

# ECHOES

Volume 20, Number 2  
Spring 2010

## Hot topics in noise

*Nancy S. Timmerman*

What is noise? Here are some possible definitions:

1. Sound from other people's activities that interfere with one's own
2. Unpleasant sound (especially if music)
3. Injurious sound (particularly in industry)
4. Sound which carries no meaning
5. Sound generated as a by-product of mechanical processes, such as pumping, fans, combustion, friction, and assembly
6. Naturally occurring sounds at the wrong time, or
7. Sounds which carry an unpleasant connotation to the listener.

### Community noise and vibration from transportation (Ref. 1)

Noise from transportation affects nearly everyone. The amount of noise which can be produced is regulated by (Federal) law. This type of noise can be reduced by home improvements (reducing the amount that enters the home).

The Federal Aviation Administration (FAA) oversees airport noise studies. Their NextGEN program is working on making quieter aircraft. Aircraft noise exposure is still computed using the Integrated Noise Model (INM), and revision 7.0b was just released in October. They are working toward having one modelling program to cover both air quality and noise (AEDT), to be available in 2010.

For highways, the state highway departments and turnpike authorities are responsible for addressing the community noise. Two ways to reduce this noise source are to put up barriers along the road

(which, usually, blocks the view as well), and to use porous pavements (in warm climates). A recent medical study in Sweden has related high blood pressure with highway noise.

### Sustainable energy — wind turbines

Sustainable energy is all the rage with governments at all levels in the US. What is usually meant is energy that is not generated from coal, oil, or natural gas (fossil fuels). Unfortunately, energy produced from solar panels and wind turbines is more expensive. Therefore, governments have “subsidized” these sources to encourage their development. Solar panels and wind turbines are thought to be “environmentally friendly.”

It has been known for some time that neighbors of wind turbines sometimes complain about the noise (Figure 1). This is particularly true when they are in rural areas. Background sound levels in these areas are low, and nighttime levels of 35 dBA have caused complaints. The turbines produce a “swishing” sound which is very annoying. In order to avoid these problems, about a mile of buffer is needed around the turbines.

### National Parks (Ref. 2)

The National Park Service (NPS) has been working on the problem of maintaining the character of wilderness areas and their sounds since the early 1990's. The first studies came as a result of air tour operations in the Grand Canyon. It was found that the ability to hear the aircraft was key. This is at odds with the typical noise exposure criterion in use by the Federal Aviation Administration for people around airports. A new standards effort has just been started (S3-SC1-



Fig. 1. Wind Turbine: Hull, MA

*continued on page 3*

# We hear that . . .



- Useful information about the **ICA in Sydney** appears at [www.ica2010sydney.org](http://www.ica2010sydney.org)

- Funding for the **NSF Robert Noyce Teacher Scholarship Program**, which supports future math and science teachers, has increased dramatically as a result of the federal government's commitment to science, technology, engineering, and mathematics education. For FY 2010, Congress has supported the NSF's request of \$55,000,000 for the program.



*Rebeca de la Fuente and Sergio Beristain*

- The **2nd Pan-American/Iberian meeting on acoustics**, November 15-19 in Cancun will be a joint meeting of ASA, Instituto Mexicano de Acústica (IMA), and Federación Iberoamericana de Acústica (FIA). The organizing committee is composed of James West (ASA, co-chair, Sergio Beristain (IMA, co-chair), Samir Gerges (FIA, co-chair), Charles Schmid (ASA), and Rebeca de la Fuente (cultural program).

- Ivan Tashev, a member of the Speech Technology Group at Microsoft, spoke on sound capture and processing for telecommunications and speech recognition at the **Northwest Regional Chapter's** winter meeting held at Microsoft in Redmond WA. The Northwest chapter, which began in 1956



*Ivan Tashev and Andrew Boone at the NW chapter meeting.*

became dormant for a decade and was officially reactivated at the ASA meeting in San Antonio. Andrew Boone is chair of the chapter.

- ASA member **Fred Dylla**, CEO of the American Institute of Physics, was elected a AAAS Fellow.

