

SOUND & COMMUNICATIONS

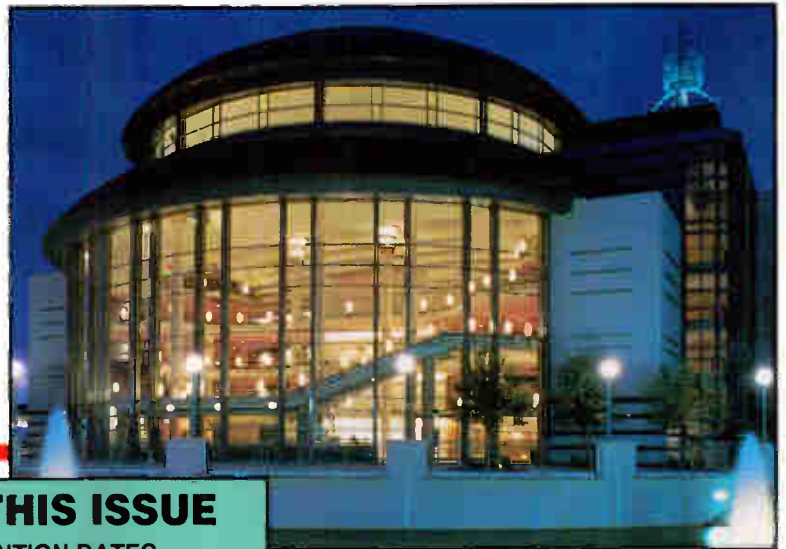
Volume 39 Number 9

September 24, 1993

THEATER SOUND

Designing a theater is a cooperative effort — that can cost megabucks when the sound people aren't included. We talked to theater managers and consultants on how things go right, and wrong. (And don't forget, the IAAM sponsors a sound seminar at its convention in mid-October)

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THEATERS AND THE WOW FACTOR

The Luxor Hotel opens in October in with three theaters, each o wow the audience. The 0 sign was challenging for e theaters.

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• CONVENTION DATES

If you're planning your calendar — remember there are new dates for Infocomm, in June for the major show, with a new partner for the ICIA. And, there's something else that's new — a Sound Division to Infocomm.

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• THEATER ON A BUDGET

For a small budget and a theater-in-the-round, equipment choices had to be careful and live mixing was necessary. For an Allen Sherman hit in New York, the sound succeeded.

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• SHOWBIZ EXPO

Audio is endemic to the visual experience. Some of the exhibits and seminars at ShowBiz expo showed how.

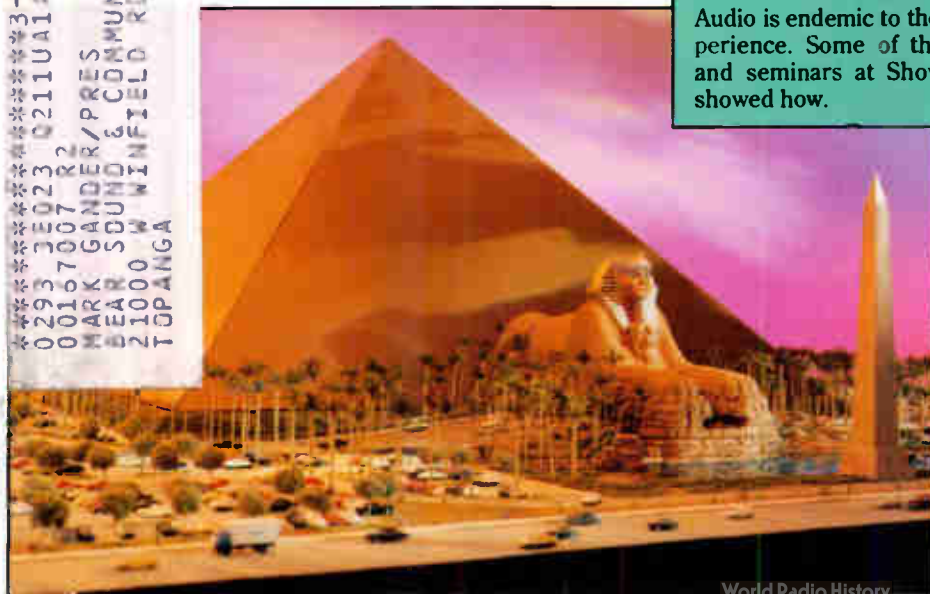
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THE 95TH AES IN THE BIG APPLE

“Audio in the Age of Multi-media” is the theme of this year's AES Convention in New York. Moving to the Javits Center, AES uses 180,000 square feet, hosts 300 exhibitors and plans 120 papers. Who's planning to attend the AES convention? We researched the market and spoke to end users, contractors, and consultants. Here is our report.

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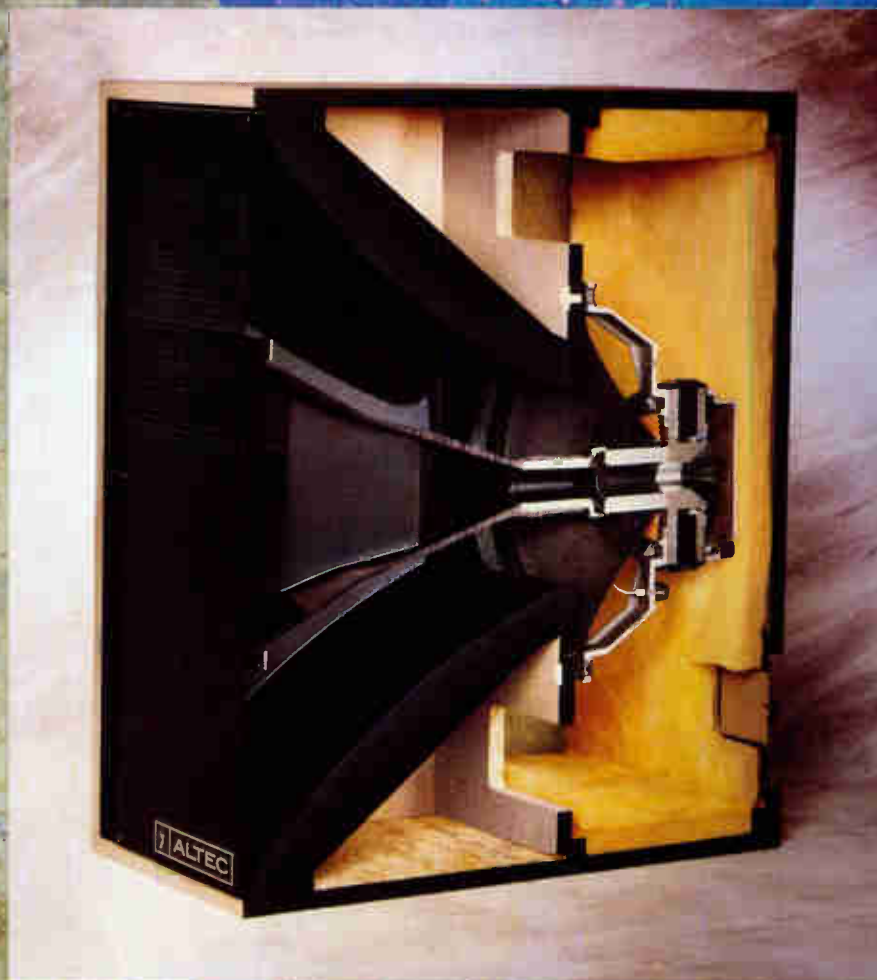
ALTEC 9864-8A

THE ACOUSTIC ENGINE WITH A SPLIT PERSONALITY

Altec Lansing has literally redefined the approach of full-range loudspeaker design with the introduction of the revolutionary 9864-8A vented bass duplex horn system. The 9864-8A is the first and only full-range, point source, constant directivity, loudspeaker system in a single enclosure.

The heart of this innovative system is its "engine": a true coaxial or Duplex® design. The low-frequency and high-frequency components feature a single integrated driver which is capable of handling 550 watts of continuous power while providing 130db SPL from 50Hz to 18kHz with directivity control down to 200Hz. The unique cabinet not only acts as a housing for the "engine" but also as an acoustic propagation guide for the lower frequencies.

- ❖ Compact Enclosure
- ❖ Single Point Source
- ❖ High-Output
- ❖ Excellent Directivity Control
- ❖ Cabinet Allows Refinishing
- ❖ Cost Effective
- ❖ Ease Of Installation



Primary Specifications

System Type:	Vented bass horn type, full range loudspeaker
Pressure Sensitivity:	HF: 109 dB SPL (1 w, 1 m) LF: 104 dB SPL (1 w, 1 m)
Frequency Response:	50 Hz - 18 kHz (equalized)
Power Handling:	HF: 75 w, AES: 150 w, continuous program: 300 w, peak power LF: 200 w, AES: 400 w, continuous program: 800 w, peak power
Maximum System Output:	127 dB SPL, AES method; 130 dB SPL, continuous power; 133 dB SPL, peak power
Dimensions:	31.5 in. (80.0 cm) high, 25.3 in. (64.3 cm) wide, 25.5 in. (64.8 cm) deep
Net Weight:	124.0 lbs. (56.2 kg)

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Circle 202 on Reader Response Card

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That's what contractors are saying again and again about Crest Century SP and TC consoles.

IT'S NO SURPRISE

Before designing the Century series, we spent over a year talking to leading contractors and end users about what they needed in a console. They gave us an earful about which design elements and features are really important, and which frills add to the cost, but don't add value. We listened and learned. And then we got busy.

IT'S GOT WHAT YOU WANT

Start with flexibility. Century SP and TC consoles are available in six different frame sizes, from 16 to 52 inputs. The SP's 4 band fixed EQ is ideal for non-technical operators, while the TC adds sweepable mids. Choose from four or eight subgroups, plus optional stereo input and matrix output modules. A mono assignment system, ideal for hearing impaired or center channel systems, is standard. So is electronic balancing on all primary inputs and outputs. Or

you can choose optional balancing transformers.

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Crest reliability is legendary — ask any Crest amplifier or Crest Gamble console user. The Century consoles are built to the same high standards. We've used the latest technology and only top quality components in the Century series — you'll find no TL072 or 5532 chips and no electrolytic capacitors in the signal path. The console is fully modular. And the power people at Crest have given Century SP and TC a power supply that's practically indestructible...think of the service calls that could save!

THE NEW STANDARD FOR VALUE

Made in America, Crest Century consoles are quickly gaining a worldwide reputation as the contractor's choice for features, performance reliability and above all, value. For the full story on the entire Crest Century series, which includes the full-featured GT and live monitor LM console models as well as the SP and TC, call Crest Consoles at 201-909-8700.

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World Radio History

Planning For The Next Millennium

This month I want to talk about one of the things I did this summer. I attended a Sony event on "magneto optical technology."

The event was important, I think, not only because of the preparation time Sony put into it (which was considerable), but also because I think it gives some indication of what we can expect to see from large companies functioning in a new and multimedia world with serious currency fluctuations. Sony seems to be readying for the battles of the next millennium.

Sony Corporation, in its strongest positioning statement yet, has iterated its commitment to optical — particularly magneto optical — media. Beginning with the previous change of name of Sony Tape to Sony Recording Media, and in its recent introductions of its MD products (last year), CD-Rom and new standardized Md-Data disks, Sony is not only out carrying the flag for optical-based products, but is positioning itself as a technology leader, as it did with the introduction of the compact disk.

Advances such as MPEG compression, the Blue Laser (increasing disk density by operating on a shorter wavelength at room temperature) and the recent showing of video on the MiniDisc format bode well.

This heavily attended "seminar" on Magneto Optical Technology was the venue for the formal introduction to the general press of the PCM 9000 mastering system (seen at NAB in April and expected at AES in October). This disk based system seemed to move in its positioning from the compact disc mastering system we saw at NAB to part of a disk based framework that Sony sees as its corporate direction of the future. The PCM-9000

works on a 5-¼ inch optical disk — but one that is incompatible with any other 5-¼ inch disk.

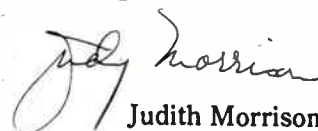
Sony Recording Media's Data Division and Music Division are separate — but all media are under Wataru Ogawa, the new president of Sony Recording Media Products (who jokingly says his initials stand for "write only").



So Sony has — at its pro and at its consumer ends — optical media covering all bases: the CD Mastering System (PCM-9000); the CD (of course); its CD-R recorder; The MD (recordable and play-only MiniDiscs introduced last year); and now the MD-Data (recordable MiniDiscs that can accept graphics — and video — but are not compatible with the music MiniDiscs).

But meanwhile, there are a lot of digital Betacams and 8 mm products to sell.

Best regards,


Judith Morrison
Editor in Chief

SOUND COMMUNICATIONS

Publisher/Editorial Director
Vincent P. Testa

Editor-in-Chief
Judith Morrison

Technical Editor
Mike Klasco

Associate Editor
Steve Jacobs

Research Assistant
Jeff Colchamiro

Contributors
Jeff Ader, Wes Alderson, Rob Baum, Mark Miller, Neil A. Shaw

Technical Council
Dr. Mort Altschuler
Professor Audiology, Hahnemann University, Chief of Audiology, V.A. Hospital, Phila, PA

C. Leroy James
Rees Associates, Inc.

Richard N. Jamieson
Jamieson and Associates, Inc.

Russell Johnson
Artec Consultants, Inc.

Joel Lewitz
Lewitz and Associates

Daniel Queen
Daniel Queen Associates

Jon Sank
Cross Country Consultants

Neil A. Shaw
Menlo Scientific Acoustics, Inc.

William R. Thornton
Phd, PE

Art Manager
Alicia Celli

Artists
Janice Kaliberg, Janice Pupells, Wendy Ser, Lori Vllardi

Production Manager
Ron Perone

Electronic Composition
Diane Catanzaro
Kim Marchica
Kerri Reilly

Circulation Director
Debbie Vanderneut

Advertising Manager
John Carr

Classified Ad Manager
Patricia Torrisi

Associate Publisher
Nancy Davis

Editorial and Sales Office
Sound & Communications
25 Willowdale Avenue
Port Washington, New York 11050
(516) 767-2500
FAX: (516) 767-9335



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Post • Producer
Sound & Communications Blue Book
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The Music & Sound Buyer's Guide
CES-TV News • NAB-TV News • NAMM-TV News
NSCA-TV News • AES-TV News

Aural Art Gallery and Dual Decks

Dear Answerman,

I am interested in establishing a business that predominately features recorded music performance and an atmosphere conducive to maximum music listening enjoyment. It'll be a kind of cross between a traditional club (without the dependence and emphasis on food and beverages) and an "aural art gallery," for lack of a more fitting description. High-end audio will be my primary concern, but

**I NEED TO KNOW
EVERYTHING ABOUT
ARCHITECTURE,
INTERIOR DESIGN,
AUDIO INSTALLATION
REQUIREMENTS,
MARKET DATA ETC.**

my questions to you are: Are you aware of any other establishments of this type in existence and are there any other magazines or resources you can recommend to me? I need to know everything about architecture, interior design, audio installation requirements, market data etc.

Forgive me if this is too far afield of your area of expertise (or interest). Your publication, *Sound & Communications*, was an excellent start for me. I found it quite by accident and intend to subscribe.

**Byron Ford
Houston, Texas**

Dear Byron,

Over the years I have heard a few people propose similar concepts to your idea of starting the type of listening club that you have outlined. Unfortunately, none of these projects ever got off the ground. Tried and true formats like bars, cabarets, and nightclubs are much easier to get funding for. Regardless of how you will finance this endeavor, how will you determine

your cash flow and return on investment? Except for New York, very few clubs can get away with a cover charge. Even in New York, many of the clubs still pay their rent out of the bar receipts. In the height of the disco days (daze?), many clubs were "juice bars" with a heavy entrance fee. This equation worked because while there was no booze, there was both juice and heavy drugs. But somehow I don't think this is what you have in mind.

ANSWERMAN

Besides classics, a little variety might work, maybe certain days you have Karaoke, an oldies night, private parties, etc. There are audiophile and music listening clubs, both formal and informal, but very few are really commercial enterprises. Traditional nightclubs are more than food and beverage — their purpose is predominantly social. How about "Byron's Music Club, Dating Service and Grill"? You could consider doing this project on the side after work.

While the Answerman is rumored to be the ghost of disco past, this aspect of the business is way out of my field. I do have a few places for you to begin your research.

Go to a local hotel and restaurant show (the big national show is in Chicago), the New Music Seminar which is held in July in New York, the LDI Show (lighting and audio equipment for clubs and theaters) which is held toward the end of November, and the DJ Expo, which has a number of club management and design seminars that would be relevant and is run by Testa Communications, the publisher of this magazine. You just missed the LA DJ

Expo, which was toward the end of August.

On the magazine side, get a subscription to one of the restaurant trade magazines, which cover interior design, lighting, operation and related issues (you can pick these magazines up at the hotel and restaurant show), and also take a look through of *Sound & Communications'* sister publication, *DJ Times*.

Finally, an experienced sound & lighting designer/installer might be able to help you plan out your facility.

Dear Answerman,

Help... Help. We need to find a dual deck audio cassette player, consumer or industrial, that has speed control to play and record tapes at slightly different speeds.

This is for ice skating/dance music programs so that when the skaters go to competitions, not all machines play the correct speeds. Therefore, we can have fast and slow versions!

**Mitch Korn
Asst. Ice Arena Director
Miami University
Oxford, Ohio**

Dear Mitch,

There are a number of variable speed cassette decks, both consumer and semi-pro, including a couple of dual transport versions. Fostex, Tascam, Vestax and others offer all-in-one mixer/recorders which would be handy for the production side of your work. Plain vanilla single-transport variable speed cassette designs that are popular include the rackmount Denon DN-720R, and comparable models are also available from Tascam. Manufacturers of dual transport decks are JVC and Rolls (model RS-73). The Rolls is unusual in that it provides separate outputs for each transport (typically each output is fed to separate inputs on a mixer), and clubs and aerobic studios have found this feature very handy. ■

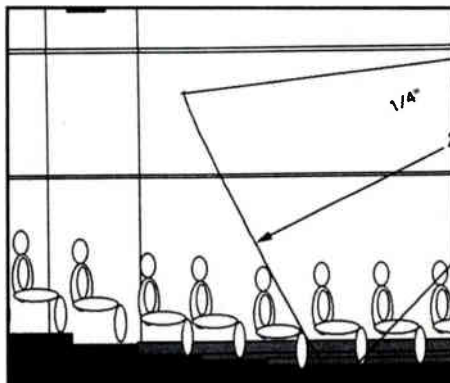
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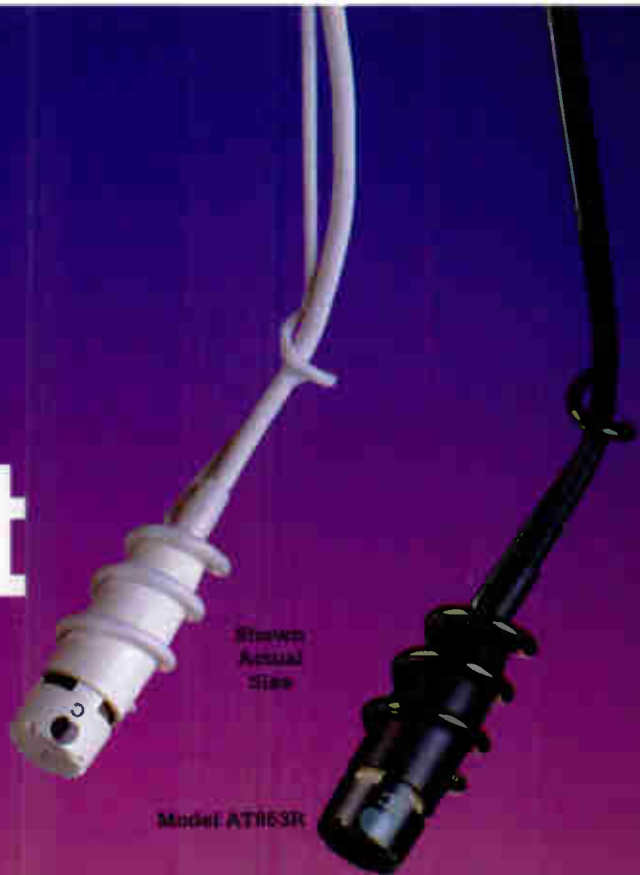
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Model AT853R/W

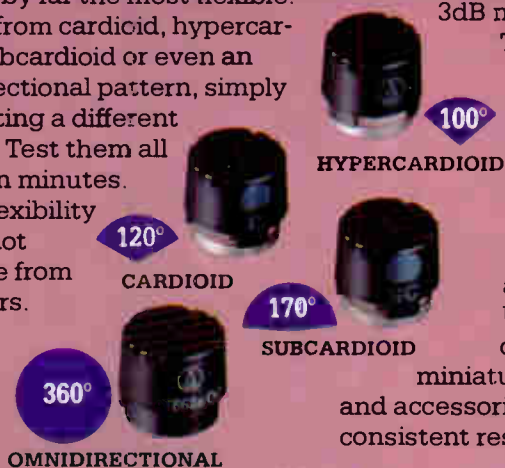
Shown Actual Size

Model AT853R

Sure you'll see other brands hanging around from time to time, but when it comes to self-supporting miniature condensers, the Audio-Technica AT853 series, now in its fourth generation, has been the overwhelming choice of both contractors and end users for years. The reason is simple: It works so well. And for some very important reasons.

Full Choice of Pickup Patterns

When it comes to pickup pattern choice, the UniPoint® AT853 series is by far the most flexible. Choose from cardioid, hypercardioid, subcardioid or even an omnidirectional pattern, simply by inserting a different capsule. Test them all on-site in minutes. That's flexibility simply not available from the others.



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World Radio History

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NEWSLETTER

JBL MAKES MARKETING APPOINTMENT

Hope Neiman has been named executive vice president of marketing for JBL Professional, reporting directly to Ron Means, president of JBL Pro. According to Means, "I wanted an outside perspective to stir up the pot." Neiman has a masters degree from Harvard and has previous marketing experience at Dayrunner and Proctor & Gamble. According to Means, the appointment of Neiman "allows us to focus more closely on business segments to analyze and be inventive in our strategic plan." The appointment will "facilitate advertising and marketing communications worldwide." Mark Gander has moved to Vice President of Engineering for JBL Pro. Roscoe Anthony is the director of marketing communications.

