprehensive manner for this type of text, no mention of high frequency sound propagation and cut off frequency was made. Also on page 73 some mention of resonance effects in expansion chambers should have been given. Chapters 9 and 10 have a good discussion on room acoustics for the beginner. The last three chapters give a very wordy discussion on noise control and it is easy to lose the importance of some of the advice given.

The book fulfills its major objective of introducing new students to the field of acoustics but the beginner would need to look elsewhere for solved problems and more illustration of the theory.

Leonard L. Koss
Monash University

HANDBOOK OF NOISE ASSESSMENT

D.N. May, Editor, Van Nostrand Reinhold Company (Environmental Engineering Series) New York. 1977. 400 pp., ill., Index. Price: unknown.

This book aims at presenting an authoritative review of the current procedures for the assessment of noise and gives, where appropriate, criteria to be achieved.

The fourteen chapters, written by thirteen contributors, cover a wide variety of topics, including transportation noise as it effects travellers and the community, noise inside buildings (including noise inside hospitals), industrial and commercial noise construction site noise, domestic noise, occupational noise as it effects hearing and noise as it effects work efficiency and sleep. At the end of each chapter there is an extensive list of references relevant to the subjects covered. Five short appendices, including one on basic acoustics completes the book.

Overall style and quality of writing by the contributing authors is good and those chapters where the approach has been to rely on reviews of technical papers and with the least emphasis on international and local (usually American) standards as the source of material, usually fare best. The chapters which refer significantly to standard test methods (the chapter Recreational Vehicle Noise to Non-users, in particular) give little insight into the problems of noise assessment and may be of little relevance due to either the test methods becoming obsolete or the methods not being used in the reader's country.

An unfortunate omission from the volume is a full discussion of the assessment of in-use vehicles. The constraints set upon such tests are invariably different from the test procedures for new vehicles. This has been recognized by many countries which have seen the need for separate noise abatement programmes. It is particularly unfortunate that the wrong impression has been given concerning vehicle noise controls in Australia.

The editor of this book hopes that it will be of assistance to persons in a wide variety of professions and not only those involved directly in acoustics; and perhaps this is where the strength of this book lies. Those working in a specialized branch of acoustics will probably find that much of the content is too general and contains insufficient new material. However, for others it will do much to explain the existence of a plethora of noise units and methods of noise assessment. In this respect this book would appear to be unique and will surely find its way onto the bookshelves of many university and other technical libraries.

J. Fowler
E.P.A. Victoria

PHYSICS AND MUSIC - NEVILLE FLETCHER

Heinemann Educational Australia, 1976, 48pp, Index, Bibliography. Price $ Soft Cover.

The Author, Physicist Professor Neville Fletcher, is an accomplished musician, and has had a number of papers published in musical acoustics. This monograph is designed for use at final year HSC level, or first year University level.

The reviewer has been using the monograph as a fundamental text in musical acoustics at a Conservatorium of Music, and in a University Department of Music. The book is tightly written - key sections are put in a box surround format, which some students will ignore, and others regard carefully. All the classes of musical instruments are considered: spectra and waveforms are put side-by-side, and well explained. Experiments are described, which those with access to simple apparatus can perform, to verify the theses in a more accurate quantitative fashion, e.g. than: "'tightening' a guitar string and noting that the pitch is higher".

The singing voice, hearing, and temperament are given perhaps less space than they deserve. But the list of references can be said to overcome this.

Highly recommended at the price for both teachers of musical acoustics and students thereof.

G. Troup
Monash University

ACOUSTIC GUIDELINES FOR SOUTH AUSTRALIAN SCHOOLS PUBLIC BUILDINGS DEPARTMENT, SOUTH AUSTRALIA 1977

This publication is a recent addition to the library of the Society, which is maintained by the librarians at the National Acoustics Laboratory, Sydney.

It comprises 79 pages, plus additional work sheets, in a ring binder which allows for the inclusion of additional information and personal notes.

The four sections cover the control of external noise, noise transmission between rooms, control of sound within rooms and acoustic design checklist. The explanations are kept to a minimum and the information presented, where possible, in the form of diagrams, graphs or tables. This follows the comments in the introduction which state that a "simple procedural approach has been adopted throughout, with involved calculations replaced where possible by graphical data and "rules of thumb".