- ASA member **Daniel Tollin**, University of Colorado Medical

School, has received the 13th Burt Evans Young Investigator Award from the National Organization for Hearing Research.

- ASA is currently searching for a half-time **Education Coordinator** (honorary position). For details please visit the ASA website <http://asa.aip.org>. The review of applications will begin on 15 April and continue until the position is filled.

**ECHOES**



**ECHOES**

Newsletter of the Acoustical Society of America

*Provided as a benefit of membership to ASA members*

The Acoustical Society of America was organized in 1929 to increase and diffuse the knowledge of acoustics and to promote its practical applications.

Echoes Editor . . . . . Thomas Rossing

ASA Editor-in-Chief . . . . . Allan Pierce

Advisors . . . . . Elaine Moran, Charles Schmid

Phone inquiries: 516-576-2360. Contributions, including Letters to the Editor, should be sent to Thomas Rossing, Stanford University, CCRMA Department of Music, Stanford, CA 94305 <[rossing@ccrma.stanford.edu](mailto:rossing@ccrma.stanford.edu)>



*Tom Ho and Maurice Yeung, co-organizers for the joint meeting of the ASA and the Acoustical Society of China in May 2012. The meeting will be held in Hong Kong hosted by the Hong Kong Institute of Acoustics.*



# Hot topics in noise

continued from page 1

WG4) on this topic under the direction of two scientists at the NPS.

## Soundscapes

The term “soundscape” is just like “landscape,” but for sounds. It is used to describe an area, usually in a city, to try to get away from the negatives of the word “noise.” Recent work in this area has found that sound level is often less important than the viewpoint of the listener. Influences of the norms of society also play a role.

In addition to the “sound walks” which have occurred at ASA meetings in recent years, a new workshop series has started to bring acoustics into the planning processes in cities through an ASA innovation award. The first such workshop occurred in Portland, and another is scheduled in Baltimore.

## Codes and standards: LEED/schools and hospitals (Ref. 3)

For the first time since the Leadership in Environmental and Energy Design (LEED) (U.S. Green Building) standards were introduced, credit can now be taken for acoustical design for schools and hospitals. The classroom standards allow for one credit for design similar to that in the national standard on classroom acoustics, ANSI S12.60-2002. This is currently allowed.

The credit for hospitals is in the current revision of the green building document for hospitals. A national standard is in the works to go with it, ANSI S12, WG44. Two credits are possible: one for speech privacy and one for ambient levels. The speech privacy criterion goes with the idea that conversations between doctors and patients should not be easily overheard. The ambient level criterion is for proper design so that the interior of the hospital is quiet enough to be restful, which is not the case in many current designs.

In the Fall of 2009, the U.S. Environmental Protection Agency (EPA) issued a notice of rulemaking on personal hearing protective devices, which changes the labeling and frequency of testing, inviting comments on their rule. An update on this process will be presented in Baltimore.

Members of the Acoustical Society of America (ASA) can receive five (5) free standards per year as a benefit of their membership.

## Energy savings from noise control (Ref. 4)

The sealing of sound leaks, when used on an outside wall, uses the same materials as those used for energy conservation, namely caulking and weatherstripping. In both cases, the best improvement is for a solid material intervening between the inside and outside. Both acoustical performance (using the STC, sound transmission class), and infiltration (the amount of air which enters through the cracks) are available for doors with different degrees of treatment. Cost savings were determined for Boston, using fuel oil for heating (boiler efficiency of 80%) at \$2.50 per gallon. The results are shown in Table 1. Thus, depending on the initial condition of the door, cost savings range from \$378 per year to \$756 per year per door.

**Table 1: Energy Cost Calculation/Exterior Door**

Door Type	Standard	Gaps to .5	Gaps to .25	Treated	Best
STC (dB)	21	24	27	42	44
Infiltration 11.36 cfm/lfc	5.68	2.84	.35	.04	
Btu/hr F	245	123	61.3	7.56	.864
Annual Btus 5791 deg days	3.41 E7	1.71 E7	8.53 E6	1.05 E6	1.20 E5
Yr Fuel Oil, gal 80% eff.	302	151	75.6	9.31	1.06
At \$ 2.50/gal	\$ 756	\$ 378	\$ 189	\$ 23.30	\$ 2.66
Above 25 mph	Below 15				
About half	\$ 378	\$ 189	\$ 94.50	\$ 11.60	\$ 1.33

## Hearing loss from personal music devices (Ref. 5)

Over time, listening to music has moved from portable “boom boxes” to Sony Walkman players, to iPods and mp3 players today. While this has been good from the point of view of the people who listened to music which was not theirs, it has brought a new potential problem to light.