As previously reported, Harman International has restructured its 21 operating units, with JBL/Urei, Soundcraft, DOD and Harman Applied Technologies making up the Harman Professional Group.

UNIVERSITY MOVES ENGINEERING

Engineering for University Sound has been consolidated at Altec Lansing's Oklahoma headquarters. Both companies are components of Mark IV Audio. Manufacturing of University products remains at its California office. Doug McCallum remains president of University. Dave Merrey, who heads up the group which includes Altec and University, is the vice president of Mark IV Audio. Steve Romeo has left University Sound. Ken Kacheski who was the head engineer has become marketing manager for new University lines.

AIPHONE SPECIAL PRODUCTS

Jim Morrison, National Accounts Manager of Aiphone, has issued a letter stating that "The Aiphone special order products department is alive, well and ready to receive and evaluate your requests for products modified to meet your needs." But "the product that we will normally accept for special modification will have to be such that can be used by others." Morrison says the essence of the change in the company's special products program is that a modified product should have at least limited use in future applications.

YAMAHA AT AES

Among its plans for its exhibit at AES, Yamaha is introducing new power amps, a new line of live speakers with new boxes for contractors. In addition, the company plans to show its 16-channel digital mixer, eight-bus mixing console and the D-5 hard disk recorder.

AVID RESTRUCTURES

Avid Technology has formed separate business units for its desktop video, broadcast and professional products. The business units will have their own engineering, marketing, sales and customer support staffs. The Desktop Video business unit focuses exclusively on providing digital media solutions to the corporate, education and consumer markets, including the Media Suite Pro and VideoShop, which was obtained in the acquisition by Avid of DiVA Corporation in February 1993. The Professional Products business unit provides production and post-production solutions for the professional film, video and audio markets. Products include the Media Composer series of digital nonlinear editing systems and the Avid AudioVision digital workstation. The unit is managed by vice president and general manager Daniel Keshian.

In additional news, Avid Technology has introduced the Media Composer 1000 nonlinear online editing system priced at \$49,900.

RECOTON INCREASE

Recoton Corp. has reported its net income up 89 percent on a 77 percent sales increase in the second quarter. Robert L. Borchardt, president of Recoton, commented, "We are very pleased to report the

NEWSLETTER

12th consecutive quarter of earnings improvement for Recoton. The record second quarter results are indicative of a variety of positive factors . . . These factors include the successful integration of the newly acquired Ambico camcorder accessory products line . . . the encouraging steady growth of . . . 900 MHz wireless products; expansion of the company's OEM manufacturing programs. . . "

GTE AND MUZAK MAKE DEAL

Muzak has struck an agreement with GTE Spacenet to give GTE's two-way satellite and digital video services customers easy access to Muzak music and advertising services. In the past, business which already used GTE Spacenet VSAT networks and services were required to purchase an entirely separate one-way system to receive Muzak's broadcasts. Now Muzak's audio products can be broadcast on GTE's two-way system. Retailers using the two-way information networks to deliver credit authorization, check verification, inventory, etc. can now add music and advertising easily. Muzak's music products will be available on GTE Spacenet's GSTAR IV satellite.

KLONDIKE CELEBRATES NEWPORT

Klondike Sound Co. of Greenfield, Massachusetts, has announced that it provided sound services for the 40th Anniversary Celebration of the Newport Jazz Festival at the White House. The event, hosted by the President and Mrs. Clinton, was recorded; televising is planned for September. The President joined the finale on saxophone. Performers included Wynton Marsalis, Rosemary Clooney, Herbie Hancock, Joe Henderson, Bobby McFerrin, Grover Washington, Jr., and Clark Terry.

Representing Klondike Sound were technicians Ethan Williams (monitors), Erik vonRanson (system engineer), and John "Klondike" Koehler (house). Sound reinforcement equipment was supplied by ProMix, Inc. of Mount Vernon, New York. Audio producer James Anderson, assisted by David Gillette, engineered the digital recording in Unitel's A/V truck. The event was produced in a 131 x 180 foot frame tent erected on the South Lawn. The sound system featured flown Apogee 3 x 3's and Meyer UPAs, with Apogee AE-3M monitors. All amplification was by Crest. The house console was a new Crest Century GTY-32, providing outputs to four speaker zones plus feeds to the White House and press. Monitors were mixed by a DDA S Series 32.

AMANA INSTALLS ALTEC LANSING PAGING

Altec Lansing has reported that Amana Refrigeration Inc. of Fayetteville, Tennessee, has installed a multipurpose paging system in its 700,000 square foot industrial facility, using equipment manufactured by Altec Lansing.

The Amana plant is reportedly designed with several manufacturing areas with different ambient noise levels in a high risk area prone to storms. Several sections of the plant use volatile chemicals. Ken LaRue of Advanced Audio in Huntsville, Alabama said, "The project was an adventurous step in a new area of sound installation. We proved that the mixture of RF and quality sound equipment does have vast potential." Advanced Audio designed and installed the sound system. Altec equipment installed included seven VIR horns with 299-8A drivers, two VIT horns with 299-8A drivers, seven 1594C amplifiers, and 32 5382A speakers. Sixteen University PA430 horns were also installed.

According to LaRue, the selling part of the package was a rental of the Altec VIR horn and a small PA system for a visit and speech to company personnel by the president of Amana. A single VIR horn was suspended from overhead beams in a large area of the plant. The horn was placed directly over the speaking platform and aimed to cover a 20,000 square foot area seating 700 employees. One bass cabinet was placed under the speakers' platform. An Altec 9444 with 500 Hz crossover powered the speakers. The system was driven by an Electro-Voice Entertainer mixer board with two wireless microphones and a CD player.

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Rising Sun

AUDIO IN ASIA

I can only *urge* Mike Klasco to read *Rising Sun* by Michael Crichton. It's widely available in paperback. It reads easily and presents a *very* important perspective.

Susan Weber Ph.D.
Northstar Audiology Ltd.
Minneapolis, Minnesota

Dear Dr. Weber,

When I began my series on Audio In Asia, I really wasn't sure whether the topic would be of so much interest to our readers. But since a lot of people seemed interested by what my consulting firm does in audio, as well as what it is like to work in audio in various Asian coun-

tries, I thought a few pages in each issue would break up the hard core information typically found in *Sound & Communications'* pages. Many readers did in fact like part one of this series so I continued my saga across the continent.

Reaction to the series has not been completely positive, with one letter from a manufacturer upset with my cavalier remarks on China's student relations, and lack of in-depth detail in the China/Philippines article. While I may have been to Korea, Taiwan, and Japan many times so I could provide an insider's perspective, I did make it clear in the beginning of the last article that it was my first trip to China and the

Philippines. During my visits to these countries, I asked that on my next trip I would like to visit installations and talk with the contractor who installed the job. When will I go back? Actually, as you read this I have just come back, but don't worry, I got my creative writing urges out, and I won't do this series again, at least for an other year or two!

Dr. Weber wrote her note to me March 3, way before the movie created such a controversy. I loved the book, and certainly found a lot of it at least superficially true. Unfortunately, many Americans are unable to separate someone whose grandparents moved here from Japan (or Korea) from the Japanese bad guys in the book. Recently, one poor fellow of Chinese ancestry (who does not even have a relative that ever even visited Japan) was beaten up in Detroit by two out of work auto workers.


For a moment, you might even consider the predicament the Japanese are in. They must import half their food, and they have no oil deposits or metal ore and few other natural resources. If they do not export, they cannot import. They are not remotely self-sufficient. Perhaps they export with such intensity for good reason. On the other hand, the weakening influence of the U.S. military-industrial complex has created a vacuum of power that Japanese lobbies must be enjoying.

If the U.S. was cut off from all foreign food supplies we might have to stop dumping wheat into the ocean and give up some imported delicacies — although Haagen Daaz ice cream actually is produced in New Jersey. Never mind. In any case, I am all for export and I am working with ALMA (American Loudspeaker Manufacturers Association) to present a road show of U.S. speaker materials technology throughout Asia.


Mike Klasco
Technical Editor
Sound & Communications

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A POWERFUL EVENT LOOMS

By Wes Alderson

Human beings are homeostatic. To a doctor or a physiologist this means the human organism has a built-in drive to preserve “sameness” in order to continue living — to survive! To those of us involved in marketing in the sound and audio visual industry, however, homeostasis may prevent that survival! Why?

We all feel more comfortable doing things the same way, using the same knowledge, and relying on what we already know. This can become a trap which prevents us and our businesses from moving forward. The vitality of our industry depends on constant change and new technology. Metaphorically, this is almost like cosmological virtual pair production in an intense energy gradient. In other words, change produces something out of nothing. This is progress in business, and yet human beings frequently fight this progress. Instead, we must embrace progress. Possibly, this is why a recent industry folk hero made the statement, “If it ain’t broke, break it!”

The effects of technology on our industry render methods we used yesterday obsolete. If we accurately perceive today’s methods and forecast tomorrow’s technology we will be able to know in advance that the river of

history may (and will) change its course. If we do not change along with the river, we will be fishing on the bank of a dry river bed. And we won’t catch many fish!

PLACING BLAME FOR THE RECESSION

National and local recessions are not only the result of economic cycles. They are almost never the fault of the political party which is unlucky enough to be in office when the recession occurs. (Human beings also love to blame each other.) Recessions are not solely created by regional economics. Recessions may result in a specific set of industries merely because those industries have lulled themselves into doing things the “old way” and have therefore lost their vitality and slipped behind the newer technologies and methods of another nation, another region, or another set of businesses.

The recent recession, which still continues in California, burned through our industry leaving many businesses in virtual ashes. Think of the canceled major projects, bankruptcies, and the loss of background music leases. In many areas, dealers, and contractor, manufacturers, and reps are wondering what to do to recoup the resulting loss of sales.

SEIZING OPPORTUNITY

Yet, throughout the recession, new technologies, new methods, and new business opportunities were created which we all would have loved to take advantage of. Yet only a few of us seized these opportunities. Examples include the convergence of the traditional sound industry with the audio visual industry, the emergence of the new systems meta-industry, and the

control and communications technology blending audio and video, by methods such as Crown IQ, IED, Lone Wolf’s MediaLink and more! These opportunities are indeed *gems*!

HOW TO FIND THE META-INDUSTRY

It is this emergence of our blended sound and audio visual meta-industry which inspired the expansion of the powerful Infocomm show into the sound industry. In the past, Infocomm has been thought of as an “audio visual” show. In July, the Sound Division of Infocomm was created. The Sound Advisory Council has created a major Sound Show as a much-needed part of Infocomm, partly since other trade shows have been reluctant to address the merging of the sound and audio visual industries.

As a result, the Infocomm show in June 1994 in Anaheim, California will include these sorts of activities:

- Educational seminars and workshops on new technologies.
- Entry level workshops for the design and installation of sound systems for video venues.
- Workshops on sound systems for the sake of sound!
- Prolific exhibit space dedicated to sound equipment manufacturers.
- Participation by well-known contractors, consultants, and manufacturers.
- The backing of Infocomm’s vast resources.

The June 1994 Infocomm Show in Anaheim, California will, in my opinion, be the major event which changes the course of the River of History in our industry. This show will save us the need of having to sift through the ashes in search of gems. Infocomm will place these gems right in front of you! You need to be there. ■

Wes Alderson is President of WesTech Marketing, the California rep company.



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The 95th AES Convention

Audio in the Age of Multimedia

BY JEFF COLCHAMIRO

“**A**udio In The Age of Multimedia” serves as the theme for the Audio Engineering Society convention at the

Jacob K. Javits Convention Center in New York, October 7-10. Len Feldman and Irv Joel have acted as co-chairmen.

AES Executive Director Chris Plunkett sounded optimistic about the show, noting that registration was going well and the sale of booths has also been higher than usual.

Plunkett said he expects about 15 to 16,000 attendees and approximately 300 exhibitors. One-hundred-twenty papers are scheduled to be presented, in addition to about 12 to 14 workshops.

This year's AES also marks the show's move to the Javits Center from the Hilton Hotel, where past New York AES shows have been held. “We just couldn't fit into the Hilton anymore,” Plunkett explained, “and the move in at the Javits Center is also a lot easier.” The Javits Center will accommodate all of the exhibits on one floor, as opposed to the four or five floors that they were spread over at the Hilton. Plunkett also said the 180,000 square feet of the Javits Center that will be used for AES will allow more room for papers and workshops and make it easier for attendees to move around and see all of the exhibits.

Who's going to AES? We spoke to consultants around the country, asked them if they were going and what their

Jeff Colchamiro provides research assistance to Sound & Communications.

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reasons for attending or not attending were.

What we found was not terribly surprising. Most people who live and work in the New York area and on the east coast said that they, or someone from their office, plan to attend. Many consultants situated in other areas around the country are not attending due to the costs (both financial and time) of traveling. But we did find some more interesting answers as to why people chose or chose not to attend AES, including a debate about the value and overlap of AES and NSCA and the impact of moving the convention from the Hilton Hotel to the Jacob Javits Center.

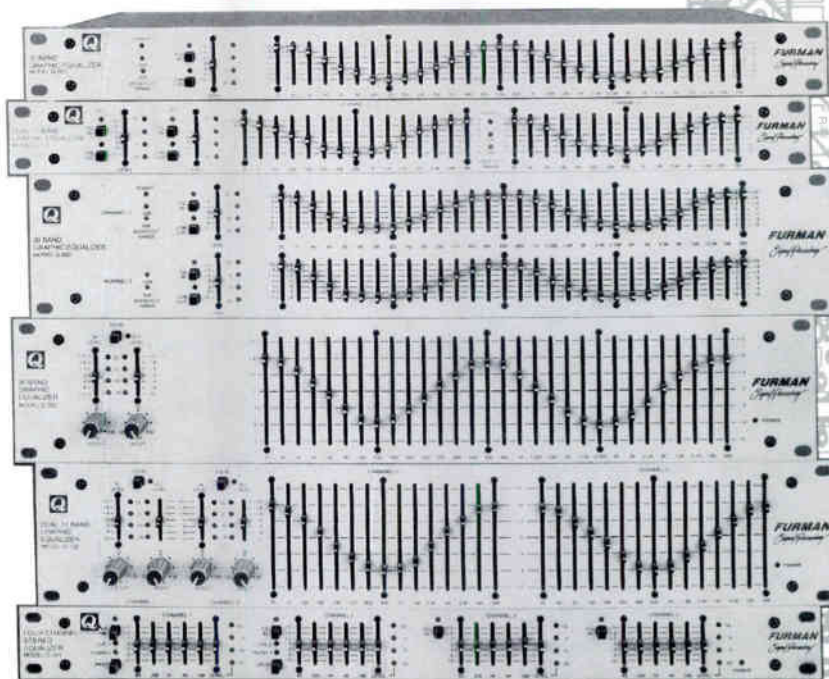
Most people who are attending said they want to keep up with new products and talk directly to manufactur-

“We don’t want to sell old equipment if something new is out there.”

ers. Joe Kline (Northeast Total Communications, Bensalem, Pennsylvania) said he will try to attend the show “to stay on top of technology changes. We don’t want to sell old equipment if something new is out there.” Jennifer Lintner (Electro Media Design, Gaithersburg, Maryland) also said she would like to go “to get an idea of new products [available]” and said she will attend “[unless] we’re really swamped with projects.”

For other consultants, time and money are the main reasons they are not attending. “We’re working, which is a rare thing right now,” said Robert P. Costello (Acoustical Analysis Assoc., Canoga Park, California). Costello said he usually attends AES and other shows, but things have been very busy in the last year, preventing him from getting away. Michael Dow (Zamar Sound, San Jose, California) attended last year’s show because it was local, and despite the fact that he found it “very informative and benefi-

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The Jacob K. Javits Convention Center of New York is hosting the 95th AES Convention.

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cial," he will not spend the money to travel to this year's convention.

Many consultants said their companies only pay for them to travel to one show a year, and chose to attend NSCA. Paul Christopher (Newcomb and Boyd, Atlanta, Georgia) said he thinks AES would be "just as useful" but that "NSCA has enough to keep me up to date in the industry."

One consultant did not agree that the conventions overlap, pointing out the different purposes of NSCA and AES and explaining the need for both. Allan P. Smith (SFG Acoustical Consultants, Maitland, Florida) noted his perception that AES, for tax reasons, is a non-profit technical society, so no sales can go on there. At NSCA, business can go on and more contacts are made. Though Smith said he will be unable to attend the AES show, he said that there is "still a need for it. There are dozens of people out there installing systems who have no idea even what a 70 volt system is."

But others disagreed with this, and said they attend one or the other. James L. Postlewait (Acoustical Design Services, Mission, Kansas) said he doubts he will go to AES due to both time and expenses. "We tend to go to the NSCA and we find that that seems to be a better convention for us," he explained. Postlewait said he used to go to AES and found it helpful: "I'm not saying we wouldn't go to AES, but we don't plan to go this year."

Another factor affecting people's decisions was the location of the show, moved from the Hilton Hotel to the Jacob Javits Convention Center. This change was looked at as both a positive and a negative, as people had complaints about both venues. Several people, some of whom were unfamiliar with the Javits Center, expressed hopes that it would be more spacious and less expensive than the hotel, while others complained about the conditions of the Javits Center.

Rob Rosati (Rosati Acoustics, Boston, Massachusetts) said "It was get-



The Javits Center, it is hoped, is more spacious and easier to get around than prior venues.

ting very crowded at the Hilton. Prices were high, even just to get a cup of coffee. It was a hassle." He also said he was "hoping for improvement and

that it will be spacious and easier to get around." David Harvey (Peter George Associates, New York, New York) said the Javits Center is a nice

location and will be an appropriate place for the show.

But not everyone agreed that the move was a positive one. David M. Andrews (Andrews Audio Consultants, New York, New York) was originally planning to attend the show, which he thought was in San Francisco. Reminded that the show was in New York and at the Javits Center, Andrews said he may not attend even though his office is only about four blocks away. "The Javits Center is awful. It's a very dangerous place to work and a terrible venue. Things get stolen all the time. All the manufacturers are going to get raped," he said, adding that this may be the first and last time the show is held at the Javits Center.

Time will tell. Meanwhile, the Audio Engineers will be out in force in October, as will this magazine as we cover the convention. ■

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Theater Sound

The Consultant, The Contractor, The Manager — And The Owner

BY MARK MILLER

The relationship between theaters and audio consultants can be a testy one. From theater to theater, in both film and performing arts, the situation differs. There are either horror stories or appreciative praises. Most of this is based on the quality of service.

Consultants are being mainly utilized in the construction process, according to Clint Smith, Head Audio Engineer at the Kravis Center for the Performing Arts in West Palm Beach, Florida. However, there are decisions being made every day by theater managers that affect the audio and an audio consultant's work.

Robin Williams, Manager of Houston's Wortham Theater, had a realization at the International Association of Auditorium Managers (IAAM) seminar for performance art facility managers last year.

"My background is tech theater and I played with sound reinforcement so I kind of know that end. But I don't know the acoustics end. At the conference we were touring the Steppenwolf Theater in Chicago which is built with cement blocks. I was amazed at the acoustics. One of my counterparts said 'Plain concrete block is very absorptive; it's only when you paint it that it becomes very reflective and not a desirable building material.' I realized that there are probably facility

Mark Miller is a freelance writer based in New York.



According to Clint Smith, Head Audio Engineer at the Kravis Center for the Performing Arts, a consultant's job is to come up with everything that could possibly go wrong.

managers across the country that when the backstage gets a little dirty decide to add a coat of paint. They don't realize they're affecting the acoustics."

This prompted Williams, who is also the Chair of the Performing Arts Committee of IAAM, to push for a seminar in this year's conference, being held October 17-19 in Dallas.


The one day acoustics seminar is being organized by Chris Jaffe of Jaffe, Holden & Scarbrough Acoustics, Inc. in Norwalk, Connecticut, who did work at the Wortham Theater.

It includes 2 ½ hours of information from a wide array of audio consultants including Dana Houghland of David L. Adams Associates in Denver, Colo-

rado, Charlie Boner of Boner Associates in Austin, Texas, Bill Cavanaugh of William J. Cavanaugh Consultant in Natick, Massachusetts, and David Robb of Jaffe's firm.

The topics will include Audience to Performer Relationships (seating configurations), Acoustics of the Stagehouse (acoustic shells, acoustic coupling techniques), Audience Chamber Acoustics (criteria of the room itself), Sound Isolation from internal and external sources, AC noise control, and Sound Reinforcement.

After the prepared information, there will be an informal lunch where an audio consultant will sit at each roundtable with theater managers and answer questions. The day will be



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capped off by a visit to the Meyerson Symphony Hall, designed by I.M. Pei.

Jaffe sees the seminar as an opportunity to attain better communication between theater managers and acoustical consultants in a market he says is changing.

"The construction of multi-use spaces seems to be on the wane," he says. "Either the larger communities have it, or they're finishing one off. Universities are very active in improving their facilities. A lot of times it is a town affair where the community will put up a building to combine with a university to provide the audience."

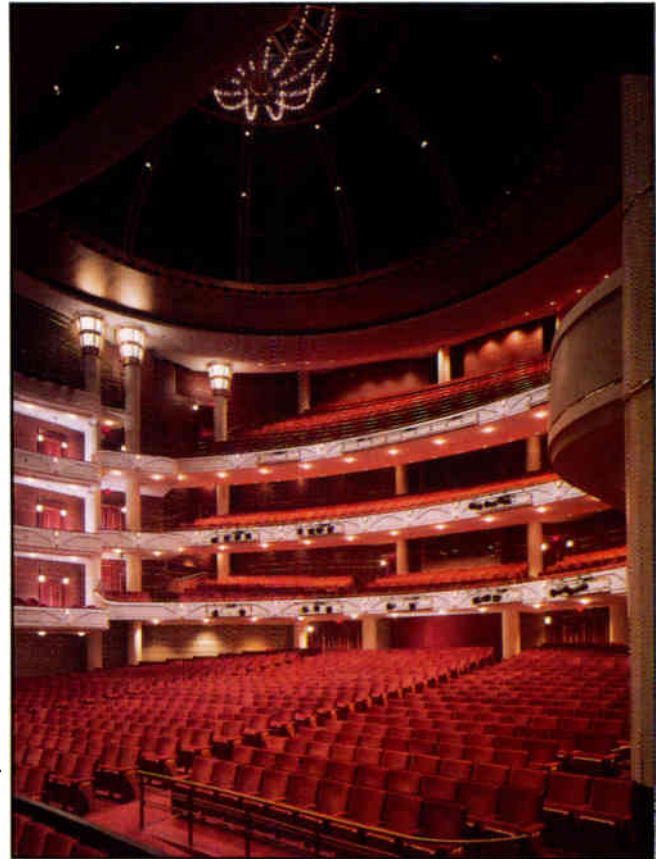
Jaffe attributes this to the fact that over the past ten years many universities have added educational buildings and are now developing the more artistic departments.

