

A Newsletter from **Stewart Acoustical Consultants**

**Our 27<sup>th</sup> Year**

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## **Merry Christmas and Happy Holidays!**

We want to wish all our friends and clients a Merry Christmas and Happy Holiday Season. We thank you very much for helping us make our 27<sup>th</sup> year a successful one and look forward to continuing to work with you in the New Year. We hope in this newsletter as always to make you aware of news in our firm and in the general field of acoustics and information you can use.

## **Reminders**

The beginning of the year is usually a slow period with demand building into the spring. Schedule your work as early as possible in the year.

Travel time is a major expense we all need to avoid. We are actively exploring internet based meeting possibilities. We would like to hear from others who are doing so and who would like to use such options to reduce costs and make us all more productive.

We offer a limited number of lunch and learn opportunities primarily in architectural acoustics topics, either in our office or yours if in the Triangle area. Contact Joe Bridger if interested.

We are beginning to see interest in classroom acoustics for new school projects. Schools contain many similar classrooms, but each has to be analyzed because small differences could require differences in the acoustical treatments. We are developing tools to allow variations to be analyzed efficiently once the basic design is set.

## **Stewart Given Wallace Waterfall Award by ASTM International Committee E33**

Noral Stewart has been recognized by ASTM Committee E33 with the Wallace Waterfall Award, the highest award bestowed by the committee for leadership in the development of acoustical standards. This award is named for Wallace Waterfall, originally the chief acoustician of the Celotex Company in the 1920's who was instrumental in the founding of the Acoustical Society of America and in starting the development of acoustical standards in ASTM, and who then served for 43 years as Secretary of the Acoustical Society of America and in his later years as Executive Director of the American Institute of Physics.

## **Congratulations Joe and Esther Bridger on new daughter**

Camilia Christine Bridger was born October 5.

## **New Budget Material for Gyms and other spaces**

We now have a new material option to treat walls in gyms and other spaces that may be on a tight budget; the Quiet Coordinates system from CMA Inc. [www.cmainc.net](http://www.cmainc.net). Previously, the least expensive wall treatment we knew was to use a one-inch fiberglass ceiling panel in a plastic frame on the wall. The problem with this was that it was only an inch thick and left us without enough absorption below 500 Hz. The new system is very similar in concept and cost, but it is two inches thick. This extra inch makes a big difference acoustically. A further advantage of this system is that it can be painted without significant loss of acoustical performance. While the surface is soft, it recovers without damage if impacted. While the framing is a hard plastic, it will also give some upon impact, making it probably no more dangerous than a hard wall for use low on walls when needed.



## Do you need a Frogbox for your home air conditioner?

In the last issue we talked about the problem of home air conditioning condensers violating local noise ordinances. A company in England says it has the answer. They call it a Frogbox. They have entered the US market and are now developing a simpler version they hope could be assembled by a homeowner. For more information see <http://www.frogbox.co.uk/products/environ/index.html>

## Impact Isolation of Floors - Beware of Systems using only Ceiling Isolation

Some recently introduced products offer improved isolation of a gypsum ceiling or wall surface compared to resilient channel. Some of these systems in laboratory tests can achieve an IIC rating greater than 50 with a hard floor surface above without using a pad under the floor surface. This would be great if it could work dependably in the field. However, beware of a major difference between the laboratory impact test and field conditions. In the laboratory, the complete floor is isolated from the laboratory structure so the only significant sound transmission is through the sample ceiling. In the field, a tapping on the floor can easily get into the building structure and both laterally to adjacent spaces on the same level and downward along walls to spaces below. This will be especially strong in concrete structures and will vary significantly with details in wood frame structures. Be very careful before you consider eliminating the isolating pad under a hard floor surface in residential spaces.

## Thinking Green? Consider Thinking Blue as in Denim

Many clients are looking to ways to incorporate sustainable products in their designs and gain LEED points. In many applications, recycled waste cotton denim and other cotton can now be used instead of fiberglass or mineral wool. Acoustical performance appears to be comparable in most cases. At least one manufacturer of fan silencers now offers this material as a fill in their silencers at no extra cost. At least one supplier of built-in-place wall panel system is also offering this as their core material though with some cost increase. The product is also available for use in walls for thermal insulation and sound absorption to improve the sound insulation of the wall. More about it here. <http://www.bondedlogic.com/index.htm>

## A Bose Suspension for your Car?

We all know of the audio systems of Dr. Amar Bose. Perhaps you have one of their systems in your car. Now, what about a Bose suspension system for your car? Dr. Bose has for years been working on an active suspension system for cars that could provide a combination of sports car handling and luxury car ride in the same vehicle. It may be just around the corner. [http://www.automobilemag.com/news/0410\\_bose/](http://www.automobilemag.com/news/0410_bose/)

## Posters on Worship Spaces to be featured in new ASA Book



The Acoustical Society of America has published a series of books with examples of designs of music halls, drama theaters, music education facilities and worship spaces. We expect several examples of worship spaces we have worked on to be in the next book on worship spaces to be published next year. Posters on the projects to be included will be presented at the Acoustical Society meeting in Providence, RI in June. We may be calling on some clients to assist with information for these posters.