Several years ago, a medical doctor noticed that some of his teenage patients had developed the kind of hearing loss associated with working in factories all day. Careful research showed that the levels developed in the ear were 74 to 110 dBA (loud shouting to ear-splitting). This result has been repeated again and again in current research. The European Commission is studying whether to make a rule of requiring automatic volume control. The fact that people are subjecting themselves to this kind of sound when they are not working has made it harder to attribute hearing loss strictly to places of work.

## References

1. Transportation information from various sources, including the FAA
2. NPS information from Miller and Hingson (InterNoise 2009)
3. LEED information from David M. Sykes (InterNoise 2009)
4. Energy use by author
5. In-ear information from Burgess and Williams (InterNoise 2009)
6. Photography by author



*This article is based on paper 3pID3 at the 158th ASA meeting in San Antonio.*

*Nancy S. Timmerman, P.E. is a self-employed engineering consultant in acoustics and noise control in Boston, MA. She is an ASA Fellow and is currently Chair of the Technical Committee on Noise.*

# ASA meets in historic Baltimore

The historic city of Baltimore, is named for the founder of Maryland colony, Lord Baltimore, who in turn took his name from his place of origin in County Cork in Ireland. The city has a scenic and busy harbor on the Patapsco River, and arm of Chesapeake Bay. Baltimore played an important role in the American Revolution, but even more notably in the War of 1812, when troops from Ft. McHenry defended the city in a battle that inspired Francis Scott Key to write "The Star Spangled Banner." The harbor is now home to the Harborplace, a shopping, entertainment, and tourist center and the National Aquarium in Baltimore.

The Baltimore ASA meeting will be a joint meeting with the Institute of Noise Control Engineering (INCE), and registrants will be welcomed at sessions of NOISE-CON 2010 as well as at many joint sessions. ASA and INCE will co-sponsor a technical exhibition. The technical program features 142 sessions and 1350 papers. A "Hot Topics" session will cover the fields of musical acoustics, speech communication, and structural acoustics and vibration. The Gallery of Acoustics will consist of multimedia collection of images, videos, audio clips, and narrations.

Technical tours of the Mount Vernon arts district (Monday afternoon), the laboratories at the U.S. Naval Academy in Annapolis (Wednesday evening), and several laboratories at the University of Maryland (Wednesday evening 5:00 p.m. to 11:00 p.m.) are planned. The Naval Academy tour will include dinner at the Officers Club. The University of Maryland tour will include tours of laboratories in the following locations: (1) Speech Communication Lab, Neural Systems Lab, and Perceptual Interfaces and Reality Lab; (2) Fish Bioacoustics Lab, Evolution of Sound Localization Lab, and Auditory Neuroethology Lab; and (3) The Language Perception and Development Lab, Hearing Science Lab, and Cochlear Implants and Psychophysics Lab. Refreshments will be served before the tours begin. Registration for all tours is available with online meeting registration.

A tutorial lecture on Animal Hearing will be given by Robert J. Dooling, University of Maryland on Monday at 7:00 p.m. The registration fee is \$15 in advance, \$25 at the meeting (\$7 and \$12.50 for students). A short course on Array Signal Processing for Sonar will be taught on Sunday, 1:00 p.m. to 5:00 p.m. and Monday 8:30 to 12:30 by Douglas Abraham, Department of Electrical and Computer Engineering at the University of Connecticut. The registration fee is \$300 (\$125 for students) (\$250, \$125 for registration in advance). A one-day symposium on "Urban Design with Noise in Mind," free to conference registrants, will be provided by several ASA members and public speakers. A topical meeting on "Signal Processing of Subtle and Complex Acoustic Signals in Animal Communication" will take place on Thursday and Friday.