He also attests that most consultant work is being done on renovation work; newer buildings are not appearing as quickly as in the past.

"Quite a few concert halls are being improved one way or the other. I guess the level of expectation and sophistication of listeners [was risen], maybe due to the home fidelity listening experience. People are expecting more from concert halls. There's more and more happening with taking old movie theaters and buildings with other applications and turning them into theaters. Museum theaters are on the rise. Things go in cycles. There is a good deal of work right now for the experienced practitioner. The specialty stuff is still happening. The whole profession is a growing one with the awareness and the need for the acoustician. Also, the idea of what our role is in these projects has increased. We aren't just redlining somebody's drawings the day before the bid goes to the contractors. Now we are with them from day one. And that means they have to pay for the time involved. In the end it is showing that there is value to that and people are beginning to recognize that."

Smith could not agree more. His vi-

The Kravis Center for the Performing Arts in West Palm Beach, Florida.



sion is to have an owner who knows what he or she wants, and a building plan that includes plenty of conduit for future technological changes.

"The trap that people fall into is committing to technologies that are old even before the building opens because of the desire of the owner to have a figure in his head as to what

Most consultant work is being done on renovation work; newer buildings are not appearing as quickly as in the past.

this is going to cost the day that he opens the building. The best thing to do is to put as much of the blunt, brutal basics of a wide-ranging system in. This comes down to a lot of conduit early in the project. Fight and maintain to keep as much access to that conduit as you possibly can. As the technologies and the systems become more apparent down the road, you can put what you want in."

A consultant's job, according to Smith, is to come up with everything that could possibly go wrong.

"Consultants are generally people who have wonderful imaginations," he says. "They're paid to be imaginative. It is the owner's responsibility to get someone on-line early enough in the project so that they're not at the whim of the consultant. buying the newest, LED-driven, whiz-bang, gee-whiz, gosh-golly, satellite zipper lubricator that you'll never use."

Smith says that a consultant should come up with all the capabilities of the building and the owner, when the application is over-specific, should not do it but allow for the capability. Owners need to be in tune with what they want from their building for the next five, ten years, and a technical director needs to get in on a project early enough to act as a buffer between the consultant and the owner.

Unfortunately for Jim Starks, Technical Director of the Cerritos Center in Cerritos, California, he didn't get into the project early enough.

The performing arts center, owned by the city, opened in January with

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intermittent hums and buzzes in the sound system.

Starks came on to the project in November of 1992, just after the controversial leaving of the Audio Project Engineer.

"The idea originally," says Starks, "was to put an isolated ground in the building for the audio system. It didn't quite make it. A lot of the audio sys-

tem is tied into this ground but there are also some legs of the system that have reached into other systems. It hasn't been completely isolated. We're not sure whether the grounding problem exists because of the way the grounding and AC system were installed by the electrical contractor or whether or not the grounding problem is something that's inherent with the



Bob Gunther, Assistant to the Film Studies Department at Keene State College in Keene, New Hampshire.

way the building is."

So all parties are not happy. The audio contractor still has to fix the system, so major work needs to be done, yet the center is used four or five days a week for performances.

Starks tells of discovering unfinished jobs at 5:30 pm when doors were to open at 7:00 pm on a consistent basis until a policy had to be established of exactly when audio work could be done.

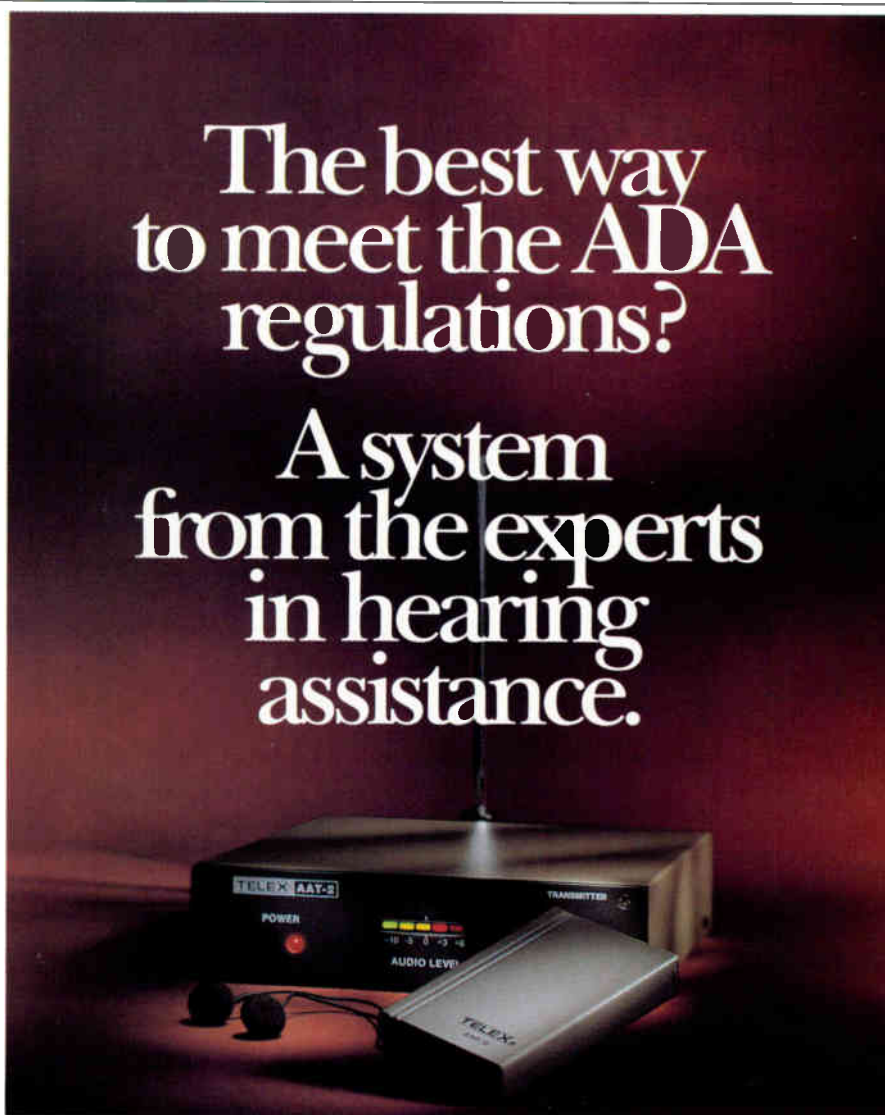
"It created a rub between us and the audio contractor of course, because



Christopher Jaffe of Jaffe Holden Scarbrough sees the acoustics seminar at the IAAM convention as an opportunity to attain better communication between theater managers and acoustical consultants in a changing market.

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they want to be paid. At the same time, we are trying to make sure the shows come off good. It got a little crazy there for a while," he says.

Also, the original theater consultant was based in England, and spec'd mostly English products that are good but not completely useful in a road-house environment.

Starks finds that he is renting more equipment than he planned.

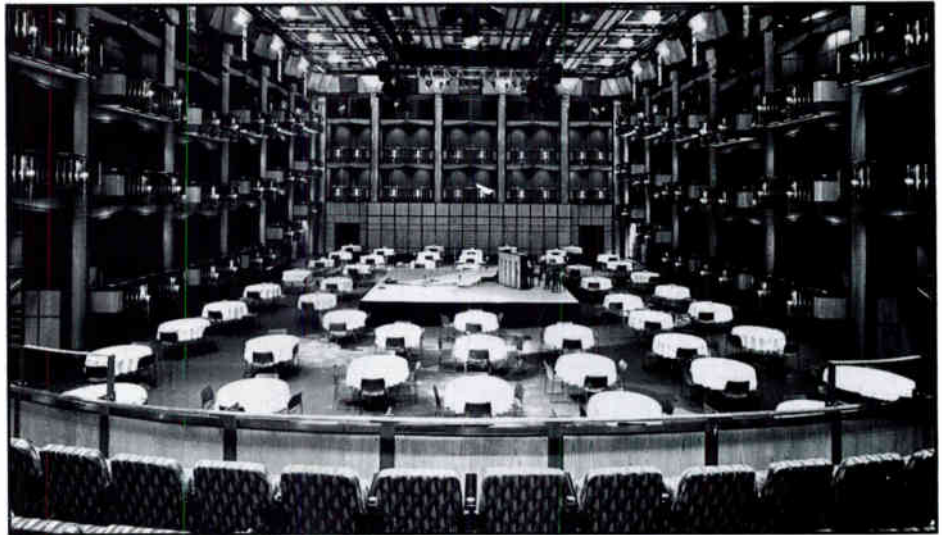
There aren't any such problems at Keene State College's film theater, constructed in 1988 and recently installed with Dolby Digital, making it the first educational institution with this capability.

"What usually happens," says Bob Gunther, Assistant to the Film Studies Department, "is that the architects and engineers who know nothing about a theater just do it for the aesthetic value. Then the sound people have to come in and correct their boo-boos. And that hasn't happened in our building fortunately, even though our consultant wasn't with the job from the beginning. If they had been, the architect would have designed the building differently."

The idea of having consultants with projects from day one is not a new one. It usually comes down to a matter of money and priorities. Fortunately for the audio consultant market, sound is becoming more of a priority. Because of this, audio contractors and consultants are becoming closer to their local theater managers.

"There are plenty of stories I could tell you," says Smith. "I won't because you always want your local sound contractor on your team. You don't want him as an adversary. That's really important."

Important enough for the IAAM to try to build a stronger relationship between the two at a meeting which expects between 150 and 200 performing arts managers. It will probably grow more important as audio continues to play a more noticeable role in the performing arts. ■



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EX Series < 2 >

The screenshot shows a digital audio workstation interface with two channel strips, Ch 1 and Ch 2. Each strip includes a power protection indicator (Pwr Prot) with 'On' and 'Mute' options, a clip indicator, and two level meters (Input and Output) ranging from +10 to -70 dB. Ch 1 shows an input level of -60 dB and an output level of -69 dB. Ch 2 shows an input level of -31 dB and an output level of -54 dB. Between the strips is a 'Select' section with 'Aux' (In/Out) and 'Control' buttons, and a 'Gang' section with 'Fader', 'Mute', and 'Solo' buttons. A 'QSC' logo is visible at the bottom of this section. To the right of the strips is a vertical fader with a 'THRSH' (threshold) control and 'SOLO' and 'BYPASS' buttons. Below the strips is a 'Thermal' indicator, 'Mute', 'Solo', and 'Polarity' buttons, and an 'Atten' (attenuation) control set to -36 dB.

QSCControl™ gives you full graphic computer control of any device in a MediaLink Network using LoneWolf's breakthrough *Visual Network Operating System (VNOStm)*. Displayed on this screen are QSC EX Series Amplifiers, the JBL/UREI Platform Signal Processor, the Carver PDR-10 CD Recorder, and the Rane Neq 228 Equalizer.

Neq 28/56 < 1

The screenshot shows an equalizer interface with a frequency spectrum from 40 Hz to 1.8 kHz. The sliders are labeled 'AN 1 FADERS' and 'CUR MEMORY NA'. Below the sliders are track controls including 'Mute Record', 'Track A B', and 'Inc' buttons.

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QSCControl connects QSC EX Series Amplifiers to the MediaLink network. It gives you total computer control and monitoring of all amplifiers and any other MediaLink device in your system. (Even

non-MediaLink devices may be bridged to the network.)

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In other words, QSCControl takes complete advantage of the full-function power and ease-of-use of the two most popular GUI's. Versions are available for both Macintosh® and Windows®. *In fact, with MediaLink your network can include both of these platforms at the same time.*

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The plug-in QLink card is the EX amplifier interface, via fiber optic cable, to the MediaLink network. It allows for several optional I/O modules, including MIDI, PA-242, RS-485, and other glass or plastic fiber optics.

future may bring.

Speaking of the future, what about MediaLink's potential to become the industry's widely accepted standard?

It may still be too early to tell, but the list of leading manufacturers who have "heard the light" is growing rapidly. At the time this ad was produced the list

included JBL, Soundcraft, UREI, Rane, TOA, Carver, Altec Lansing, Vega and Klark-Teknik. But, if you want to keep up to speed, you'd better contact us. It's likely the list will keep getting longer.

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With QSCControl and MediaLink, your network may include both "Mac" and PC systems.

Hear the light.



Hieroglyphic Sound

*Three Cutting-Edge Theaters,
In Ancient Style, Open in Las Vegas*

BY MARK MILLER

Las Vegas is taking a ride these into middle-ground, family-oriented entertainment with the planned and recent openings of such casinos and theme parks as Grand Slam Canyon, Treasure Island, MGM, and the Luxor.

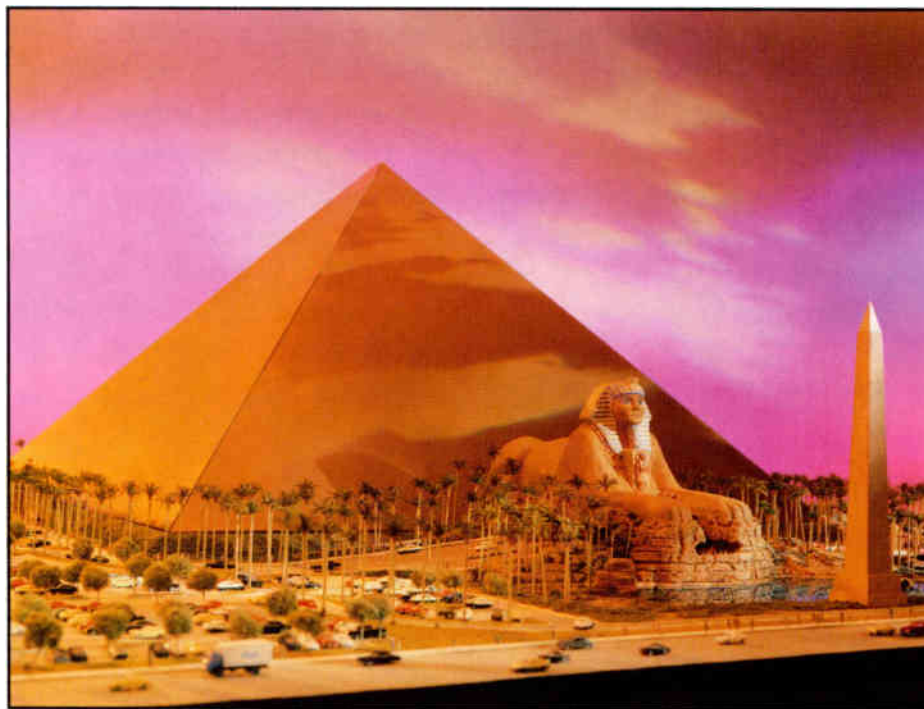
The Luxor Hotel/Casino, opening on October 9, is shaped like an ancient Egyptian pyramid and features an interior River Nile which guests ride by boat to elevators that travel up the 39 degree slope of the pyramid to any one of the 2,525 rooms. The Circus Circus Enterprises creation has a laser-shooting sphinx out front, an 1,100 seat performance space, 100,000 square feet of gaming and three cutting-edge film theaters, designed by Douglas Trumbull.

Trumbull, based in Lenox, Massachusetts, has worked on "2001: A Space Odyssey," "Close Encounters of the Third Kind," "Blade Runner," and Universal Studio's "Back to the Future — The Ride." His three theaters in the Luxor present the trilogy *In Search of the Luxor Pyramid* and attempt to make anyone who enters a complete participant in the film.

IN SEARCH OF THE OBELISK

On the first section of the trilogy, a 15-seat, magnetically levitated vehicle takes you *In Search of the Obelisk*.

Mark Miller is a freelance writer based in New York.



Model of the Luxor Las Vegas, scheduled to open in October.

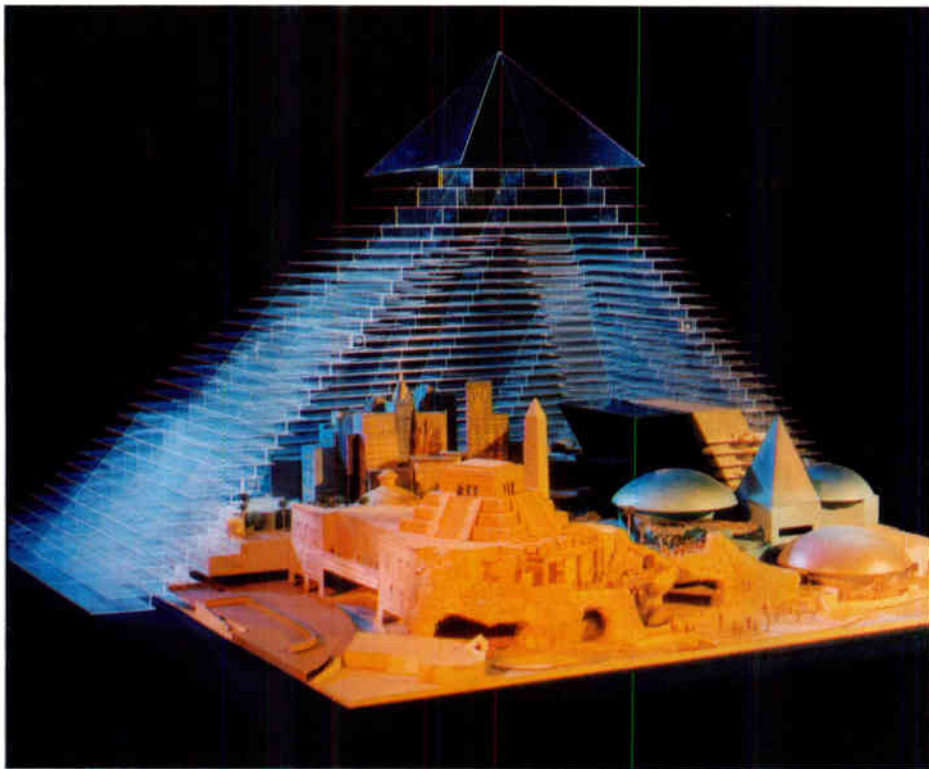
The story of this ride starts in the present and takes participants back in time to a mythical pyramid temple beneath the Luxor.

"You watch a very high resolution film on screen and the chair is programmed to move," says Leslie Shatz, co-sound designer on the project with Erich Greenebaum. "You go up and down and sideways in synch with the picture to give you the impression of falling and flying and things like that. So the challenge for the sound is to completely engulf you in that world

and I think this is the first time that such an extensive treatment will be done on the sound for one of these rides."

There are eight different bays, six of which feature motion-simulator vehicles. One is basically an elevator for those in wheelchairs or who don't like sharp motion and it simulates huge freefalls into the earth. The final bay is the ride without motion simulation for those who just don't enjoy motion.

"The sound characteristics of each of the bays is basically the same. Once



The Luxor Hotel/Casino is shaped like an ancient Egyptian pyramid and features an interior River Nile which guests ride by boat to elevators that travel up the 39 degree slope of the pyramid to any one of the 2,525 rooms.

we did it for one, we did it for all of them,” says Cliff Hayes, Technical Director of the three theaters as well as the River Nile, the Luxor Museum and the monorail which will run to the nearby Excalibur Hotel. “They have quite a few components in each one and eight channels stored in the Roland DM-80 multitrack,” Hayes adds.

There are three speakers in the front, a left surround and a right surround and a subwoofer. This gives Shatz the ability to pan sound.

“Giving the sound a spatial characteristic is really a great challenge. I do mainly motion picture work where panning sound is always interesting but it’s never accompanied by motion in the theater obviously. This is the first time for me where I’ll be able to use panning really as a complete element in the soundtrack.”

None of the sound can be static, except for the dialogue, so all of the

sounds have to be cut separate in the process so they can be panned at different times.

Greenebaum has set up a Studer Dyaxis workstation with “10 or 12 gigabytes” to perform what Shatz calls “virtual mixes within the computer because you hear the sounds mixed together without actually combining them, which saves the separations until the very end.”

Greenebaum and Shatz are doing the final mix for all three films within the actual theaters, something new for Shatz.

“I think that’s an incredible advantage and something I wish I could do more often in film,” says Shatz, sound designer on the film “Dracula.” “When you mix in a recording theater, it’s usually so much better than most movie theaters that you go to. The real world is a whole different story from a recording studio. It’s always a disappointment after mixing a film and making it sound great and then going to a

real theater. Here we won’t be having those problems because the theaters here are designed and equipped really well acoustically. Also, we’ll be hearing the actual sound as we mix it in the theater.”

According to Mark Engebretson, the consultant from the Warner Springs, California-based Summit Labs, this theater provided an extra challenge due to the screen’s curvature.

“It’s a very hard acoustic structure, following a single radius of curvature in all directions. It demonstrates ‘whispering gallery’ characteristics for sounds that graze the surface from any direction. Wide-angle sound energy that impinges upon the screen nearly parallel to the surface ‘creeps’ across the surface in all directions outward from the source. Some of the sound energy vibrates the surface of the screen and is re-radiated, creating time-smear distortion and mid-bass energy loss.”

The sound energy reflected into the screen was minimized by making all of the room’s vertical surfaces anechoic.

After experimenting with a few solutions, Engebretson provided narrower coverage in the speakers to reduce HF energy spillage on the screen. The area immediate to each speaker was treated with sound absorption material to absorb as much wide-angle energy radiation to as low as frequency as practicable. Loudspeakers were aimed to minimize direct sound energy radiated onto the screen and the sound energy reflected into the screen was minimized by making all of the room’s vertical surfaces anechoic.