The appendices which deal with definitions, basic principles and criteria suffer somewhat because of this approach, however, a reading list is provided. The noise reduction, in terms of dB(A) and the sound absorption coefficients, mostly for six octave bands, are listed for a wide variety of constructions and construction types. For proprietary materials the manufacturer or distributor is also listed. The very brief explanation of noise measurement procedure in another Appendix may be sufficient for someone who has previously had a detailed explanation. However, insufficient warnings about the factors which may lead to inaccurate measurements could lead to problems for the inexperienced.

Overall this is a useful publication for those planning schools and other educational buildings. It supplements the information in publications from the U.K., or U.S.A., as it has been prepared for Australian conditions.

Marion Burgess

CONFERENCE & SYMPOSIUM ANNOUNCEMENTS

ACOUSTICAL EVENTS IN AUSTRALIA

1979

21 and 22nd Sept. 1979: Melbourne
Australian Acoustical Society
Annual Conference.
Topic: 'Building Acoustics Design Criteria'.

Details from: Mr. K. Cook,
School of Applied Physics,
R.M.I.T., 124 Latrobe Street, MELBOURNE. 3000

1980

9-16th July: Sydney, Tenth International Congress on Acoustics.
"Acoustics in the 1980's"
Satellite Symposia
"Engineering for Noise Control"
- Adelaide 7-8th July
- Perth 18-19th July

Details from: 10th ICA Exec. Committee,
Science Centre,
35-43 Clarence Street,
SYDNEY, NSW, 2000

ACOUSTICAL EVENTS OVERSEAS

1979

NEW ZEALAND

10-11th May, 1979. Christchurch,
Fifth New Zealand Acoustical Society Conference.

Details from: Prof. D.C. Stevenson,
University of Canterbury,
CHRISTCHURCH. N.Z.

UNITED KINGDOM

(a) 9-11th April, 1979. ISVR, Southampton.
"Spring Conference of the Institute of Acoustics"
Sessions on Psychoacoustics, Sound Power, Building Vibration, Sound Generated by Impacts.

Details from: Institute of Acoustics,
47 Belgrave Square,
LONDON.

(b) 18-20th July, 1979. Manchester University. "Third Conference of the British Society of Audiology"
Sessions on Paediatric Audiometry, Communication, Noise Induced Hearing Loss, Rehabilitation of Hearing Impaired Adults, Vestibular Tests.

Details from: British Society of Audiology,
105 Gower Street,
LONDON.

THE UNITED STATES OF AMERICA

(a) 11-15th June 1979. Cambridge,
"Meeting of the Acoustical Society of America"

Details from: Dr. R. Bolt,
Bolt Beranek and Newman,
50 Moulton Street,
CAMBRIDGE, MASS, 02139

(b) 26-30th Nov. 1979. Salt Lake City.
"Meeting of the Acoustical Society of America"

Details from: D.W.J. Strong,
Department of Physics,
Brigham Young University,
PROVO., UTAH, 84602

(c) 30th April2nd May 1979. West Lafayette.
NOISE-CON 79 - 'Machinery Noise Control'

Details from: Dr. J. Sullivan,
Herrick Laboratories,
Purdue University,
WEST LAFAYETTE, Ind. 47907

POLAND

11-14th September 1979. Warsaw.
"Internoise 1979" (In English)

Details from: Prof. Stefan Czarnecki,
IPPT-PAN,
Swietokizyska 21,
00-049 WARSZAWA.

GERMANY

28-31st August 1979. Gottingen.
Symposium on Mechanics of Sound Generation in Flows.

Details from: Prof. E.A. Muller,
Max Planck Institute,
Bottinger str 4-8
D-3400 GOTTINGEN.

SWEDEN

28-30th August 1979. Stockholm.
International Tyre Noise Conference,

Details from: Mr. Nils-Ake Nilsson,
IFM Akustikbyran AB,
Warfvinges Vag 26,
S-11251 Stockholm.