The ASA meeting will have a published proceedings, which will be a separate volume of the online journal "Proceedings of Meetings on Acoustics" (POMA). This is an open access journal, so that its papers are available in PDF format without charge to anyone in the world. Speakers also have the opportunity to submit their papers to ASA's "Meeting Papers Online," which opens for author submissions in March. Submission procedures and password information were mailed to authors with the acceptance notices. A separate proceedings of NOISE-CON 2010 will be published on CD ROM.

With a full program of interesting papers and events, there won't be much time for sightseeing, but a promenade around the Inner Harbor will take the visitor past the Baltimore Maritime Museum, the National Aquarium in Baltimore, Harbor Place, and the Maryland Science Center. Visitors who come early or stay after the meeting will enjoy visiting the Walters Art Gallery, the Washington Monument and Mt. Vernon Park, the Lexington Market, Ft. McHenry, the National Shrine of the Basilica (the first metropolitan cathedral in the U.S.), the Top of the World Observation Level and Museum, and Johns Hopkins University (whose annual Spring Fair April 23-25 includes a concert on Saturday night).



*Juan I. Arvelo, technical chair,  
Charles Schmid, Mardi Hastings,  
general chair*



*Baltimore Marriott Waterfront Hotel*



*Baltimore harbor  
at night*

# Lasers and Acoustics

Thomas D. Rossing

Several scientific societies, including the American Physical Society, the Optical Society of America, SPIE (optical engineering society), and IEEE (Institute of Electrical and Electronic Engineers) are celebrating the 50th anniversary of the invention of the laser with a year-long **LaserFest**. Special sessions are planned at society meetings, and special displays are planned at museums. The website [www.LaserFest.org](http://www.LaserFest.org) features a continually updated calendar of events and locations. (ASA is a supporter of LaserFest).

Lasers, of course, are widely used in scientific research, and the laser has become a critical component in countless technologies ranging from CD and DVD players to Lasik eye surgery. Gigantic petawatt lasers have been developed for fusion energy research. Scanning past issues of *ECHOES* has reminded me of some interesting **acoustical applications of lasers**, and searching online has turned up many more. I will mention only a few of them. I apologize to readers if I have missed your favorite acoustical application.

- Intense pulses of sound up to 220 dB can be generated by concentrating laser light under water so that it ionizes water and creates a small explosion of steam, according to a news note in the Winter 2010 issue of *ECHOES*.
- The SASER (sound laser) which produces beams at terahertz frequencies is described in the Fall 2009 issue of *ECHOES*. The saser depends upon a beam of phonons stimulated by a light beams, bouncing back and forth between layers in a lattice of gallium arsenide and aluminum arsenide, each layer a few atoms thick. Similarly, the UASER (ultrasound amplification by stimulated emission of radiation) is an ultrasonic version of the laser.
- Laser-generated ultrasound is widely used in nondestructive testing and inspection. An alternative ultrasonic inspection technique uses two lasers, a short pulse laser with a wavelength

chosen so as to be absorbed by the sample to produce ultrasonic waves, and a second laser beam to detect the impact of the ultrasonic waves. Laser-generated bulk waves and surface waves have also been applied to the determination of elastic constants or defects of composite structures.

- Magnetorotons, observed when surface acoustic waves and laser light were simultaneously applied to GaAs, were reported in the Summer 2009 issue of *ECHOES*. Magnetorotons are characteristic excitation of the states associated with the fractional quantum Hall effect.
- The National Institute of Water & Atmospheric Research (New Zealand) carries out fish biomass surveys using lasers to determine how much sound reflects off fish.
- At least three different types of laser microphones have been built. In one type laser light is reflected from a vibrating window or other surface affected by sound. The return beam is fed to an interferometer which detects frequency changes due to the Doppler effect. A laser beam microphone which depends upon diffraction of the laser beam by sound waves was described in the Fall 2008 issue of *ECHOES*. A third type, a particulate flow detection microphone, is based on a laser-photocell pair with a moving stream of vapor in the laser beam's path. Sound waves cause variations in the amount of laser light reaching the detector.
- Holographic interferometry and laser speckle interferometry are widely used to study the modes of vibrating systems and how they radiate sound. Almost every ASA meeting has papers based on the results of such studies.