The action-adventure simulator ride, *In Search of the Obelisk*, features wraparound dramatic film action, seen from aboard 15-passenger, magnetically levitated vehicles.

LUXOR LIVE

Luxor Live is the title of the second show, presented in a 350-seat auditorium that is set up to represent a television talk show studio. As the participants enter the studio they pass a "control room" setup. Things seem normal. A live actor warms up the audience. As the show grows closer, things start to go wrong, the lighting starts to fall in the back of the set, and the set starts to fall.

"Some of this will be real, real sparks, and the lighting goes crazy," says Shatz. "But it's all going to be illusion."

Integrated into the set is a large screen which will have a 70mm film being shown at 60 frames per second, 2 1/2 times the normal frame rate. Also, two large monitors are incorporated within the set.

In time the show becomes a three-dimensional film production that takes participants to a solar eclipse, among other exotic things.

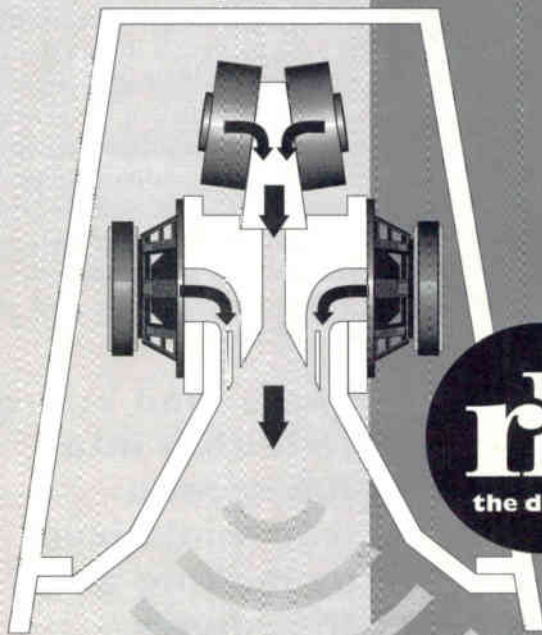
"The effect when you're looking at it is that you're actually watching real people; it's very hard to tell because the image quality is so good. Visually, it's quite spectacular, so the challenge is to make the sounds as real as possible," says Shatz.

All of the sounds will be created on an Emulator IIXT and the Kurzweil K2000 synth/sampler. They are using mainly digital input/output signal patches. All of the shows will be mixed on a Yamaha DMC1000 console. The Roland DM-80 hard disk recorder will act as the playback unit for all three venues. All of the theaters will feature a variety of speakers by Panasonic/Ramsa in a marketing agreement between Luxor and Panasonic. The three theaters will also feature Showscan screens from Stewart Filmscreen.

"With this theater, we're trying to recreate the live sound that you hear when you go to watch a taping of Arsenio Hall, the studio sound," says Hayes. "The big movie portion of it has

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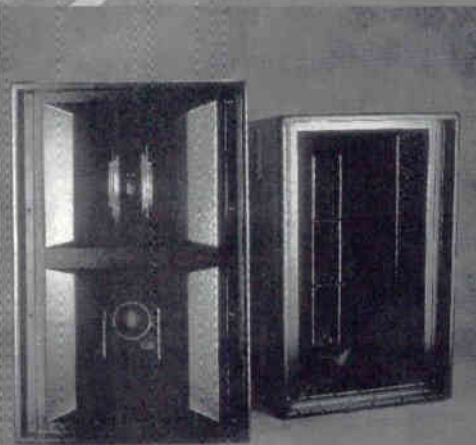
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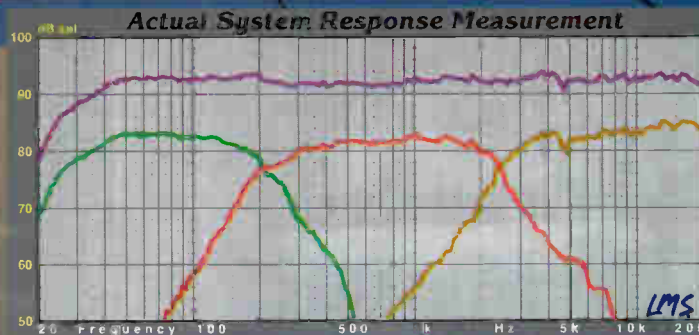
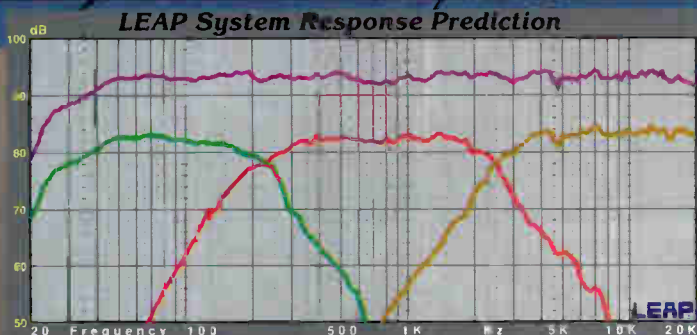
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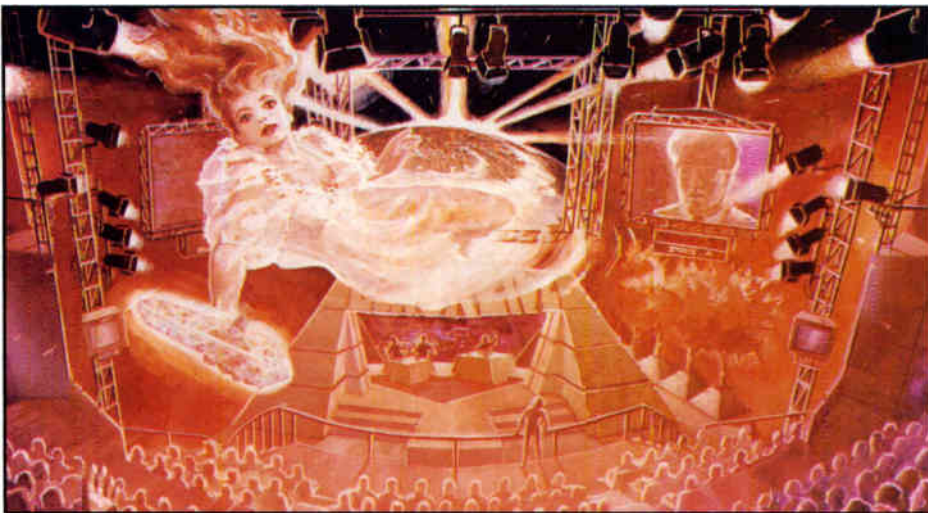
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that rich, full movie sound. The rest of it, where you think you're hearing the true behind-the-scenes, you really get that headphone type sound even though it's coming over the speakers. When the actors are on the stage we want the directionality of where the sound is coming from. One of the things we can do with the Roland DM-80 is slightly delay one or more of the tracks so we can get some directionality from the front of the stage. Then we'll augment it in the other speakers. A lot of it has to do with a fairly substantial final mix."

Several lines of Ramsa/Panasonic speakers will be placed within the sets and around the seating areas plus a few sub-bass speakers. The system will be fairly automated.

ALTERNATIVE FUTURES

The "Alternative Futures" film is done in 35mm Vista Vision, but instead of being projected sideways, like a usual film, it is projected up and down, creating a seven-story projection in a 350-seat, steeply raked theater.

"A normal frame ratio would be 2:1 where this would be 1:2 so it will be very long and narrow and very, very large," says Shatz. "There will be safety belts to keep people from falling out and the image will be very stunning. There will be six speakers, on the bottom, middle and top of the screen."

The film starts out with a small image on a small screen, and then the main curtain opens to the large screen. The sound enlarges with the video.

Also included in this adventure are electro-magnetic transducers designed by AuraSound within the seats and at the participants' feet, each taking its own dedicated track of audio from the complete 12-track system, bringing the participant completely into the experience.

"The whole purpose of these actuators is to induce a little visceral sensation," says Engebretson.

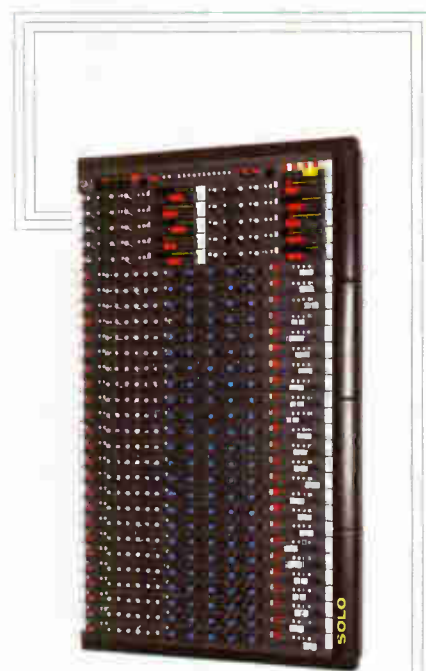
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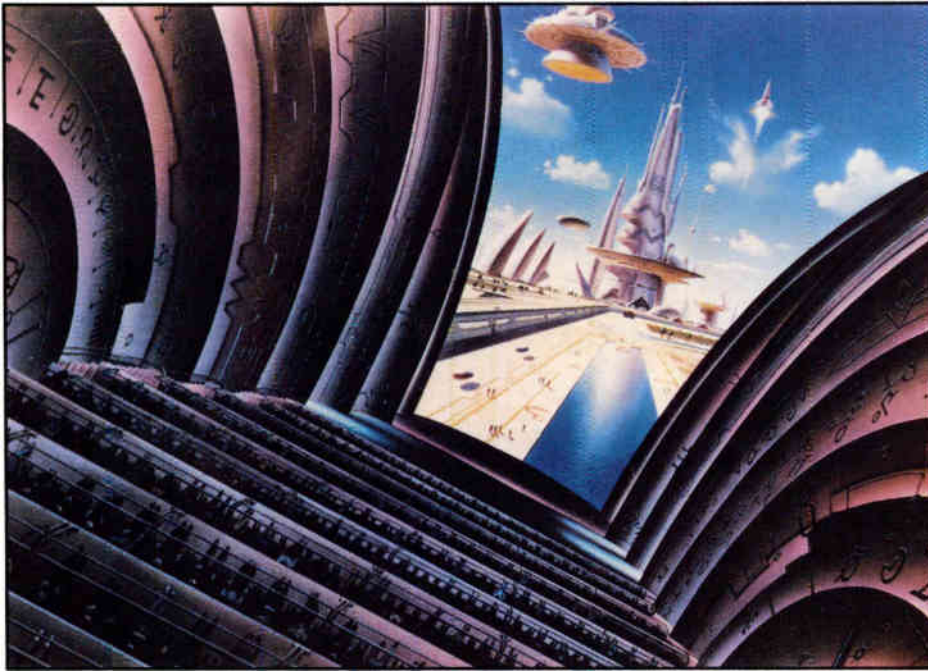
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The 350-seat "time transporter" theater features steeply raked seating and a 70-foot vertical 70 mm screen. The film, *Alternative Futures*, takes the audience on an adventure that explores Utopian and Dystopian visions.

"You're not only going to hear it, you're not only going to have the sub-bass that's really going to help move the theater. Now you're going to feel

it," says Hayes. "You're going to feel it in beats, in time with music, and we can throw it out of phase and kind of confuse you a little bit. There are

plenty of things you can do with this."

"The future is the most challenging," said Shatz, "because it's a 50-minute film and there are probably the most incredible visual effects in it and

"You're going to feel it in beats, in time with music, and we can throw it out of phase and kind of confuse you a little bit."

people are time traveling into the future and so we have to create the sound for the time travel, for the future. Again, we have the capability of

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The Discovery Toys Distribution Center in Livermore, CA has a need for clear voice announcements to improve efficiency. Because there is also some final toy assembly, the floor areas have the production ambient noise in addition to the usual noise of lift trucks and other packaging machinery. Eleven SoundSphere #110A Speakers were installed to distribute voice paging and background music.

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The author taking a breather, and friend.

panning all around. We're going for that big, splashy soundtrack kind of sound."

Hayes says, "One of the things that Doug Trumbull wanted to do with this is not only to visually paint an image

but to audibly paint an image, and we're going to try and excite you from every angle. Doug is the type of person that if we could figure out a way to get an odor in there that everybody liked, we'd be doing that too. He really

likes to excite the senses."

"Working with Doug is really an exciting, challenging thing," continues Hayes, who has known Trumbull for 17 years. "The one thing I really wish I could do with Doug is to have him stop creating long enough for us to build what he's thought of already because he never stops creating. He creates things faster than we can build stuff. By the time we've got stuff half-way built he's got this great new vision and it sounds better and works better than what we're doing. Sometimes you have to say, 'Wait a minute, I have to build this, we can't go on like this.' There's no way to leash that guy down. He's a creative genius that just keeps on going."

Trumbull's latest adventures in Las Vegas create sounds and journeys like no other. ■

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SOUND DESIGN FOR OFF-BROADWAY — THE ALLEN SHERMAN MUSICAL HIT

By Jeff Ader

I recently had the opportunity to be the “sound operator” for an Off-Broadway show. Most Off-Broadway shows have short runs. This one ran for seven months! During that time I came to appreciate the work done by sound designer Tom Morse.

If it is Off-Broadway, a show has less budget and therefore must rely on the imagination of the production people to come up with creative and cost effective ways to achieve what the larger “On Broadway” shows can do.

I was amazed at the amount of audio gear used for a “small” show and impressed with how well everything worked within the context of the production.

Before I go any further with the technical aspects of the show, a little history of “Hello Muddah, Hello Fadduh” is in order.

In 1962 Allen Sherman’s parody of Ponchielli’s “Dance of the Hours,” retitled “A Letter from Camp,” cap-



“Hello Muddah, Hello Fadduh” featured (from left to right) Stephen Berger, Scott Robertson, Tovah Feldshuh, Jason Graae and Leslie Klein.

tured the nation’s imagination as a young boy told his “Muddah and Fadduh” of his experiences at Camp

**I WAS AMAZED AT THE
AMOUNT OF AUDIO
GEAR USED FOR A
“SMALL” SHOW AND
IMPRESSED WITH HOW
WELL EVERYTHING
WORKED.**

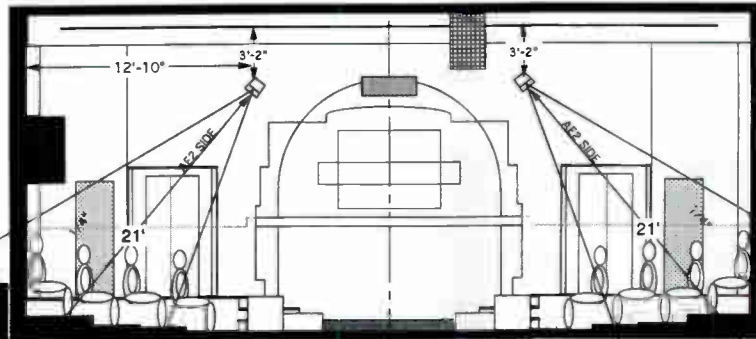
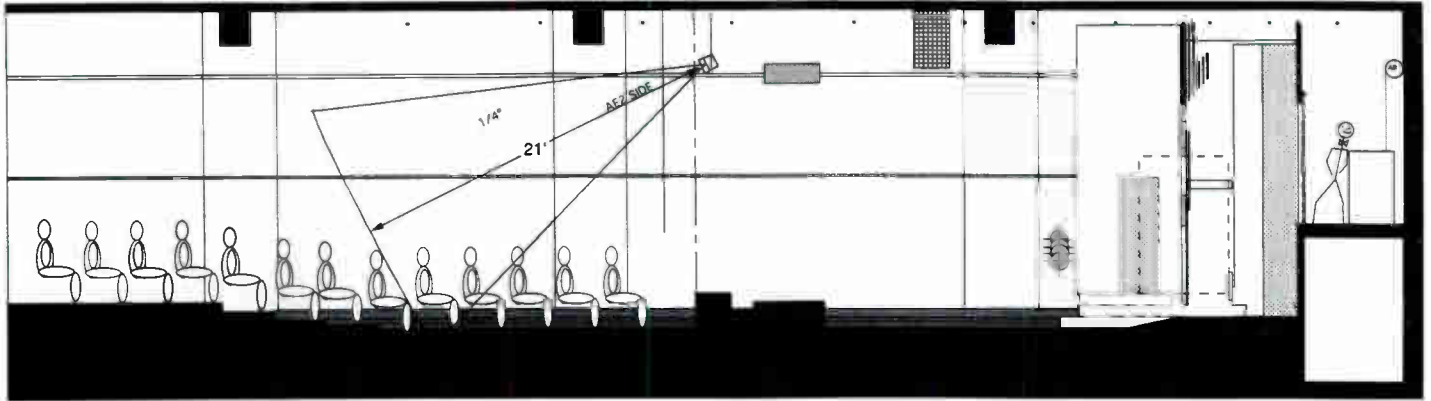
Granada. It rose to number “One” on the record charts.

Rob Krausz and Douglas Bernstein’s

love for Allen Sherman’s musical parodies led them to create a vehicle to show them off. In “Hello Muddah, Hello Fadduh” we follow the life of a fictitious character named Barry Bachman from birth to old age, through “summer camp,” school, romance, wedding, work and retirement home. We are introduced to his zany family and friends along the way and get a healthy dose of Allen Sherman parodies to boot.

The show, produced by Diane Krausz, Jennifer Manocherian and David Blumberg, directed and choreographed by Michael Leeds, is a musical comedic tour-de-force.

Jeff Ader is a consultant to the sound and communications industry.



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Above the proscenium on the left and right were suspended two Apogee AE-3s for music support, audio cues and special effects.

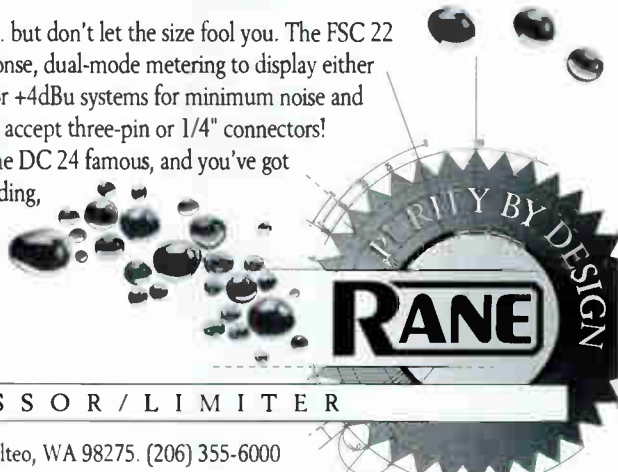
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The theater, Circle in the Square (Downtown), is a small 350-seat house in the heart of New York City's Greenwich Village. It is theater-in-the-round. Tom Morse was faced with the prospect of using foot microphones and standard miking procedures because the size of the house and the budget would not permit the use

of wireless microphones. Our cast consisted of three actors and two actresses.

Because it is theater-in-the-round, the action moves all over the stage area. This requires continuous "live" mixing as the show goes on. Tom Morse placed eight microphones strategically around the stage and risers

and suspended two shotgun condenser mics over the riser areas. The two act show runs for two hours with a fifteen minute intermission.

Tom Morse is no stranger to sound design, having done such shows as Neil Simon's "Odd Couple," "Brighton Beach Memoirs," "Biloxi Blues" and "Lost in Yonkers." He has designed sound for over 40 Broadway productions as well as numerous industrial shows, special events and consultancies.

For Tom, the biggest concern was to support the production with sound reinforcement and not overpower it with too much amplification. The use of three Apogee AE-2s overhead to cover the audience left, right and center very effectively supported the vocals. Above the proscenium on the left and right were suspended two Apogee AE-3s for music support, audio cues and special effects.

**BECAUSE IT IS
THEATER-IN-THE-
ROUND, THE ACTION
MOVES ALL OVER THE
STAGE AREA. THIS
REQUIRES CONTINUOUS
"LIVE" MIXING AS THE
SHOW GOES ON.**

Behind the proscenium on the musicians stage we had two JBL cabinets to augment the acoustic piano, synthesizers and drums. At times during the show there was a scrim or screen in front of the musicians, which made the amplification a necessity. There were also three Galaxy "Hotspot" monitors for the musicians so they could hear the dialogue and special effects cues during the show.

All of the special audio "effects" and prerecorded voice cues were played on an Otari 5050 tape recorder. There were two of these machines (one for back-up). I also used them to record new cues when there was a change in

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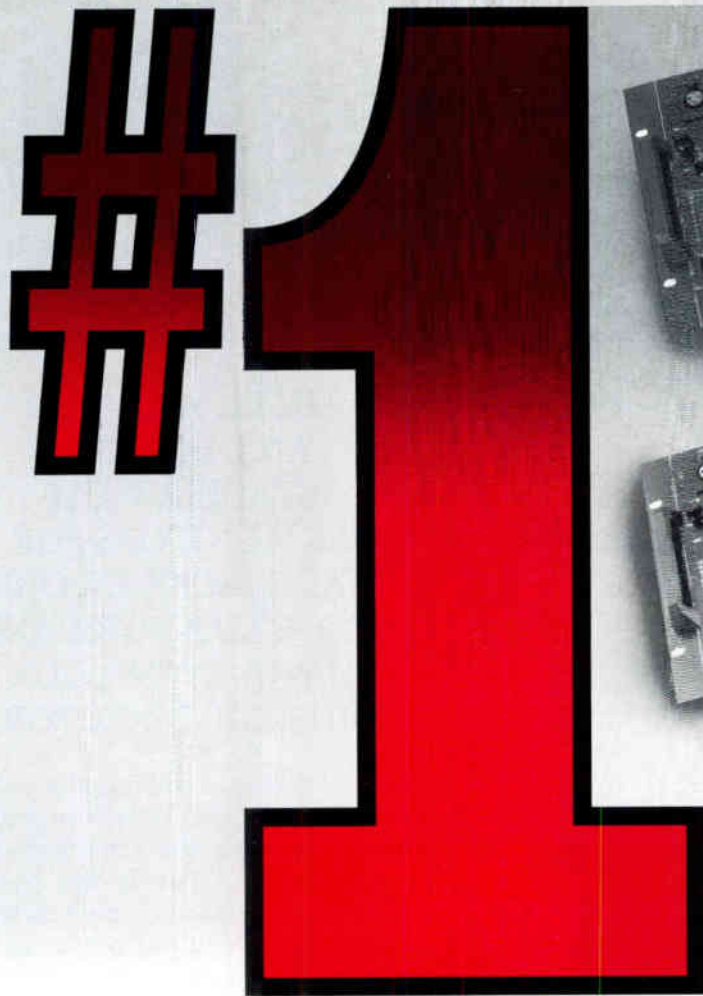
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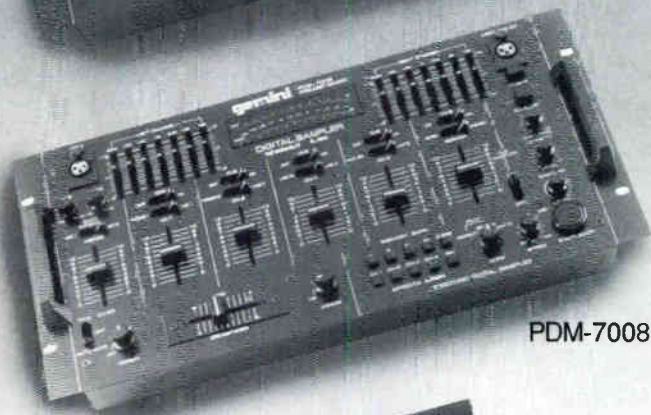
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the cast and to create a safety copy of the master tape.