JAPAN

5-8th June, 1979. Tokyo.
Meeting of the Acoustical Society of Japan.

Details from: Prof. M. Konishi,
Musashi Industrial College,
Tamazutsumi Setagaya,
TOKYO 158.

DENMARK

6-11th August, 1979. Copenhagen. "Ninth International Congress of Phonetic Sciences"

Details from: Prof. E. Fischer-Jorgensen,
Institute of Phonetics,
96 Njalsgade,
2300 Copenhagen S.

1980

AUSTRIA

26-29th February 1980. Vienna. "63rd Convention of the Audio Engineering Society"

Details from: Secretary,
Audio Engineering Soc.,
60 East 42nd Street,
NEW YORK, NY. 1000017

U.S.A.

21-25th April 1980. Atlanta, Georgia.
Meeting of the Acoustical Society of America.

Details from: Dr. C.R. Bragdon,
Georgia Institute of Technology,
Atlanta, Georgia 30083

18-21st November, 1980. Los Angeles.
Meeting of the Acoustical Society of America,

Details from: Dr. R. Stern,
UCLA School of Engineering,
6426 Boelter Hall,
Los Angeles.

NEW PRODUCTS

COMPLETE NOISE DOSIMETRY

Complete noise dosimetry is here at last! Metrosonics db-301 Metrologger and db-651 Metroreader, combine microprocessor technology and acoustics experience to produce statistical distribution and time history printouts and computations of Leg, Ln and Lmax at a competitive price.

A miniature pocket-sized data logger, the db-301 is specifically designed for processing and storing sound level information. Its companion db-651 reader interrogates the db-301's memories, calculates noise descriptors and simultaneously prints out all information on a built-in thermal printer or ancillary XY recorder.

Patented circuits operate over a 64dB multifunctional and prevent obsolescence. The hard copy read-out may be directly used as compliance evidence, placed in reports or kept in files for future comparison.

AUSTRALIAN GENERAL ELECTRIC LTD.
86-90 BAY ST., ULTIMO, 2007

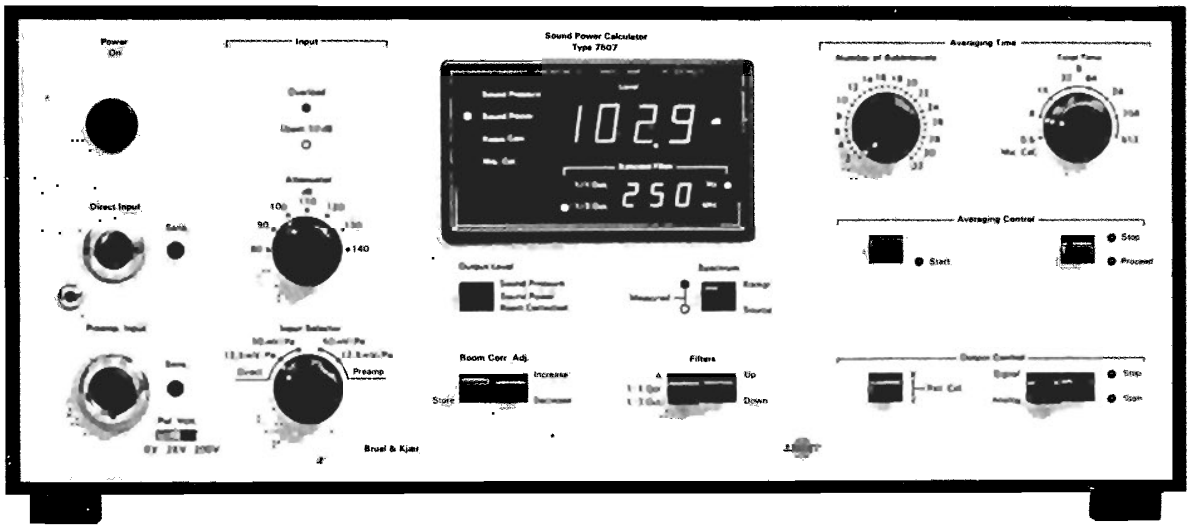
SOUND POWER CALCULATOR

A Sound Power Calculator for determination of sound power levels of a sound source according to the most rigorous standards has been developed by Bruel & Kjaer.