In light of the general interest, as well as scientific interest, in the laser during 2010, it would be well for ASA to draw attention to the many acoustical applications of lasers, perhaps by scheduling a special session on lasers and acoustics at an ASA meeting.



Technical program organizing committee for Baltimore meeting. L to R: Courtney Burroughs, Juan Arvelo, Mardi Hastings, Maureen Stone, Kenneth Good, Carr Everbach, Nancy Timmerman, Altan Turgut, Murray Korman, Monita Chatterjee, Robert Koch, Sandra Gordon-Salant, Rochelle Newman, Michael Scanlon, Roger Gauss, Susan Parks, Charles Gaumond, Keith Wear, David Feit, Peter Marvit, Patricia Davies, Stuart Bolton, James Cottingham, Judy Cottingham (not shown Michael Lucas) [Photo by C. Schmid]



# Publication Policy Committee

*Charles Schmid and Brenda Lonsbury-Martin*

The Publication Policy Committee reviews and suggests changes to the policy, contents, and format of the *Journal* and other Society publications, with the exception of books and standards, as well as proposing new publications. Its membership is comprised of a chair (currently Brenda Lonsbury-Martin), members appointed by the president, and ASA's Editor-in-Chief and President-Elect as ex-officio members. The Committee meets at each ASA meeting to discuss matters related to ASA's journal publications and to make recommendations for action to the Editor-in-Chief and the Executive Council. Also, a staff person from the American Institute of Physics (AIP), which provides ASA with publication services, usually attends the meetings.

Scientific and technical journal publications have been undergoing revolutionary changes, which directly affect ASA members and journal authors as well as the Society's finances. In recent years the Committee has addressed the increasing pressure to make scientific journals open access, which has the potential to reduce library subscriptions, membership, and the quality of composition of ASA's publications. The Committee has also discussed issues including providing open-access

assistance to authors in meeting the requirements of funding agencies regarding publications, and the capability for improved online journal formats and delivery methods to members and subscribers.

*Proceedings of Meetings on Acoustics* (POMA), ASA's online meeting proceedings publication, is an example of a new publication issued by the Society. The Committee was also instrumental in the launching of *JASA Express Letters* (JASA-EL), which has been successful in reducing the time between submission and publication of articles, and in the decision to replace the online Journal archives with improved and high-resolution files. Other issues under consideration by the Committee include journal impact factors, publicizing newsworthy articles, revising the acoustics subsection of the Physics and Astronomy Classification Scheme for indexing articles, and improving reader/author interaction through social networking capabilities such as AIP's recently launched UniPHY (see [www.aip.uniphys.org](http://www.aip.uniphys.org)).

Members who wish to make suggestions for improvements to ASA's publications are encouraged to send their ideas to [asa@aip.org](mailto:asa@aip.org) for consideration by the Publication Policy Committee.



*Photo: (L to R) Front Row: Charles Church, Brenda Lonsbury-Martin (Chair), Dick Stern (Editor, Acoustics Today), Mardi Hastings, George Frisk (President-Elect) Back row: Kelly Quigley (Manuscript Manager, JASA Peer-Xpress), Andrew Norris, Michael Stinson, D. Keith Wilson, James Lynch (Editor, JASA Express Letters), Thomas Rossing (Editor, ECHOES), Allan Pierce (Editor-in-Chief) (not pictured Philip Marston). [Photo by C. Schmid]*

# Scanning the journals

Thomas D. Rossing

- An **optomechanical crystal** capable of localizing and strongly coupling 200-terahertz photons and 2-gigahertz phonons is reported in the 5 November issue of *Nature*. These planar silicon-chip-based optomechanical crystals bring the powerful techniques of photonic crystals to bear on phononic crystals, providing sensitive (near quantum-limited) optical measurements of mechanical vibrations. Possible applications for such optomechanical crystals include signal processing in photonics or detectors of tiny masses (such as biomolecules) with high spatial resolution.