To mix the sound for all of this, I had a Yamaha PM 2000 console. It was very flexible and was able to get the sound to all the places it was needed, including the dressing room to page or cue the performers.

There was also an infrared camera


with TV monitors for Wade Jackson, our Stage Manager, and David Evans, our Musical Director. This enabled them to see that the performers were on their "marks" between each scene when the house was dark.

In order to keep everybody on top of things and in constant communication, Tom Morse specified a Clear-

Com system. With the Clear-Com I could check with David Evans and make sure that he and the other musicians were getting what they needed from the monitor mix.

At times, due to the seating capacity in the house, the acoustics would change. It made mixing the show an interesting experience and always kept

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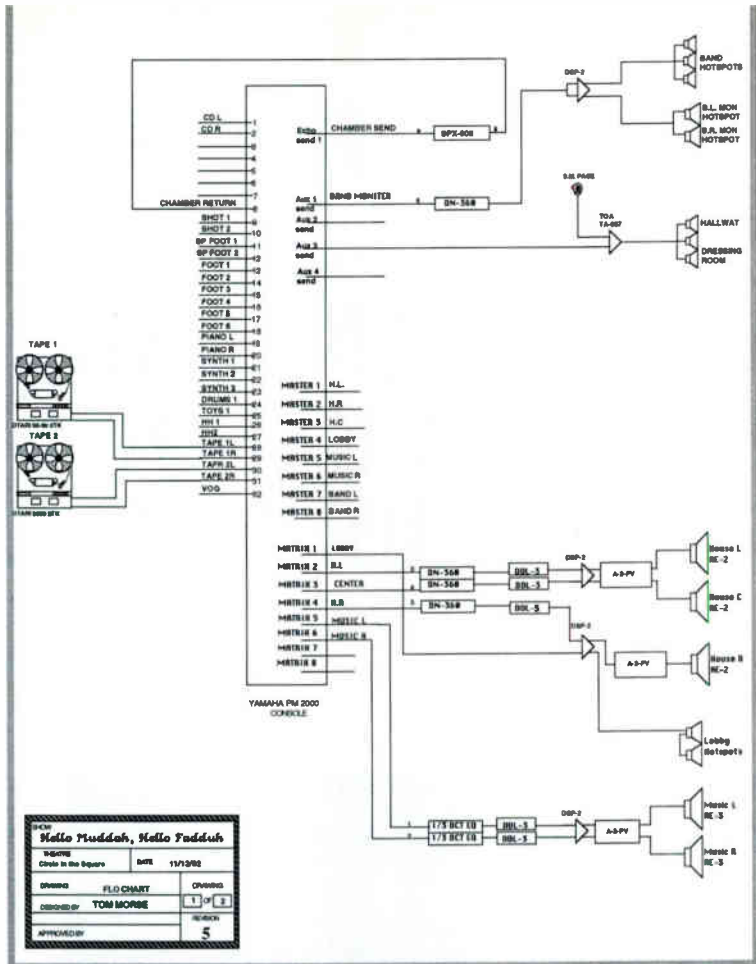
**THERE WAS ALSO
AN INFRARED
CAMERA WITH
TV MONITORS FOR
WADE JACKSON, OUR
STAGE MANAGER, AND
DAVID EVANS, OUR
MUSICAL DIRECTOR.**

me on my toes. The biggest problem that I had to deal with was getting used to hearing the show from the sound booth. Circle in the Square (Downtown) has had more dramas than musicals and was not set up for a musical production. A special platform had to be constructed over the entrance to the seating area. The Sound Operator and the Stage Manager's stations were on this plat-

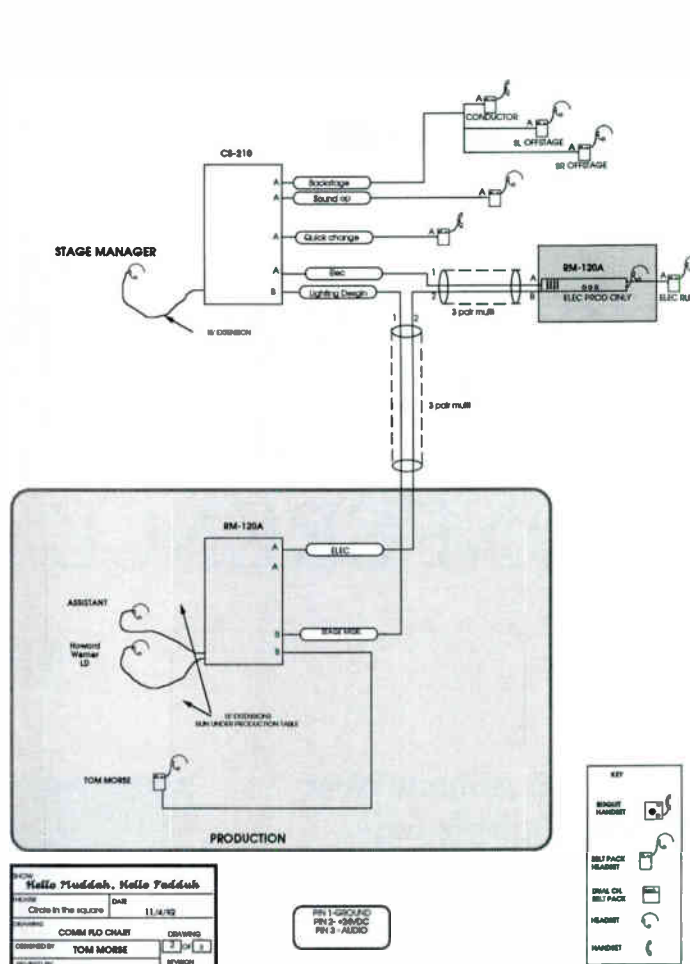
**AT TIMES, DUE TO
THE SEATING
CAPACITY IN
THE HOUSE,
THE ACOUSTICS
WOULD CHANGE.**

form, reached by a narrow stairway up the back wall of the theater. My head was just about level with the House Center AE-2 speaker!

For the most part the difficulties were minor. The cast and crew were great to work with and, best of all, the audiences loved the show! It made it a memorable experience for me as well. ■



The Yamaha PM 2000 console was used to get the sound to all the places it was needed, including the dressing room.



The communications system flow chart.

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NOTES FROM THE 10TH ANNUAL WEST COAST SHOWBIZ EXPO CONFERENCE AND EXHIBITION

By Neil A. Shaw

The 10th Annual West Coast Showbiz Expo Conference and Exhibition was held in Los Angeles at the Los Angeles Convention Center from June 5 to June 7, 1993. People who attend this show are involved with the production of feature film, television, cable, commercial and corporate video, theatrical production, and themed entertainment.

In addition to exhibitors who provide services and supplies for production and post-production, there were exhibits that were grouped by "theme" — "Stage Crafts," of course, had lighting and staging resources (everything from tailors to scenery), "Production Design/SFX/Graphics Studio" had exhibitors who provide special effects and graphics, and included feature presentations at the "Special Effects Studio." The "HDTV Theater" featured screenings of HDTV programming by "foremost producers in this emerging medium." Another area was the "Video Systems & Facilities" which presented video products, services and post-pro-



An overview of the ShowBiz Expo.

duction facility exhibits. "Theme Park Technology Row" showcased technology used to create virtual reality, animatronics and realtime graphic presentations at live venues. "The Screening Room" provided an opportunity to view award-winning film and video work.

The Conference program at Showbiz Expo included sessions that were produced or hosted by the Directors Guild, the Writers Guild, Women in Film, The American Society of Cinematographers, Illuminating Engineering Society/Theatre, Television and Film Committee and the United States Institute for Theater Technology, among others. Many of the sessions presented were of the moderator-panel of experts format. Session titles included, but were not limited to, "Following the Money: Who Gets What & Why?," "How the Free Trade Agreement Will Affect Production in the '90s" and "Virtual Reality 101." For this writer, the highlight session was "The Post Experience." This was a special full day

mini-course hosted by the Society of Motion Picture and Television Engineers. More on this session later.

Now, what did this trade show have to offer contractors involved with sound and communications? Well, that depends. Many contractors not only provide installed sound and communications systems, but also provide lighting and production services to their clients. Many clients look to their "entertainment" and "communication" contractor to help program, design, manufacture, install, and yes, even, operate systems needed for all types of venues from the corporate boardroom to the legitimate theater in town to the local school. ShowBiz Expo gathers in one place all the services and suppliers needed to shoot a corporate video on location from Thailand to, figuratively, Timbuktu. All the production services, from companies who can provide everything from a very large portable AC power generator, to helicopters, to costumes and tailors, are exhibited by, in many cases, many companies who of-

Neil Shaw is a partner at Menlo Scientific Acoustics in El Segundo, California.



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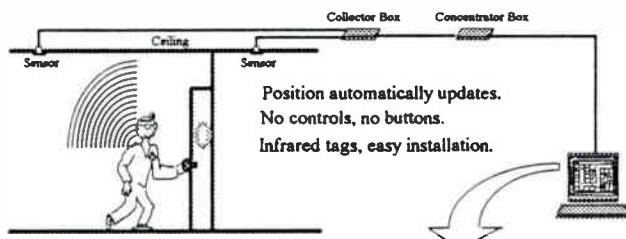
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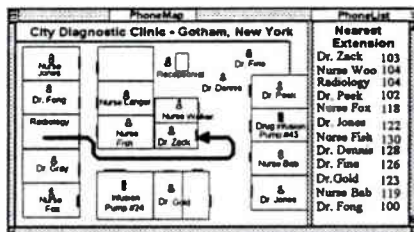


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fer these services in mundane to exotic varieties.

If you require production services and supplies, you can see exhibitors ranging from state film commission (from Arkansas to Tennessee), foreign countries (Canada, Thailand, Philippines, and more), modest studio production space (KCET, Los Angeles), very large studio production space (Universal Studios), lighting (Mole-Richardson and National Specialty Lighting, among many others), to publishing shops specializing in theater, film and video (Samuel French).

As was the case at the NAB show, although audio definitely does play second, maybe even third, fiddle to the visual sense, audio was present at the show. "The Post Experience" featured, after the video post, practical demonstrations of audio post-production. And there were some audio-only exhibitors. Dan Dugan Sound, whose booth was in exhibit Siberia, was showing its very competent automatic microphone mixers, which are not only used in high-end fixed installations, but also appear to be used by cinema sound mixers on location. Audio Services Corporation was in attendance. ASC is known for its sales, service and rental of audio equipment for use in audio production. Hey, you need wireless mics, and lots of 'em? They got 'em for a day, a week or a month. Your wireless mic did a head plant? They can fix the innards and perform cosmetic surgery.

Now, a quick look a some of the exhibits and products that caught this reviewer's eye:

Eastman Kodak revealed a range of new products beyond film stocks. Included were their CD Photo line, digital publishing and the Cineon Film System. The Cineon Film System consists of a Scanner, Paint and Compositing Workstation and a Recorder. This system allows for digital capture manipulation and printing that exceeds the high quality for motion picture capture provided by Eastman Kodak's Film. Kodak claims that it is

virtually impossible to distinguish between the camera original and Cineon digital film output. The examples that I saw were indeed quite good.

Jib-Jobs of Los Angeles, has comfortable pads and belts. If you ever needed to lug around portable tape recorders, battery packs or other equipment, the Jib-Jobs 325M or Python SR-1 systems are for you. Your aching shoulders will thank you for the soft-pliable pads from Jib-Jobs that better spread the strap load over a larger area than the pads originally supplied with the equipment.

Simgraphics/Iwerks Entertainment, of Burbank, California, showed "Actor," a computer-generated character or object whose movements are controlled by actors in real-time using specially designed devices for their face, hand and body. It was demonstrated on a large video screen. Hey,

the expressions of these computer generated characters rivaled those of recent Oscar winners!

ShowBiz Expo runs again on the East Coast next January and returns to the West Coast in one year.

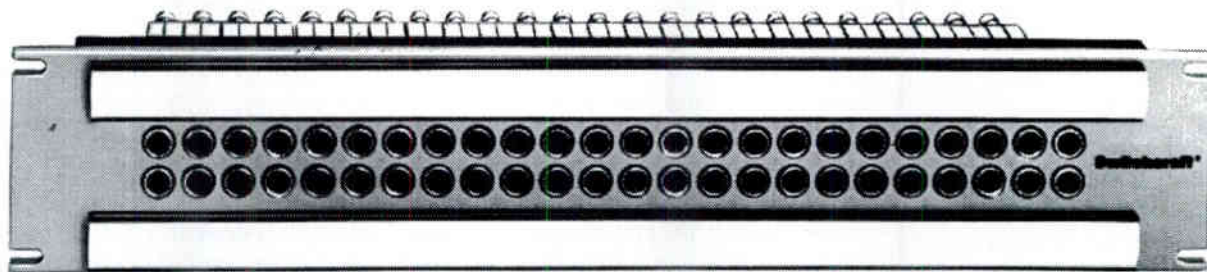
Seminars at ShowBiz Expo run the gamut of use for its participants.

NOTES ON "THE POST EXPERIENCE"

Picture if you will a scene from a weekly series on TV: The camera zooms in on the couple in an intimate dinner setting, romantic music sails in the background. We cut to a closeup of two champagne glasses clinking together and then cut to a two-shot of the couple. One of them takes a piece of celery and eats it. A loud, clear, snap is heard. Fade to black. Roll commercial.

A simple scene is described here. "The Post Experience," a comprehensive and educational multimedia seminar that was developed by the SMPTE Toronto Section, dissects and explains all the visual and audio post-production required for this one simple scene. Insight to how more complicated productions are assembled, such as a Vince Neil MTV video, was also presented. The seminar, attended by over 170 participants whose background ranged from director to set nurse to consultant, was offered as part of the 10th Annual ShowBiz Expo, which took place at the Los Angeles Convention Center. The seminar, which is to be offered in other venues around North America, provides producers, directors, front office personnel, sales personnel, equipment suppliers and installers, and just plain couch

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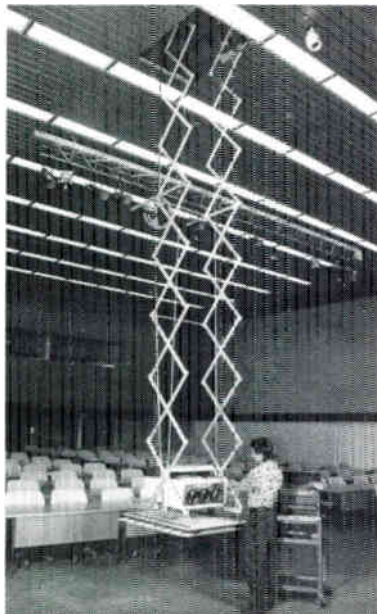
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Bob Prodovich, Vice President, the Masters Workshop, teaches at the 10th annual expo.

potatoes, with a behind-the-scenes look at what goes into a shot from film, but transferred to video, television production. You'll never look at television, or film, in the same way after experiencing "The Post Experience."

In brief, "The Post Experience" enabled one to obtain a quick, but accurate, overview of the entire post-production process, from start to finish. After a review of pre-production elements, using the actual footage and dailies from a Canadian series, "Maniac Mansion," the seminar takes you directly to the "editing room," where, via three large screen projection television screens, you became an armchair, non-linear editor of a scene from the series. After the initial video editing, the audio post-production starts. But I'm getting ahead of myself here.

The seminar is designed to offer an introduction to, and a complete overview of, the aspects of audio and visual post-production. The Experience is a sequence of presentations which, to as great a degree that one would expect in a one-day seminar, duplicates the actual sequence used in post-production today. An audio professional attending the audio post-production parts of the seminar is introduced to other crafts and trades that utilize mixing, recording, dubbing, sound effects and sound manipulation. Many of the audio techniques used in audio post-production are similar, if not identical, to techniques used in live sound reinforcement and mixing, while others are more exotic, like Foley. (Foley, named after Jack Foley who worked at Universal Pictures in the 1930s and

1940s, is a system to add synchronous sound effects to a sound track.)

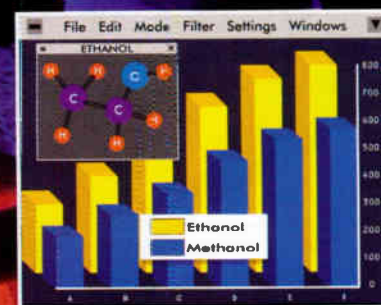
A brief blow by blow description of the seminar as experienced by the author:

The morning session included an examination of the reasons for selecting a format, film or video. The impact this decision has on cost, and options available later on, was discussed. The role of the post-production supervisor was presented. The procedures that are followed at the shoot, which effect the post-production, were explained. If things are sloppy at the shoot, the post-production is made more expensive and harder to do! A little pre-production planning and communication between the location/set personnel and the post-production people enables the post-production to be effective and efficient.

Next, a videotape took us to the Film Transfer suite. Here, since "Maniac Mansions" was shot on film, the film is transferred to videotape. All post-production for this production is then video based, and the final product is on videotape. The show is seen on televisions across Canada.

At this point, we can actually start the creative post-production process. First, the visual scenes are edited. This process is done in an off-line suite. The instructor explained the advantages and disadvantages of both film and video as editing media, and then proceeded to perform an off-line edit using a non-linear video edit station. Off-line editing, in the simplest sense, means using copies of the original material, on multiple video sources, and generating an edit decision list. To play back the off-line edit, the edit decision list then is used to control the multiple sources. The off-line edit uses professional quality equipment. The off-line edit decision list produced is in essence a computer list of what to do when the on-line edit is done. The on-line edit uses broadcast quality equipment to produce a master tape. On-line editing is more expensive per hour

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Scene from "The Post Experience."

than off-line editing. At "The Post Experience," Ms. Ellen Heine, with the help of the 170 producers who were looking over her shoulder, took the dailies produced for a scene for "Maniac Mansions" and performed an off-line edit. Ms. Heine used the E-Pix Nonlinear Editing System, which uses optical disks, to which the dailies were transferred, for editing. The results of this off-line edit was then used as the basis for all the audio post-production.

Next, a videotape, along with commentary by Mr. Peter Conn of Homer & Associates, presented some of the techniques used for special effects. Mr. Conn reviewed miniatures, mattes, composites, bluescreen and electronic pin registration, among other special visual effects techniques. The videotape also showed some of these techniques.

After lunch, the audio portion of the post-production process was then introduced. The audio post-production includes dialogue editing and replacement, sound effects and music, and these are added and refined during the various stages of audio post-production — layover, recording, editing, pre-mixing, mixing and layback. SMPTE time code and its uses, electronic picture reference, the soundtrack media used to compile the sound track and

the sources of available sound (Foley, libraries and original scenes) were reviewed by Mr. Bob Predovich of The Master's Workshop. The art of ADR was then demonstrated. One lucky participant was selected to stand on stage and watch a loop of a scene several times. Prior to the portion to be replaced, three spaced beeps were sounded. On the beat where a fourth beep would be, the actor would then speak the line to be replaced. Many actors strongly dislike ADR as they find it difficult to recapture the nuances of feeling that they evoked during the original scene. Right . . . they probably dislike it because it's hard to do.

"Sound" was the next module in the seminar. This module was presented by Mr. Phillip Seretti of the Post Sound Corporation. Mr. Seretti talked about the "composite" soundtrack ("comp mix") and the "M & E" soundtrack ("Foreign" pre-mix/pre-dub). The comp mix is the final mixed soundtrack with all the dialogue, music and effects balanced and panned (left, center, right) into the final blend. It contains, in general all the production sound including many post-production sound effects (footsteps, clothes rustling, etc.). The "M & E" mix is the same as the "composite" but

minus the original language dialogue. It must contain all the elements to feel and sound like the original language version so that other languages can be added.

Mr. Seretti then proceeded to add the Foley sounds needed to enhance the sound track for the edited scene. He demonstrated how to wear a leather jacket and make leather jacket noises, used gaffer tape strips on a leather jacket to simulate clothing being ripped off, Styrofoam and plastic cups to simulate stabbing, crunching and strangling sounds. Bunches of celery are used to simulate arms breaking, and celery being eaten. Knives plunged into Styrofoam packing produce stabbing sounds. Ice cubes are replaced with walnuts in Foley. And footsteps: a good Foley artist has more shoes than Imelda

Marcos. Slippers, boots, high heels, loafers, etc., are used by the Foley artist to improve on the location sound.

The music portion of sound was presented by Mr. Grover Helsley. Music is the most subjective portion of a soundtrack and is also its heart. How big a heart is often dictated by the budget, though. The role of the traditional orchestra, the impact and effectiveness of MIDI-sequencer music production, and the licensing and use of existing recordings as a technique in the production of music for film and television was discussed by Mr. Helsley, music re-recordingist for "Broadcast News," "Switch" and "Moon Over Parador."

As this seminar included elements of the total post-production environment, there were also modules on closed-captioning, both open and closed, in-

ternational standards for material to be sent to other countries, and international television distribution.