## NC and DC ASA Tour NASA Langley - 2005 Royster Awards Presented



The NC and DC chapters of the Acoustical Society of America met jointly November 4 and 5 in Hampton Virginia. The meeting began with a tour of the acoustical facilities of NASA Langley Research Center. Dr. Stewart got his start in acoustics there in the summer of 1967 working in an anechoic chamber like the one shown at left. The NC Chapter will celebrate its 40<sup>th</sup> Anniversary April 6-7, 2006 in Raleigh.

As part of the meeting, the 2005 Royster Prize competition was held with Noral Stewart and Aaron Farbo serving as judges

along with Juan Arvelo of Johns Hopkins University, George Bissinger of East Carolina University, and Tim Lavellee of LPES, Inc. Awards of \$2500 each were made to Mr. Om Deshmukh of the University of Maryland and Mr. Noah Schiller of Virginia Tech. The awards are to be used towards support of full time graduate study in a program involving acoustics. Below Dr. Stewart congratulates Mr. Deshmukh and Mr. Schiller



## ASTM E497 on Lightweight Partitions under Review

Dr. Stewart is chair of an ASTM task group for the withdrawal, revision or reapproval of E497 Standard Practice for Installing Sound Isolating Lightweight Partitions. This covers gypsum walls typically used in residential and commercial construction. Architects might commonly reference this standard in specifications to provide guidance on required details to achieve desired isolation. As written, the standard does not address recently available new products or significant structural flanking concerns.

## Horrible Sounds?

Fingernails scraping down a blackboard... the scream of a baby... your neighbor's dog barking: what is the worst sound in the world? This is what a new website from Salford University is trying to find out ([www.sound101.org](http://www.sound101.org)). The aim of the website is to increase awareness of sound psychology, by examining what makes a sound unpleasant to hear. You audition a sound and then vote for how horrible it is. The votes will give us an insight into what is the worst sound in the world, and maybe why it is the worst sound.

## More Horrible Sounds!

It is well known that most of us lose our ability to hear higher frequencies as we age. Teenagers however can hear high pitched sounds. An inventor has used this principal in "The Mosquito." <http://www.nytimes.com/2005/11/29/international/europe/29repellent.html?8hpiib> This system emits a high-pitched noise to discourage teenagers from loitering around stores. The level is kept at about 75 dB where it is not expected to be damaging, but can be irritating to those who hear it.

## Quack! Quack!

How does a baby duckling know the sound of its own species? Would it make a different sound if never exposed to its own species? How much is instinct, and how much is learned? Forty years ago in the spring of 1966 a young researcher discussed these issues at the first technical meeting of the North Carolina Chapter of the Acoustical Society of America, and then continued a long quest for answers. The 1969 graduating class in Mechanical Engineering at NCSU became involved when given the task of designing boxes in which ducklings could be hatched while isolated from the outside world and exposed to selected sounds through a loudspeaker in the box. The results of the research could surprise you.

<http://research.unc.edu/endeavors/win2001/instinct.htm>

## Emily Thompson Awarded MacArthur Fellowship

In our Summer 2003 Issue 5 of this newsletter we reviewed "The Soundscape of Modernity" by [Emily Thompson](#), historian of acoustics. Dr. Thompson has been awarded a \$500,000 grant from the [MacArthur Foundation](#). The foundation each year awards a number of such grants to individuals who have shown extraordinary originality and dedication in their creative pursuits, a marked capacity for self-direction, exceptional creativity, promise for important future advances based on a track record of significant accomplishment, and potential for the fellowship to facilitate subsequent creative work.

## Antique Instruments



Two more of our old instruments mentioned in the last newsletter. The Mine Safety Appliance Soundscope from the 1950's has the "old" octave bands. If we could get it to work we could use it in those communities that copy 1950's era ordinances. The Bruel & Kjaer 2203 was the top of the line meter in the

late 1960's to early 1970's. Dr. Stewart used one of these in early work.



## F. Alton Everest 1909-2005

F. Alton Everest passed away in September at the age of 95. Amateur acousticians and studio builders recognize him for his series of popular books on acoustics and the design of studios for recording and broadcast. During WWII, Everest supervised a group of acousticians who studied the sounds of the seas in efforts to improve sonar and silencing of ships. He then helped set up studios for a group that produced films on science topics that were scientifically accurate but from a Christian perspective. He was one of the founders of the American Scientific Affiliation, a Christian organization of scientists and engineers and the first editor of its journal. He served as a consultant for a number of years during which he wrote his series of books.