- According to an article in the Autumn issue of *Birdscope*, the Club-winged Manakin is the only bird that **uses its feathers as a violin**. The small, chestnut-colored males with their cherry-red caps and black-and-white wings look fairly ordinary, but they make an extraordinary sound. Male Club-winged Manakins make a ringing “tick, tick, ting” sound when trying to attract females to mate. The ting in particular is a high-pitched note, sounding somewhat like a violin. To make the sound, the bird tips forward and flips its wings above its back. The Club-winged Manakin is a bird with a pair of violins built into its wings. The wide, ridged feathers form the body of the violin and the thin, kinked feathers next to them form the bow. When male manakins knock their wings together across their backs over and over again in a rapid cycle, the momentum from the heavier-than-usual feather shafts causes the bow feather to slide first inward across the ridged feather, then outward. This generates friction and vibration. The seven ridges generate seven knocks on the way in and seven on the way out, which adds up to that frequency multiplier of 14 needed to explain the discrepancy between the rate of feather knocking and the frequency of the sound heard. The fat hollow feather resonates at this stimulated frequency, and out comes the unique sound of the Club-winged Manakin.

- According to a paper in the 29 October issue of *Neurobiology of Aging*, scientists have created a mouse model that is comparable to an older adult who has the ears of a healthy 20-year old but the brain of that 20-year-old’s great grandmother. They created the model when they crossed two mouse strains commonly used to study age-related hearing loss: the CBA mouse, which loses its hearing gradually, like most people, and the C57 mouse, which loses its hearing rapidly in middle age and becomes deaf later in life. The offspring of this cross had significantly **better hearing** than the parent mice as they aged. It was better able to compensate for sound in background noise. If researchers can pinpoint key changes occurring as a result of aging, they may be able to develop drug or gene therapies to ward off hearing loss in some older adults.

- Several analogs of **optical elements for sound waves** in air are described in a paper in the February 2009 issue (yes, I sometimes fall behind in scanning the journals) of *The Physics Teacher*. These devices will be of particular interest in teaching

acoustics, but they also have potential use in acoustics research experiments. Among the devices described are lenses, half-wave plates, and zone plates (both amplitude and phase).

- A review article entitled “**Binaural Recording Technology: A Historical Review and Possible Future Developments**” appears in the September/October issue of *Acta Acustica/Acustica*. Although binaural recording has existed since 1880, the years 1960 to 1970 can be considered especially fruitful with accelerated development of the technology, important advances related to concepts such as head-related transfer functions (HRTFs) and significant new knowledge about the function of the pinnae. Binaural recording and reproduction have been of special interest in recent years due to advances in auralization and also the popularization of the Internet.

- A letter in the 7 January issue of *Nature* reports the cooling of the motion of a radio-frequency **nanomechanical resonator** by parametric coupling to a driven, microwave-frequency superconducting resonator. The nanomechanical resonator is a Nb-Al-SiN sample 30  $\mu\text{m}$  long, 120 nm wide and 140 nm thick formed by chemical vapor deposition. Starting from a thermal occupation of 480 quanta, occupation factors as low as  $3.8 \pm 1.3$  have been observed.

- Human **fetuses are able to memorize auditory stimuli** from the external world by the last trimester of pregnancy, with a particular sensitivity to melody contour in both music and language a paper in the 5 November issue of *Current Biology* reminds us. Prenatal exposure to native-language prosody influences the crying patterns of newborns, as revealed by analysis of the crying patterns of 30 French and 30 German newborns. The French group preferentially produced cries with a rising melody contour, whereas the German group preferentially produced falling contours.

- Zebra finches can **discriminate and categorize monosyllabic words** that differ in their vowel and transfer this categorization to the same words spoken by novel speakers independent of audible differences between individual voices or the sex of the speakers, according to a paper in the March issue of *Proc. Royal Soc. B*. This finding shows that there is no need to invoke special mechanisms, evolved together with language, to explain this feature of speech perception.