Before the end of the seminar, the scene as produced by the seminar was screened, along with the scene as originally produced and broadcast in Canada. The seminar production was good, but . . . I guess that's why these people make the big bucks.

"The Post Experience" is an educational and entertaining seminar that is a useful introduction to the elements of post-production presented in a user friendly atmosphere by industry professionals under the auspices of the SMPTE. For more information about "The Post Experience," including future presentation dates, contact the Toronto Section of the SMPTE or SMPTE headquarters, White Plains, New York. ■

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Automatic Mic Mixers, Part Two

The Saga Continues

BY ROB BAUM

This month, we examine the way automatic microphone mixers switch microphone channels between the on and attenuated states. We also discuss representative products.

Last Episode . . . Our last article introduced our series on automatic mic mixers. When sound systems use more than one mic, typically only one or two mics are actually receiving useful acoustical input (direct speech) at any given instant. Without a properly functioning automatic mic mixer, the extra open mics contribute reverb, ambient noise, and comb-filter effects, degrading the sound system's intelligibility and reducing the available gain before feedback.

How do mic mixers do the voodoo that they do so well? Automatic mic mixers, if properly designed and set up, look at each mic channel, and when appropriate, quickly and smoothly make transitions between the "on" and the "attenuated" states. This attenuation of unused mics keeps the sound system free of harmful acoustical input such as direct sound

Rob Baum is a Mechanical Engineer whose professional experience includes CBS Records and Apogee Sound. Rob works for Menlo Scientific and consults for the audio industry.

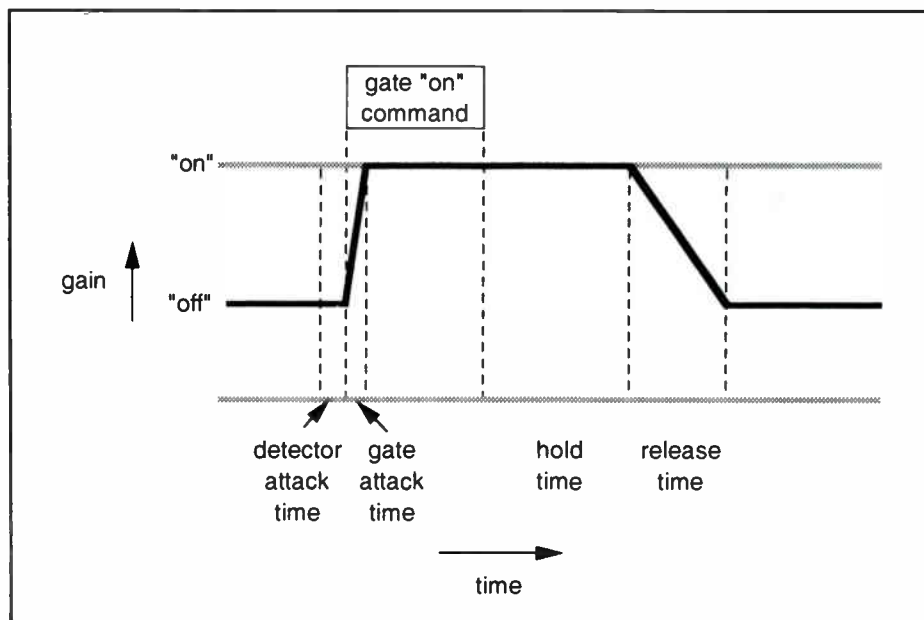


Figure 1. Gate Terminology.

from loudspeakers and spillover from the next closest mic. Automatic mic mixers also control the master gain, which has to vary as the Number of Open Mics ("NOM") varies. This gain vs. NOM tradeoff exists because, generally speaking, each doubling of the number of open mics increases the system's (loop) gain, thus reducing the available gain before feedback available to each mic by about 3 dB.

The heart of these products is the way they decide which channels

should be on and which need to be attenuated. The previous installment of this article reviewed the variety of ways automatic mic mixers make these judgments. Fixed turn-on/off threshold systems are really noise gates or voice operated-switches (VOXs). When the signal passes a pre-set point, a mic channel switches on or off. These simple systems work best when the noise level remains below the minimum speech level. If not, they may be falsely triggered on by room

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noise, like applause. Or, they may be erratically gated or switched off by a soft talker's voice, or oscillate as the threshold is continuously crossed, yielding an unnatural, choppy sound. Some manufacturers try to minimize this effect with a gate-and-hold circuit, also called "last-mic-on."

Adaptive detection systems alter their threshold as the acoustical situation changes. Various schemes can be effectively used to find the mic channel with the largest instantaneous value. IRP scans hi-to-low, IED, JBL, and Lectrosomics scan low-to-hi, while other techniques include Shure's use of direction sensing, Altec and Dugan's gain sharing which uses the average of all mics to sense the room noise level, and most recently, Audio-Technica's proprietary new algorithm using digital signal processing techniques.

SWITCHING METHODS

Most automatic mixers work pretty well, when properly set up, using an adequate number of mics, not too far from talkers or too close to loudspeakers, with thresholds appropriately set for the situation. Some real-world situations make it tougher for automatic mixers to function. For example, as the talkers move off the microphone's axis or turn their heads away, the level may drop below a gated mixer's threshold, chopping off the voices. Under these difficult conditions, the way an automatic mixer decides to gate on, and especially the way it switches from the attenuated to the on state, becomes significant. In our previous installment, a variety of decision methods were discussed. Now we'll review the methods automatic mic mixers use to switch between the attenuated and on states, *after* the mixer's logic has made the decision to change the status of a mic channel.

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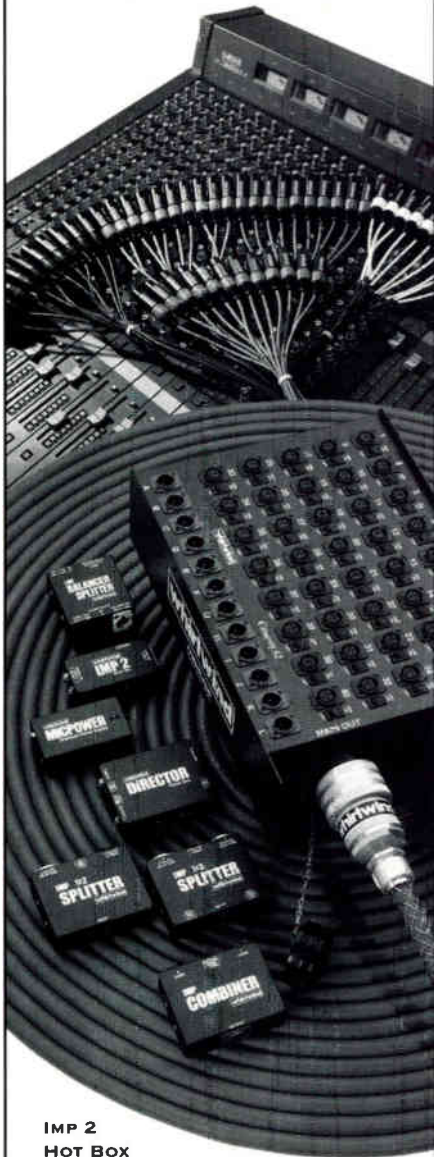
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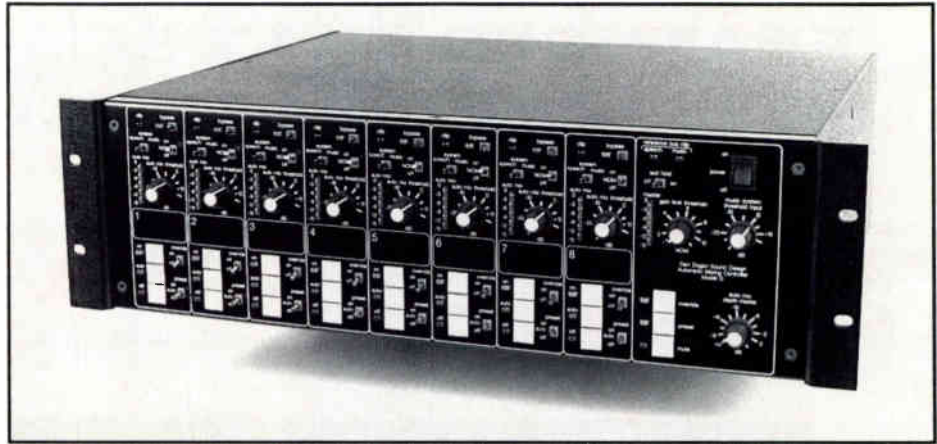
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The Model D automatic mixing controller from Dan Dugan Sound Design.

constants, or the time it takes to turn on, the hold time, and the release time. (see figure 1.)

This is particularly true when the processing sidechain in the mixer is first filtered to emphasize vocal band information, rejecting everything else. The JBL and IED mixers gate when the waveform crosses the zero amplitude axis ("zero crossing"), to decrease, but not eliminate, the noise caused by suddenly gating and interrupting low frequency sounds. The spurious noise from the sudden gating is claimed to be masked by the signal, or the room ambience in the system due to a last mic hold on feature. IRP's mixer uses the Peters patent and seeks the channel with the highest level and gates it on for 200 ms at a time. The unique direction-sensitive Shure system also abruptly gates on, but more smoothly fades out. Quickly (3-15 msec) fading up and more gradually fading down, perhaps over 300 msec, generally improves mixer performance, according to its proponents. Note that if the fade-up is not fast enough, transient sounds, like the "t" in "transient," will be missed. Optimization of attack and release time-constants is also a common design consideration with limiters, compressors, expanders, noise reduction systems, and the like.

A variation on this theme used by some audio engineers is 2:1 expansion of a signal as it passes between the attenuated state and the on state. The attack of the signal then partially controls the attack of the gate. Designers of the Altec, Dugan, and Lectrosonics

products have used this "kinder and gentler" gating technique, and claim a smoother degradation of near-failure signals, when compared to abrupt gating between the attenuated and on states.

SPECIFIC EXAMPLES

This month we will look at a few specific examples of automatic mic mixers, starting with the Dugan/Altec designs. The Dugan system is used in all Altec Lansing automatic mic mixers. As discussed last issue, the Dugan Speech System apportions the gain among microphones based on their relative levels: louder mics get more gain at the expense of quieter mics. The Altec mixers have evolved over the years, adding features, flexibility and most recently, modularity. The current modular redesign, the 1684A (list \$2,300) comes with four channels, but like others, is expandable to eight by adding channel modules (1681A, list \$300) and may be linked in groups of up to five (40 channels).

To set up, Altec suggests setting the Master Level at 12 o'clock. With someone speaking into the first mic channel, the gain is slowly increased until ringing, and backed off until the ringing disappears. Each channel is adjusted this way, set up for maximum gain before feedback. Naturally, mix levels should not be increased. Using these channel gains as starting points, decrease the level as needed to compensate for different talkers (loud/soft) at different distances (near/far) from the mic. The procedure is similar for other mixers. It should be noted

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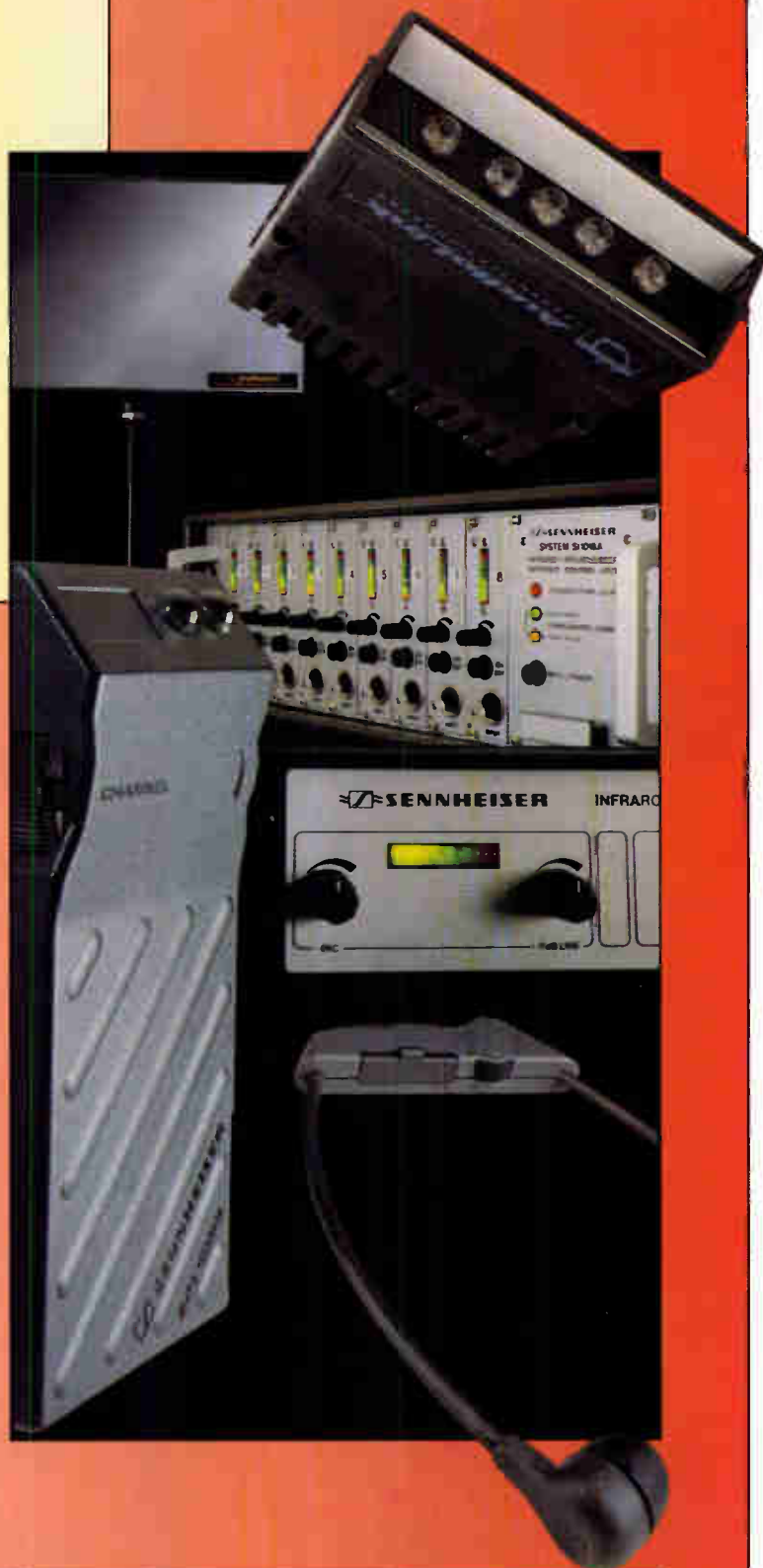
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IED'S 4400 and 4800 automatic mixers.

that extending the "reach" of a mic by turning up the gain can drive that mic channel into near-feedback, disrupting frequency and transient response, or outright feedback. A more directional microphone may be more effective. There is no substitute for careful setup of any automatic mic mixer.

The Altec 1684A has an ambient sensing mode, for use when ambient noise levels are high. Mixer gain is adjusted according to ambient levels picked up by an omnidirectional mic in the reverberant field, which raises system gain when ambient noise rises significantly.

The IED 4400/4800 units occupy one rack space for four or eight channels. Options include a three band equalizer on each mic channel, compression and precise remote volume control using a voltage controlled digital attenuator, to adjust system gain as the number of open mics changes (NOM). To reduce low frequency noise due to physical contact with the mic, air handling equipment, etc., low frequency response is gently rolled off (-6 dB/octave, -3 dB at 150 Hz). Each gated input has provision for two mic levels, one for dynamic mics and one for condenser mics. The "priority" feature (a common option on auto mic mixers) lets the microphones for which it is enabled override all other mics. Specific input channels can be held open or closed by switches ("Force On/Off"). Each gated input has a logic output to switch relays, cameras, etc. IED's eight channel model, the 4800, can mix four channels in stereo by placing jumpers in the post-combining positions on both input boards. When selected, the last mic on feature holds the last open mic on, until another mic is gated on, to maintain a uniform ambient sound in

a quiet environment. When enabled, the "onput" feature gates input 1 on, until another mic is gated on. Another common option, the "filibuster," limits the maximum number of inputs which can be gated on at once (1, 2, 3, 4 or no limit).

IED's model 4000 Series System is a modular system that uses four-channel "Active Functional Modules" that plug in to a four rack space unit that holds up to eight cards, including compressor cards, programmable gain controls, or precision (within 0.1 dB) digital attenuators. Each 4000 can be readily reconfigured for combining systems such as when a large hotel ballroom is subdivided into smaller rooms, using movable walls. As with many other mixers, these units can be chained together, in this case for up to 256 inputs. IED offers a rack-mounted PC system (Model 590) that uses menu-driven software to completely control their 4000, since the 4000 does not have user-adjustable controls on the outside of the enclosure. Lectrosonics and TOA also offer modular systems with such controls. It should be noted that IED offers several other products controllable by their model 590, such as the model 596, which can select and test 64 monitor points.

DIRECTION SENSITIVE GATING

Shure uses an effective direction sensitive detection method in their automatic mic mixers. The microphone channel gates on whenever a signal is both within a 120 degree arc in front of the mic and 9.54 dB higher in level from the front than from the rear, as determined by back-to-back mic elements. The Shure system requires special dual element mics available only from Shure. Actually, a lower front-to-rear sound ratio is needed as

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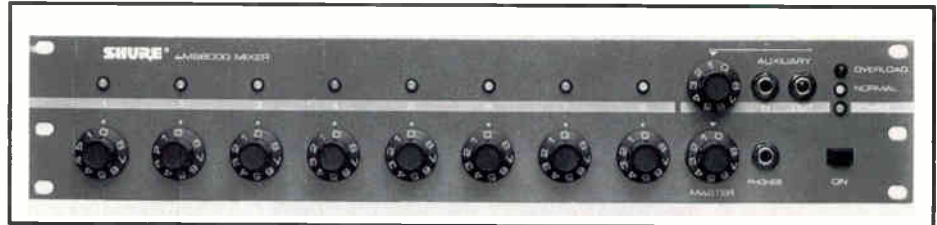


Shure's Automatic Microphone System AMS8000 mixer.

the talker gets closer to the microphone axis (7 dB within 45 degrees). When these conditions are satisfied, the Shure system gates on and holds for pauses in speech. As with several other systems, the Shure sensing circuitry looks at the vocal band, from 1 kHz to 6 kHz.

THE NEXT GENERATION

As mentioned in our previous installment, Audio-Technica's DSP (digital signal processing) automatic mic mixer will reach the market in September. The 16-bit AT-MX431 "Smart-Mixer" uses an adaptive threshold, with gating in a few microseconds, rather than the typical milliseconds. The usual spurious gating transient byproducts are filtered out of the signal, according to the company. The



SmartMixer has the usual features like priority channel override, last mic hold on, and user selectable attenuation, all in a small, light package that retails for about \$800.

WHERE TO USE THEM

Automatic mic mixers are useful for a variety of applications, including combining rooms, boardrooms, churches, and even music mixing.

If a facility manager has a job where there are 20 meeting rooms, it would

be much simpler to buy 20 automatic mic mixers than to rely on manual mixing by people who may or may not know what they are doing. Convention centers, hotel ballrooms, schools, conference and training facilities often contain large rooms that are subdivided as needed. Since large rooms are constantly reconfigured, it makes sense to be able to reconfigure the sound system (microphones, speakers, and amps). If line level inputs are set a little high or low by novices, or

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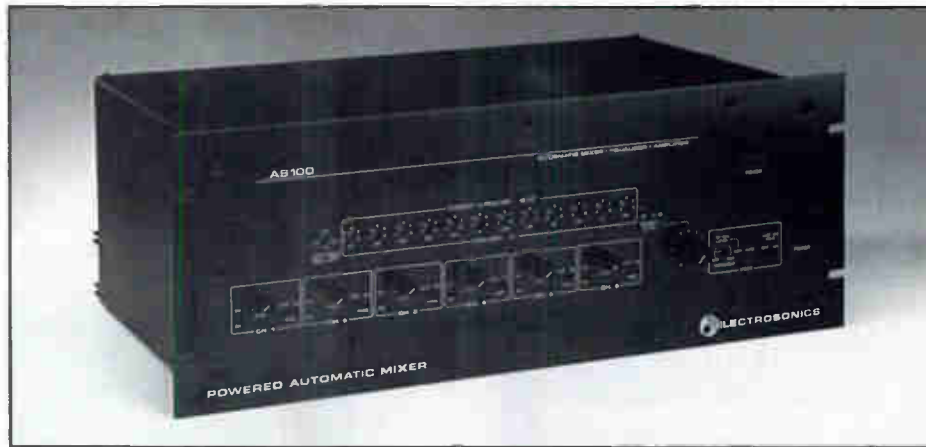
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a talker is unusually loud, the automatic mic mixer can handle it.

In the boardroom, automatic mic mixers are used for archival purposes, to boost the volume of some talkers, and for teleconferencing. Systems like the Shure AMS have gained wide acceptance. If a mic is on a three foot table and the ceilings are 8-10 feet, the distance between the two may be as small as five feet. When mics and speakers are so close, there is not much gain before feedback. Higher end systems in courtrooms, boardrooms, conference rooms and rooms used for teleconferencing with a lot of mics and/or an overhead speaker system therefore benefit from a feature called "mix-minus-one." Mix-minus-one selectively deletes certain microphones' output from speakers near the source, minimizing feedback. The di-



The Lectrosonics AS100 automatic mixer/equalizer/amplifier.

rect output from the mic is inverted in polarity, and fed to the amp powering the speaker near the mic. A multi-amped system is required. The mix minus one feature is available on product from Lectrosonics, among others. In the case of the Lectrosonics, their automatic mic mixer is used in conjunction with their logic controlled multi-channel power amplifier as a system.

Although it is an esoteric application, an automatic mic mixer has actually been used in a live sound appli-

cation, on a drum kit. Sub-mixing the drums with an automatic mic mixer makes it easier on the human mixer, who must often contend with 24 or more live channels. Drums and cymbals are usually much louder than the ambient sound level. So automatic mic mixers can readily detect and decide it is time to open a particular channel. In this application, speed becomes important, to catch the transients. The Dugan automatic mic mixer has special settings for automatic music mixing applications. Unlike the other au-

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automatic mic mixers, which are self-contained, the Dugan device is patched into some or all of the send/receive links of a mixer and takes care of the mixing of those channels.