The 7507 removes the drudgery from sound power determinations by performing automatically the repetitive sound pressure level measurements necessary for accurate results. It averages the sound pressure levels over a selected time interval and adds to them a Room Correction Term to yield the sound power level. The introduction of the adjustable Room Correction Terms means that measurements can be performed in both reverberant and anechoic environments. The sound pressure and sound power levels are indicated on the digital display as A-weighted levels or as octave or third octave band levels over the frequency range 100 Hz to 10 kHz, and if required these results can be read out via the digital or the analog output.

The three methods used to spatially average the sound pressure levels about the sound source before processing them within the 7507 are:

a) a single microphone moved from place to place
b) an array of microphones in conjunction with a multiplexer
c) a microphone attached to a rotating boom.



ULTRASONIC FLAW DETECTORS

The new portable Mark I Ultrasonic Flaw Detector has been designed and manufactured to rigid military specifications to withstand the rigors of field handling wherever ultrasonic flaw detection and thickness measurements are required. Applications vary from the inspection of high temperature steel pressure vessels to the location of minute surface cracks in helicopter rotor blades.

The Mark I, a new design from Sonic, can match the performance of laboratory instruments in detecting defects such as cracks, porosity and foreign inclusions in materials such as bar and plate, tubing, castings, forgings and extrusions, and in welded assemblies. It is also capable of thickness gaging to locate flaws or determine the physical thickness of test objects. The unit maintains a readable resolution of within 0.005 inches over a 1.0 inch range.

Easy, reliable field usage was kept uppermost in mind throughout the design of the unit. It is packaged in strong, lightweight, drip and dust-proof enclosures. Built-in batteries provide sufficient power for 10 hours of continuous operation. The CRT displays on the Mark I measure 5.5 inches and 3 inches. An operating temperature range of -20°F to +160°F permits the unit to be used in tough environment and rugged field conditions. For further information, please contact:-

JOHN MORRIS PTY. LTD.,
P.O. Box 80,
CHATSWOOD, N.S.W., 2067.
Telephone: 407-0206.

INFORMATION FOR CONTRIBUTORS

Items for publication in the Bulletin are of two types

(a) Shorter articles - which will appear typically under the heading 'News and Notes'

(b) Longer articles - which will appear as refereed technical articles.

The closing dates for the receipt of these articles are as follows:

Vol. 7 No. 2 Longer articles: Mid May; Shorter articles: Mid June.
Vol. 7 No. 3 Longer articles: Mid September; Shorter articles: Mid October.

Articles may be sent directly to the editor or via the local State Bulletin representative.

There are no particular constraints on "shorter articles" except that they should be of relevance to the Society and be received on time.

Attention to the following matters will assist when processing "longer articles".

(i) Length - typically from 3 to 4 pages when printed.

(ii) Title and Authors Address - the title should be concise and honestly indicate the content of the paper. The author's name and that of his organisation together with an adequate address should also appear for the benefit of members who may wish to discuss the work privately with the author.

(iii) Summary - The summary should be self contained and be as explicit as possible. It should indicate the principal conclusions reached. That should be possible in less than 200 words. Many more members will read the summary than will read the paper. Everybody seems to be busy these days.

(iv) Main Body of the Article - This should contain an introduction, and be followed by a series of logical events which lead finally to the conclusions or recommendations. The use of headings greatly assists the reader in following the logic of the paper. The conclusions should of course be based on the work presented and not on other material.

(v) References - Any standardised system is acceptable - for example those used by Journal of Sound and Vibration, Journal of the Acoustical Society of America, or The Institution of Engineers, Australia. Page numbers and dates are important, particularly when referencing books.

(vi) Tables and Diagrams - As a general rule, Tables are best avoided. Diagrams may need to be redrawn during the editorial stage. They ought to be totally self explanatory, complete with a title, and with axes clearly labelled and units unambiguously shown.

The papers generally will be subject to review but this is not intended to discourage members. The author no doubt would prefer to have anomaly drawn to his attention privately than to gain notoriety by having errors published widely.