- **Head-related transfer function (HRTF)** interpolation plays an important role in implementation of 3D sound systems, according to a paper in the November issue of *Acoustical Science and Technology*. It not only reduces the number of measurements for HRTFs, but it also reduces the data of HRTFs for seamless binaural synthesis. The method first decomposes the HRTF into principal components, which are directional dependent. A sphere-partitioning optimization scheme is employed to improve the approximation precision. Experiments show that HRTFs of the entire sphere can be interpolated by the method with small distortion.



ACOUSTICAL SOCIETY OF AMERICA

SUITE 1N01

2 HUNTINGTON QUADRANGLE  
MELVILLE, NEW YORK 11747-4502

Non-Profit Org.  
U.S. Postage

**PAID**

Hicksville, NY  
Permit No. 289

## Acoustics in the News

- Ultrasound and underwater sonar devices could see a big improvement thanks to the development of the hyperlens, according to a story in the October 26 issue of *Science Daily*. The acoustic hyperlens, created at the Lawrence Berkeley National Laboratory, provides an eightfold boost in the magnification power of sound-based imaging technologies. The key to this success is the capturing of information contained in evanescent waves, which carry far more details and higher resolution than propagating waves but are typically bound to the vicinity of the source and decay too quickly to be captured by a conventional lens.
- The University of Bristol (UK) has opened what it claims is the quietest building in the world, according to a story in the October issue of *Physics World*. Construction of a building for the Bristol Centre for Nanoscience and Quantum Information took over two years to complete. The site is well suited to hosting such a quiet lab, since the ground under the building consists of solid rock. The four-story building has a number of quiet rooms in the basement where most of the experiments are housed. Each experiment sits on an additional 24-tonne block of concrete separated from the floor by rubber bearings to dampen vibrations.
- “Nanothermal trumpets,” which employ thermoacoustics, are described in a news item in the 4 February issue of *Nature*. The thermal process, known as Joule heating, which often plagues electronic devices is used to produce sound as well as reproduce music and speech. The sound devices consist of an array of parallel aluminum wires—as many as 200,000 in a few square centimeters—suspended over a silicon substrate. Each wire is about 200  $\mu\text{m}$  long, 3  $\mu\text{m}$  wide, and only 30 nm thick. Using 17 W of electric power, the devices can produce sound levels of more than 100 dB at 20 kHz and at a distance of 7 cm from these microscale sources. Detailed knowledge of the thermal properties of nanoscale materials is expected to bolster research in thermoacoustics.
- “Improved Acoustics Benefit City Opera” is the headline of a story in the December 1 issue of *The New York Times*. The Koch Theater (formerly the New York State Theater), home of the New York City Opera, has undergone a major renovation. The improvements ranged from installing an expanded orchestra pit that can be raised or lowered as needed to “spiffing up the restrooms.” The improvements included removing the “dreaded sound-enhancement system that had been in use for a decade.” (An earlier report on the Koch Theater (see November 4 issue) also commented on the “dreaded” amplification system).
- Sonar, not the Moon, was to blame for a near mass stranding of melon-headed whales in a shallow Hawaiian bay, according to a story in the July issue of *Marine Mammal Science*. Another pod of whales entered shallow water 6000 miles away at the same time but was not beached. Beaked whales have been observed to beach in response to sonar, but this is the first time melon-headed whales have been known to react in the same way.
- A “spectacular” new concert hall is being constructed at the end of a pier in the old harbor in Hamburg, Germany, according to a story in the January 1 issue of *The New York Times International*. Designed by the Swiss architectural firm Herzog & de Meuron, famed for the Bird’s Nest Olympic stadium in Beijing, the Elbphilharmonie is meant to be the capstone of a waterfront redevelopment project in the heart of Hamburg. The acoustical design of the hall is in the hands of Yasuhisa Toyota.
- The pop group They Might Be Giants has released an album “Here Comes Science” aimed at children, according to a story in the 27 August issue of *Nature*. The album includes a song “Why does the sun really shine?” John Linnell, a member of the band, expresses the opinion, “I wish we could do a second volume of the science because there’s a lot more stuff we haven’t covered... We could spend a lot more time on science.” (Ed. note: Maybe ASA should furnish lyrics for some songs about acoustics!)