MICROPHONE TECHNIQUE AND SELECTION

While recording engineers may be comfortable with omnidirectional mics, automatic mic mixers function better with more directional mics, because as mics become more directional, they reject unwanted ambient sound sources better. Other than omnis, there are cardioids, supercardioids, and hypercardioid mics, in order of increasing sensitivity to sound sources in front of the mic. Each mic has a different angle of least sensitivity ("null angle" or angle of maximum rejection). Mics should be chosen to place their response nulls where other sound sources, like other talkers, will be — but all this is another article.

Note that as microphone directivity progresses to super- and hypercardioid, there is some pickup directly behind the mics. Careful placement then becomes very important. When set up, the mics should be close to the talkers' mouths, but not directly in front to avoid pickup of breath noise. Microphones should be a little above the mouth (say, at the upper lip), or a little below the mouth. Unfortunately, the first option blocks the face from view. There should also be enough distance between the mic and the talker's mouth to permit the talker to lean for-

ward to make a point.

SUMMARY

Most automatic microphone mixers are pretty easy to set up, if you read the manual, but proper setup is essential. Keep the microphones relatively close to talkers' mouths, to ensure that the talker's voice is significantly louder than the loudspeaker, when measured at the microphone position. And keep the system gain to the minimum necessary to do the job.

All other things being equal, automatic mic mixers do a better job in acoustically dead rooms. If a room is not dead, treatment to reduce specific reflections, such as heavy curtains drawn over large glass windows, may be very effective. Semi-annual routine maintenance, to check that everything works, to compensate for any drifting of component values, and to check that levels are still adjusted correctly (someone may have "fine tuned" things) may be useful. Follow up service is a good way to bring business in, and is the foot in the door that may help contractors sell more product. ■

REFERENCES

S. Julstrom & T. Tichy, "Direction Sensitive Gating: A New Approach To Automatic Mixing," AES Preprint 1976, March 1983.

Thanks to: Mark Young, Design Engineer, IED and Neil Shaw, Menlo Scientific Acoustics.



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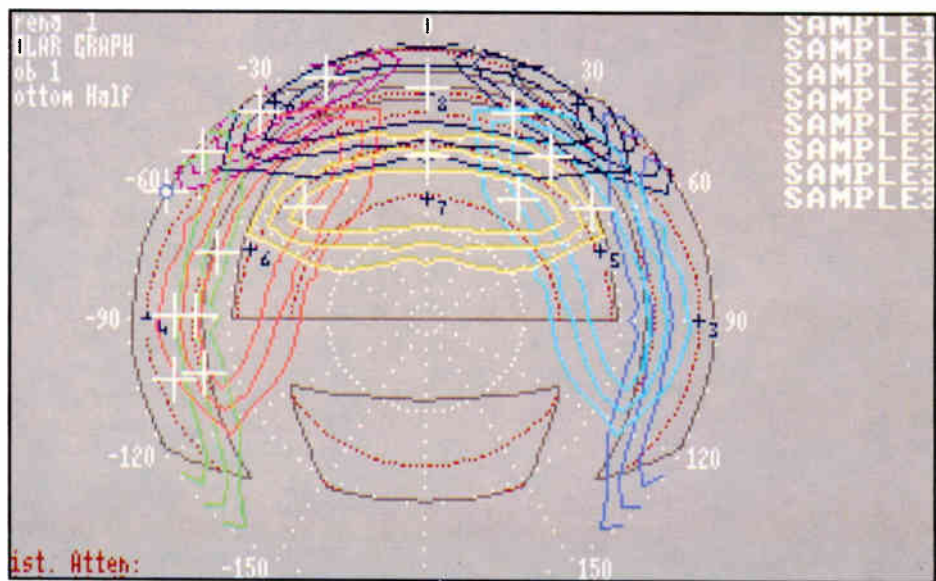
WHAT'S DOING IN SOUND SYSTEM DESIGN PROGRAMS

By Mike Klasco

Almost five years ago I began preparing reviews of the various sound system design programs for Sound & Communications.

Some of the early efforts, like Umbulus, have pretty much faded from the scene; which is more than can be said for the the CASE and NexoCADD software projects, which never originally got out the door. Still other programs have spawned totally reworked versions, such as JBL's CADP2. EASE 2.0 from Renkus-Heinz, PHD Plus, and AcoustaCADD 2.0 are also significantly revised, and Bose Modeler has been continually enhanced every year. Altec Lansing and Renkus-Heinz have both responded to sound contractors' requests for lighter versions of their software. Altec, with both a room modeling template that greatly speeds data entry for room dimensions for AcoustaCADD and AcoustaQWIK, and Renkus-Heinz with EASE Jr. Eventually we will review these low calorie programs, but let me say for now that I have looked over both AcoustaQWIK and EASE Jr. and they are significantly faster and easier to learn and use than the first versions of the complex and expensive programs that they were derived from.

After a period of intense activity, the development of this software appears to have slowed down over the last year. To some extent, speaker manu-



Polar Graph from PHD.

facturers have been feeling the economic pinch and luxuries like these software programs have had their funding cut. Users may have noticed that the factory liaison person for the software is either gone, or the job function is now shared with other duties. Software releases tend to be less comprehensive, but to be fair, the bugs, limitations, or glaring omissions are not anywhere as serious as previous generations, so the need for constant revision is over. Behind the scenes, quite a few very dedicated individuals are still working intently to continue the evolution of these programs. On closer inspection, it is not the development of these programs that have been most severely cut, but primarily the promotional funds.

I have felt that one of the more serious limitations to acceptance of a number of these software programs is

the lack of the development of file conversion utilities for speaker directional files. These file utilities would allow conversion of data taken from different programs which use different resolutions and data formats. The lack of an industry standard for directional measurements and the lack of an "open architecture" of the speaker databases within each program is a real problem, with corporate politics and ego at stake. There is actually positive movement in these directions, but instead of boasting about these utilities, an odd sort of embarrassment at these enhanced capabilities seems to keep their existence unpromoted. Both AcoustaCADD and CADP2 both use their own proprietary high resolution measurement techniques, so even with open speaker databases, it would be unlikely that most other manufacturers would expend the effort to gen-

Mike Klasco is the Technical Editor of Sound & Communications magazine.

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erate the necessary data (one shining exception is EAW who has prepared an extraordinarily comprehensive speaker data and CAD drawing package for their products which includes data for EASE 1.2 and 2.0, Modeler, and CADP2, as well as AutoCad).

Unfortunately, to my dismay, a few of the software publishers/speaker companies are drifting backward! One software program that once had an open data base as well as one of the most comprehensive speaker libraries has since improved the accuracy of its

data acquisition techniques, but has taken a unilateral approach, resulting in the lack of compatibility with data from the rest of the industry and loss of the completeness of its speaker library.

You have to wonder of the real world benefits (to both the software/speaker supplier as well as the software user) of these proprietary "breakthroughs" that result in the incompatibility of the data of competitors. Perhaps the limited penetration of these sound system programs are due less to the lack of active promotion by the manufacturers, and more to the hesitation of potential customers to spend a grand or so on a software design program that does not support most of the speaker lines the contractor prefers to design with. As consultants, Neil Shaw and I find that we tend to use two or more manufacturers' speaker products within most jobs, and certainly at least three or four speaker manufacturers products in all our work. Some jobs must be cheap, others outdoors, or long throw, or very high output, or very sensitive to size or appearance. I believe that many sound contractors might be willing to commit funds for a single program that covers both quick estimating design efforts as well as the well-funded soup-to-nuts projects. But when sound contractors figure out that they must buy and learn two or more programs to cover the speaker products that they sell, and most likely they cannot mix the products they intend to use on the same job due to the incomplete speaker data library, the sizzle of these computer design aides fades quickly. All of this is too bad and everyone is losing here.

A few years ago, I helped form the AES subcommittee SC-4, and tried to get the software developers together to at least work on file transfer capabilities between programs. But between corporate ego and attrition of the personnel that worked on these projects, I am sad to say that this has not yet been accomplished.

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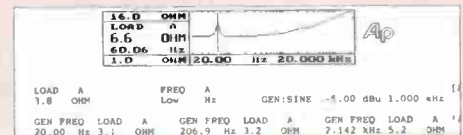
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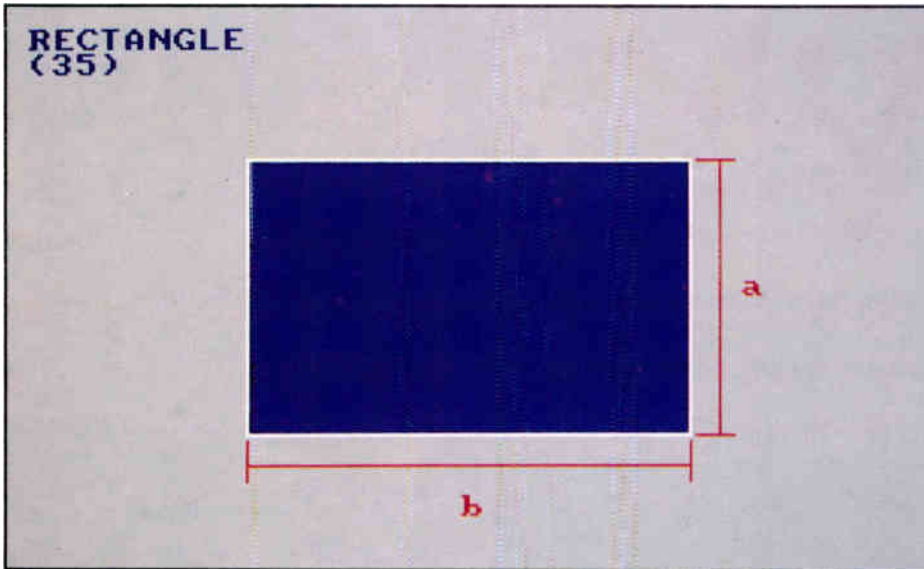
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PHD plot of a rectangle.

There is movement in the right direction. Renkus-Heinz with EASE ought to get points for trying to deal

with everyone's speakers and directional files. John Prohs is coming back with PHD Plus, and this program fea-

tures a practical open architecture and comprehensive speaker data base. Again I should mention EAW's efforts with its "Acoustical Partnership Program." And JBL's CADP2 now has a utility that will convert EASE speaker data files into CADP2. I hope that the entire industry will have a change of heart and embrace not just file conversion, but directivity measurement standards, as this will motivate the vendors of acoustic test gear to put more effort into supporting directivity measurements. Measuring directivity is not trivial for speaker components or speaker systems, and arrays can get extremely messy. Yet the accuracy of the simulations of all these sound system programs would be greatly improved if the actual array directivity characteristics could be entered rather than the discreet speaker elements



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GREATEST RASTI Speech Transmission index	0.66
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LOWEST Direct Sound SPL	98.4 dB
HIGHEST Direct Sound SPL	94.7 dB
GREATEST Variance	4.4 dB
LEAST Articulation Loss (ALcons)	4.9 %
GREATEST Articulation Loss (ALcons) ...	6.6 %
LEAST RASTI Speech Transmission index..	0.68
GREATEST RASTI Speech Transmission index	0.66
Analysis complete. Press any key to continue.	

System Performance specs.

(i.e., horns). Don't count on Techron TEF, Bell Labs/Ariel SYSid, or DRA MLSSA providing three or four sets of directivity measurement software packages, one for each sound system design program's pet standard.

As long as I am moaning about this, I would also mention that the resolution used in some of these programs is excessive and unrealistic. This micrometer in a lumber yard approach does not seem sensible to me, especially when speaker production tolerances are not as tight as the data. Try measuring a driver on a horn and then rotate the driver one bolt hole and then retake your data — it will change! And when you consider the inaccuracies that result when real speakers are arrayed, the effects of less than perfect coherent adding between different models of horns (90 x 60, 60 x 40) even within the same series, thermal effects — hot ground, cold air or vice versa, stadium lighting near the speakers, and a half dozen other parameter shifters, the assumptions used to determine what the significant figures

'PEOPLE HAVE SAID IT HAS IMPROVED THE SOUND 100%'

Recounting the incredible history of the Virgen De San Juan Del Valle Shrine in San Juan, TX helps to understand this new contemporary church. When the original Shrine was dedicated in 1954, the ornamentation it contained was described as "lavish". Special bells by La Savoy of Paris, a massive crucifix carved in wood and murals followed the tradition of European Cathedrals by Bartolome Mongell of Spain.

In October of 1970, all of this splendid architecture and art was destroyed when a low flying airplane exploded into flames on the roof of the Shrine. In a matter of minutes the fire was out of control and the Shrine was a total loss except for the tower.

In 1980, an estimated 50,000 people from the U.S. and Northern Mexico converged upon the small community to witness the dedication and opening of the new edifice. This church, which holds 3,000 for mass, has a simple interior design to augment the beautiful 40ft mosaic on the back wall of the Shrine with Jesus presenting His Mother. It is the focal

point of the contemporary interior. It is estimated that 15,000 people visit the Shrine every week.

After many years of using two different approaches to the loudspeaker utilization, the pastor was unhappy with the lack of intelligibility. It was equally frustrating to worshippers. Herman Goren of Circle Industries, Inc. offered a three week demonstration of three Soundsphere Q-12 Speakers. The results warranted the installation of permanent fixtures achieving clear voice announcements for the congregation. The Pastor, Fr. Peter Cortez, states, "People have said it has improved the sound 100%. I am very pleased with this system."

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needed just do not pass my sniff test.

I would be more than happy with five degree resolution and complete file compatibility and industry standard database directivity measurement techniques than a bunch of incompatible test procedures using one or two degree resolution.

EAW APP

APP is not a actually a software program, but EAW's Acoustical Performance Partnership between their engineers and acoustical consultants and contractors. APP's purpose is both to enhance EAW's relationship with the sound contracting industry, expanding their strong base from touring sound, as well as to share their expanding ability to characterize loudspeaker system performance. After the last NSCA show, I visited EAW in Whitinsville, Massachusetts on my way back home to PRB ("People's Republic of Berkeley"). EAW certainly has their share of test gear, including the fancy (\$40K) Bruel & Kjaer 2012 and Ariel SYSid test systems. Michael Chamness is EAW's senior Design Engineer and working with Kenton Forsythe, one of the founders of EAW and Vice President of Engineering, he has developed an extremely complete package of software data on their products. Michael Chamness is the author of the Speak-Easy speaker design software reviewed last year in Sound & Communications. Actually, aside from the enormous binder of data and discs, even more data is available on any's of EAW's products not included in the package from APP program manager Greg Burlingame.

Membership in APP is two level. Registered members, such as acoustical consultants (about 250) receive binders with data formatted into tables, graphs, etc. as well as computer files in a number of formats including Modeler, CADP2 and EASE. What sort of data? How about architectural specs, mechanical drawings, input

plates, hanging hardware, polar response plots, performance specs, and processor data.

An Associate member, such as a sound contractor, can request any info available on any EAW product. EAW does not charge for membership (actually, they even included lunch when I visited!).

PHD PLUS

Prohs Systems and Software (Box 902306) in Palmdale California 93590 markets PHD Plus, the faster, updated successor to The PHD Program. The last release was only a few years ago, yet user expectations move much more quickly in computers than in commercial sound. The PHD program was one of the first MS-DOS IBM-compatible programs (along with Umbulus

THE PHD PROGRAM WAS ONE OF THE FIRST MS-DOS IBM-COMPATIBLE PROGRAMS (ALONG WITH UMBULUS AND JBL'S CADP).

and JBL's CADP). The PHD program included one of the most comprehensive speaker data bases, along with the hidden benefit of not being tied to any speaker manufacturer. Sadly, the fears that Don Davis had about software from audio hardware vendors have come to pass.

Many readers may not even have heard of the medium resolution EGA graphics standard, let alone the original version's low-res CGA graphics. The support for the program was limited because the revenues from the program were contributed to the Heyser Fund. Heroic efforts were made by John Prohs with production and distribution efforts by Dave Andrews, but only so much time can be contributed without any remuneration. PHD Plus will be sold by Prohs Sys-

tems and Software, allowing additional user support to be offered.

PHD Plus users can still use their old Central Cluster and speaker data files. Operation of the program is faster and the use of the coprocessor is now supported. The room model is easier to create, loudspeakers can now be aimed visually by placing a cursor at the point you want them aimed — faster and far more intuitive than requiring the user to trigonometrically figure out these locations! The view can be toggled between bottom and top and back again.

In the Performance Analysis Section, the entire process is now performed on screen. The color graph allows the user to choose the exact point of interest for analysis. A color coded cursor remains on screen to show whether the system is above, below or in spec. To avoid user frustration leading to violence against the computer hard-

**PHD PLUS USERS
CAN STILL
USE THEIR OLD
CENTRAL CLUSTER
AND SPEAKER
DATA FILES.**

ware, incomplete data is now accepted: a nonexistent driver can now be spec'd and added to the data base at a later time.

Error trapping, easier ways to change directories, better and more screen colors, more consistent menus, clearer operation, and many other refinements can only come from extensive effort and hindsight.

Isobar Plus is a new utility program from Prohs Systems and Software that allows the organization and customization of isobar data files for the PHD Plus program. You can enter new data and generate patterns from ASCII files (such as generated from test gear) or from existing files from the PHD program. Since the database in PHD is so large (a high quality problem) it greatly slows the process of drawing some

of the patterns on the polar map. Being able to create custom isobar data files by deleting or adding data to a copy of the isobar file is useful. Aside from letting you prepare a database that contains only those products you plan to use in your designs, you can also overlay patterns for comparison, to show horizontal and vertical patterns and to display directivity ballons.

Cost of Isobar Plus is above the introductory \$100 upgrade cost of PHD Plus.

In our next installment, we will take a look at JBL's CADP2 version 2, Altec's AcoustaCADD 2.0, Renkus Heinz EASE 2.0, as well as what is doing with Bose Modeler, recent developments with measuring and characterizing diffraction, and finally who is doing what with auralization. ■

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NEWS FROM AROUND THE INDUSTRY

First Dolby College; Dugan Does Fort Worth

Academia Goes Digital

Keene State College in Keene, New Hampshire has had a Dolby Stereo Digital sound system installed, becoming the first college or university in the nation to obtain the technology. The six-channel system is designed to provide filmgoers at Keene's Putnam Arts Lecture Hall with a "startlingly real" film experience. The system features discrete channels for left, center and right speakers, a subwoofer at the front, and separate left and right surround speakers at the sides and back of the 150-seat theater.

Larry Shaw of Boston Sound & Light, Inc. installed the Dolby Stereo Digital SR-D system, and described the Putnam's projection and sound equipment as, "essentially the most sophisticated system available," comparing it to those in the screening rooms of the Academy of Motion Picture Arts and Sciences and the Directors Guild.

Dan Dugan Takes Off

Dan Dugan Sound Design has provided a 32-channel automatic mixing system for the headquarters staff conference room of American Airlines in Fort Worth, Texas. Paoletti Associates renovated the 60-seat facility which operates unattended, and features four linked Dugan Model D Automatic Mixing Controllers installed in the insert patch points of a Soundcraft 500 Series 32 x 12 monitor console. The console's matrix was used to distribute the

inputs over 12 output zones so that the reinforcement from each of the mics increased progressively with distance.

ADI Enrollment Up

ADI University II, a day-long systems seminar and exhibit event held at the Crown Plaza LaGuardia Hotel in New York in June, featured over 200 security professionals. Topics discussed included the Access Control, Fire,



Sound/Communications and CCTV markets. A buffet dinner was served and over 20 manufacturers participated in a three hour product exhibition. ADI's system seminar program will be presented across the country over the next several months.

Sony Program Extended

Sony's "Sight, Sound, Sony" preferred customer program has been extended through October 31, 1993. The program allows cus-

tomers of Sony's Betacam tape to qualify for free gifts found in "Sony Preferred Customer Catalogs" by accruing points based on five percent of a customer's total qualifying purchases. Customer gifts include the Watchman portable television, Betacam PVW VTRs, and DAT recorders. Other gifts include merchandise from the Sony Music and Movie catalogs.

Jacobs Gets the Blues

Boulder, Colorado-based Jacobs Audio has replaced its entire range of condenser microphones with the AKG C391B condenser microphone from the AKG Blue Line Series. Jacobs has used the mics for National Public Radio's "E-Town." This live music broadcast with an environmental theme featured the C391B with James Taylor, Julian Lennon, Roseanne Cash, and T-Bone Burnett, and was heard live over 100 NPR affiliates. The microphones are also used for concerts at the Botanic Gardens, a 5000-seat amphitheater in Denver used by classical and chamber orchestras.

Tannoy's Night at the Opera

The Barbican Theatre in London has equipped its main house auditorium with eight of Tannoy's CPA10S SuperDual loudspeakers for the new production of "The Beggar's Opera." The speakers feature a frequency response of 150 Hz to 22 kHz, and measure 15 inches H x 21 inches W x 8.5 inches D. While "The Beggar's Opera" utilizes the CPA10S onstage, the units will be mounted around the proscenium arch following the show's run, in order to keep with the Barbican's usual sound design style for its repertory catalogue.

Royal Crown

The American Royal Center in Kansas City, Missouri has installed Crown SMX-6 and MPX-6

IQ System multiplexers as part of its new audio systems. The American Royal Center is a multipurpose facility known for hosting the annual "American Royal" national livestock and horse show in November. A total of 11 SMX-6 multiplexers and four MPX-6 multiplexers within systems installed in Hale Arena as well as numerous other rooms and areas within the facility.

In addition, Studio Designer Steven Durr has specified more than 10 Crown Macro Reference amplifiers in various studios. Locations include Elysian Recording Studios, in Boca Raton; Dockside Studios, Maurice, Louisiana; Beale Street Recording Studios in Memphis; and the home studio of country songwriter Paul Kennerly, in Nashville.

DCC and MD from JVC

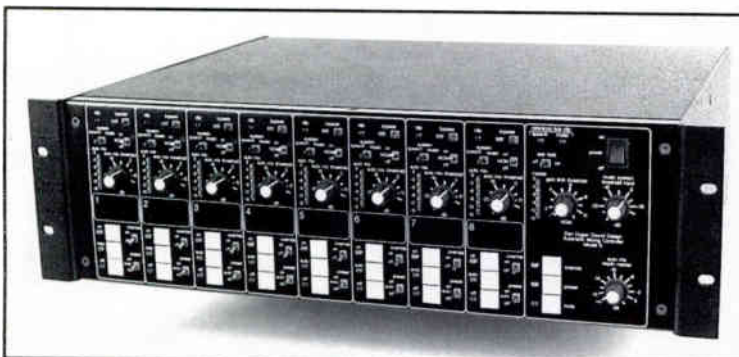
JVC is introducing a portable digital compact cassette (DCC) player, palm-top MiniDisc (MD) recorder, micro-component system for DCC and MD, and MD blank discs in the Japanese market. The DCC system is fully compatible with conventional compact cassettes as well as all digital sources.

The XM-D1 palm-top MD recorder has a pop-up display, three-way power source (AC, DC and car), and a standard remote controller.

The ZD-1 DCC player is equipped with an auto tape selector and Dolby-B NR functions. Other features include a scrolling function up to 40 characters for pre-recorded tapes, and a digital signal processing system called "PASC."

E-V in Canada

An Electro-Voice MTL-4A low-frequency system, 37 E-V PRO-8A ceiling speakers and a DDA Q Series mixing console were recently installed at the London Gospel Temple in London, Ontario. The single MTL-4A is



Ordinarily Evolution Crawls...

Occasionally It Flies

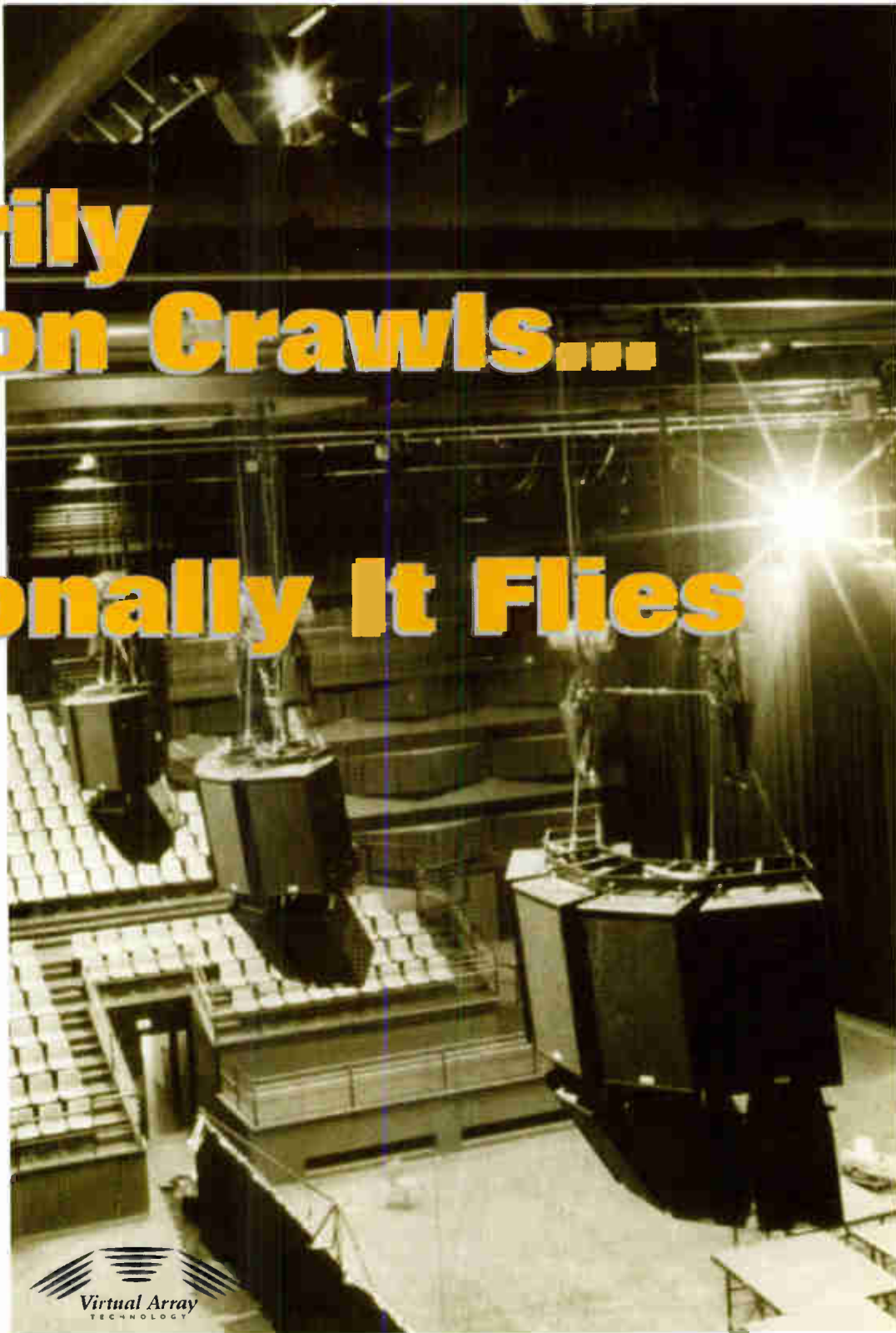
To Succeed, Evolve

Progress emerges in many forms: one of them is a cultural center in the south of France. The Zénith de Pau actually adapts its internal architecture to the presentation. Inside dual acoustically isolated space frames, the stage, seating, ceiling and rear wall can be reconfigured for classical music, pop, theater or meetings. Integrated acoustic treatment and digital electronics maximize flexibility.

The acoustical consultant demanded an equally evolved loudspeaker system: lightweight to hang without massive support, compact to leave sightlines open, accurate and natural for acoustic music and speech, powerful to deliver the energy of rock performances. Conventional thinking had no answers. So Jean-Pierre Mas turned to EAW's Virtual Array™ Technology for practical solutions.

To Evolve, Adapt

With a range of enclosure sizes, dispersion angles and output capacities, VA™ Technology adapts to almost any application. The new KF650i used in the Zénith de Pau, like all VA™ systems, is a true three-way design: The entire vocal range is covered by a 10" cone loaded with Kenton G. Forsythe's midbass horn and displacement plug. This astonishingly compact system is capable of 133 dB SPL and ± 2.5 dB response from 70 Hz to 20 kHz.



To Adapt, Listen

For a decade and a half, we've been listening critically and carefully to loudspeaker components and systems. To rooms of all sizes and shapes, to music of all kinds. To the voices of our customers, audiences and end users. If you're interested in what we've learned—and how it can help your next project evolve beyond the ordinary—contact us today for more information and a demonstration of Virtual Array™ Technology.

The KF650i evolved in demanding environments like the Zénith "Salle de Spectacle," Pau, France. Christian Makurt, APIA, acoustician. Jean Pierre Mas, Mas Conseil, designer. Tech Audio, installer.

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designed to provide low-end enhancement to a central cluster system that flies above the sanctuary. The 37 PRO-8A's are mounted throughout the under-balcony of the 1400-seat house of worship.

In addition, E-V MT-2A Manifold Technology and DeltaMax DML-1152A electronically controlled speaker systems were recently installed at the Saratoga Performing Arts Center, a 30,000-seat amphitheater in Saratoga Springs, New York. Over the pavilion stage, a central cluster of three E-V MTH-2A systems and two MTL-2A systems were installed. Two E-V HP940 horns with DH1A drivers are mounted beneath the MT cabinets, covered by grille cloth.

Changes at the Paramount

New York City Lites has completed a lighting system update for New York City's Paramount



Theatre, in Madison Square Garden. New York City Lites replaced 200 Leko type instruments with 350 PAR 64s, which "wash" a greater area and are more intense. The changes were designed to change the Paramount from a theatrical lighting set-up into more of a rock and roll/music layout.

Chicago Chooses Ramsa

Stanley Field Hall, the entry area to Chicago's Field Museum of Natural History utilizes a 28 speaker Ramsa sound system. The 75 x 300 foot room with a six story-high ceiling has the WS-A200W speakers dispersed throughout the hall. The speakers are hung on 15 pillars with Ramsa/Omnimount WS-AQ1W wall mount brackets. A utility room located off the hall is used as a control room and houses two racks of equipment. The drive rack consists of eight Ramsa WP-9220 amps to power eight speaker zones. The mixer/processing rack houses a Ramsa WR-S216 16-channel mixing console. In addition, 16 balanced lines are paralleled on each side of the hall and run into the control room, allowing the mix position to be moved depending on stage location.

Kerrigan Gets Wireonics

Kerrigan-Lewis Wire Products has acquired the assets of Wireonics Products Company. It is anticipated that the move will increase K-L's manufacturing capability more than 60 percent, according to Allen Richter, General Manager. K-L specializes in the manufacture of textile-insulated wire, and manufactures Litz wire, magnet wire, fine and ultra-fine Litz wire, textile-served magnet wire, resistance wire, fine stranded copper wire, and a variety of specialized wires.

Telrad in Montana

Bridger Realty in Bozeman, Montana, recently chose Telrad

Telecommunications when it installed a digital telephone and automated voice mail system. Bozeman's increased popularity has resulted in an annual growth rate of approximately 20 percent for Bridger. The new system — the Digital KeyBx 128 — allows customers to call the company 24 hours a day, 365 days a year. Other features of the system include T-1 connectivity for reduced long-distance rates, an 8-inch line x 24-inch character liquid crystal display on each telephone, and single key "offhook" voice announce intercom.

Chromatek's Special Pricing

Chromatek Scan Process, Inc. has introduced special pricing for the equipment rental and staging industry on their model 9120 computer to video scan converter. The 9120 converts RGB signals up to 128 kHz to standard NTSC RS170A video for purpose of display or recording. The unit features .25-16X zooms, 10 program-



mable memory settings, and can be operated via wireless remote or RS232C port. Other models affected by the pricing are the 9125 and 9135. All models are reduced by 13 to 19 percent.

DirecTV's Plan

DirecTV, Inc. announced the details of its TVRO industry marketing plan recently. DirecTV will utilize a significant number of satellite television dealers as the new element in a three-pronged national programming sales network. DirecTV has previously announced that affiliates and mem-

CALENDAR

Upcoming Events

SEPTEMBER

AEI Business Music Conference: Seattle, Washington. Contact: (800) 345-5000. September 24-26.

DSP World Expo: San Francisco, California. Contact: (617) 964-3817. September 28-October 1.

OCTOBER

Video Expo/Image World: New York, New York. Contact: (800) 800-5474. October 3-7.

Audio Engineering Society: New York, New York. Contact: (212) 661-2355. October 7-10.

National Council of Acoustical Consultants: Estes Park, Colorado. Contact: (201) 564-5859. October 8-10.

Int'l Association of Auditorium Managers: Dallas Texas. Contact: (214) 255-8020. October 17-19.

Media Summit '93: New York, New York. Contact: (203) 352-8302. October 19-21.

Rigging Seminars: McLean, Virginia. Contact: (812) 995-8212. October 25-27.

Visualization '93: San Jose, California. Contact: (510) 422-1657. October 25-29.

Professional Loudspeaker Workshop: Pasadena, California. Contact: (714) 895-7221 ext. 701. October 28-29.

Viscomm '93: New York, New York. Contact: (203) 852-0500. October 29-31.

SMPTTE: Los Angeles, California. Contact: (914) 761-1100. October 29-November 2.

NOVEMBER

Rigging Seminars: Secaucus, New Jersey. Contact: (812) 995-8212. November 1-3.

TeleCon XIII: San Jose, California. Contact: (800) 829-3400. November 8-10.

DECEMBER

Video Expo/Image World: Orlando, Florida. Contact: (800) 800-5474. December 6-10.

JANUARY 1994

ShowBiz Expo East and East Coast Theatre Conference: New York, New York. Contact: (213) 668-1811. January 6-8.

NSCA Owners and Managers Conference: Amelia Island Plantation, Florida. Contact: (800) 446-NSCA. January 20-23.

The New Product Showcase (ICIA): Atlanta, Georgia. Contact: (703) 273-7200. January 21-22.

FEBRUARY

Association for Research in Otolaryngology: St. Petersburg Beach, Florida. Contact: (515) 243-1558. February 6-10.

National Hearing Conservation Association: Atlanta, Georgia. Contact: (515) 243-1558. February 17-19.

bers of the National Rural Telecommunications Cooperative would distribute programming and equipment in rural areas, while consumer electronic outlets would distribute throughout the remainder of the country.

The cornerstone of the DirecTV TVRO dealer plan is five satellite equipment distribution companies who will serve as regional Sales Management Agents for DirecTV.

Future Meets Past

Digital Theater Systems is using Future Domain Corporation's TMC-850M SCSI Controller Card in the sound system used for Steven Spielberg's Jurassic Park. The controller card serves as the interface between a 386 motherboard and the CD-ROM drives that store the soundtrack for the movie. The DTS system comes in two versions: a four-track version that uses one CD-ROM drive, and a six-track version with two drives. In the latter, the sound for the first half of the movie is contained on one CD-ROM and the sound for the second half is on a second CD-ROM. The sound is synchronized with the film using a time-code stripe on the film.

Media Summit

The increased integration of digital technology into all media will be the focus of Media Summit, October 19-21 at the Sheraton New York Hotel and Towers. Conference sessions will focus on the key issues challenging executives as they identify the business opportunities of this new media marketplace. The Keynote session on Tuesday morning titled, "Bringing Infotainment into the Home: Who Will Lead the Race?", features executives from a variety of industries. In addition, on Wednesday, October 20th, the featured presentation will be "An Evening at the Digital Movies," produced with the assistance of

the American Film Institute's Advanced Technology Council.

Diamonds in the Sky

USA Today SportsRadio's coverage of the 1993 Major League Baseball All-Star Game was offered to air travelers for the first time this past July. SportsRadio is the first live all-sports channel available to air travelers. Future plans include the broadcast of Saturday doubleheaders, the League Championship Series, and the World Series. SportsRadio is being offered to all domestic US airlines and is currently available on some United Airlines, Delta, and Northwest Airlines flights.

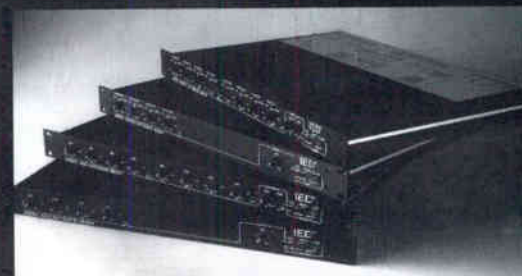
PictureTel and Reiss Winning Cart

The PictureTel System 4000 Model 400 E won the 1993 new Product Design Competition of the Structural Plastics Division of the Society of the Plastics Industry, Inc. The integrated portable



videoconferencing cart system with lockable shelf space for peripherals was custom designed by PictureTel, tooled by X-Cel Mold Co., and molded by Reiss Corporation. Reiss was able to deliver the first injection molded units within 10 weeks.

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PEOPLE

IED Appoints Collins; Houlihan Named President

Engineering at IED

Innovative Electronic Designs, Inc. has announced that Martin Collins has joined IED as its Director of Engineering of Entertainment Systems. Collins has more than 25 years of experience in the field of creative engineering and electronics for theme parks and entertainment facilities.

Most recently, Collins worked as a design consultant for entertainment systems such as EuroDisney, various divisions of the Walt Disney Company, MCA/Universal and The Atlanta Committee for the 1996 Olympic Games.



Collins

partment in an effort to provide more specialized service to its contractors and end users.

Altec has teamed Akira Mochimaru and David Schultz to the positions of applications managers for architectural spaces including houses of worship and auditoriums. Additionally, Tracy Cranton and Gary Jones have been named to the posts of applications managers for distributed systems, encompassing such markets as airports, theme parks and meeting facilities.

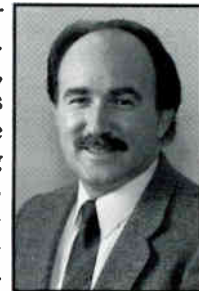
Crest Expands Sales and Marketing

Crest Audio, Inc. has announced the expansion of its sales and marketing department. Sam Spennachio has been named Regional Sales Manager for the Crest Console Division. Spennachio was previously National Sales Manager for Klark-Teknik and Vice President of Pinnacle Audio. Lisa Vogl has joined Crest as Marketing Services Manager and brings experience in the pro audio industry, including nine years as Director of Advertising and Promotions for Siemens Audio Inc.

Mosebar Promoted

John Mosebar has been appointed Product Manager at Aiphone Corporation. Mosebar has been with the intercom systems manufacturer for over ten years.

In this role, Mosebar is responsible for seeking new markets for existing Aiphone products, researching the market for new product requirements, potential OEM sales and private label requirements.



Mosebar

Roland Names President

Dennis M. Houlihan has been named President of Roland Corporation US. Houlihan joins Roland with over 25 years experience in the wholesale and retail music industry. During his career he has been active in domestic and

international sales and marketing, product design and development, and dealer and consumer promotions.



Houlihan

has held a number of senior management positions, most recently with the Panasonic Company as General Manager of the Technics Musical Instruments Division.

Altec Reorganizes Marketing

Altec Lansing has undergone a renovation in its marketing de-

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LITERATURE

Selling Through Reps; Multimedia Buyers' Guide

Rep Pub

A manual has been published for manufacturers who market their products through manufacturers' representatives and those interested in how to establish and manage a representative sales network. *Thriving with Reps - The Complete Guide for Maximizing*

the Sales Channel by Jerry Frank and Jack McNutt is the latest publication of the Manufacturers' Representatives Educational Research Foundation (MRERF), the non-profit organization supported by more than 20 associations of representatives in a number of industries.

The various sections of the 400-page manual take readers through the process of analyzing and selecting sales channels, creating a representative marketing program, and recruiting and selecting representatives. In addition, start-up of a rep network and the day-to-day management activities are covered.

Circle 15 on Reader Response Card

Multimedia Directory
The Directory of Multimedia

Equipment, Software and Services from ICIA is a multimedia buyers' guide that lists over 500 products, software packages and services designed for use in interactive/multimedia systems. The directory contains product descriptions and photos of the products. Compatibility information and technical specifications as well as company contact information is given.

The directory is designed for users of multimedia products in education, government, training, communications and industry, as well as firms selling and renting multimedia products.

Circle 16 on Reader Response Card

Parts and Components

The MCM Catalog contains over 20,000 parts and components

— more than 1,400 introduced to MCM customers for the first time. Among the categories of products offered are: semiconductors, television parts, power supplies, home security alarms, telephone parts and accessories, speakers, and VCR parts.

Circle 17 on Reader Response Card



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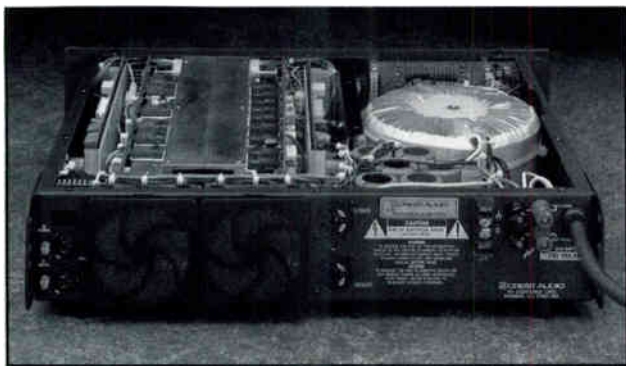


PRODUCTS

Crest's Delivery; Altec's Output

Compact, Blamped

Crest has announced delivery of production versions of the 7301 Professional Series amplifier. The 7301 is a compact power amplifier for use in biamplified systems, including stage monitor, studio monitor and front-of-house applications. Channel A is designed to

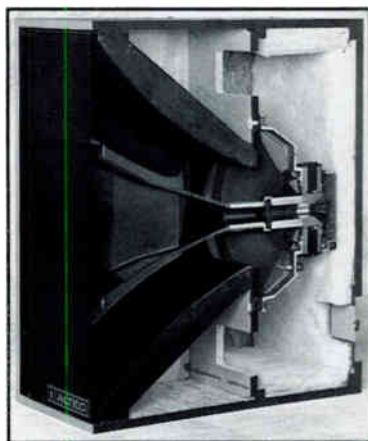


power low frequencies, provides 940 watts at 4 ohms and employs Class H operation. Channel B is designed to amplify mid and high-frequency signals and uses a Class AB, dual output section. Output power is 200 watts at 4 ohms.

Circle 1 on Reader Response Card

Coax Horn System

Altec Lansing has introduced the 9864-8A, a full-range, point-source, constant directivity loudspeaker system. The fully integrated two-way, vented bass duplex horn system acts as a single point source, and is designed to



provide high output over a wide bandwidth.

The "engine" of the unit is a true coaxial, or Duplex acoustic source that when mounted into its integrated cabinet, provides 130 dB SPL, from 50 Hz to 18,000 Hz and directivity control down to 200 Hz. The system's cabinet

serves as both a housing for the "engine," and an acoustic propagation guide for the lower frequencies. The bass reflex porting extends the low frequency response to 50 Hz and below when coupled with multiple systems. The 9864-8A can be used individually or in arrays to create compact, high-output, constant-directivity-controlled systems.

Circle 2 on Reader Response Card

Control and Display

The TX-SK+ SoftKey wireless transmitter from AMX Corporation is a programmable, menu-driven wireless remote control. All transmitters include radio frequency and infrared capabilities, and can also transmit infrared codes from other manufacturers. This allows the unit to act as a mini-control system, directly controlling VCRs, audio components, and video projectors.

All aspects of SoftKey operation are programmable using SMX SKDESIGN graphical or ACCESS software. The unit has 24K of permanent user program memory. Both compiled and source code can be stored for most programs.

In addition AMX has introduced

the SPL4, featuring a four-button panel with two-line, 16-character backlit LCD display. The unit has two relays for microphone mute, power switching or other functions, along with two solid-state



input/output ports. The SPL4 features AMX's UniMount design for installation in lecterns, tabletops, and walls. Wall-mounted panels can be installed in a standard three-gang wall box.

Circle 3 on Reader Response Card

Ramsa Is THX-Approved

Ramsa's WP-1000 Series power amplifiers have been approved for applications within THX systems. The WP-1000 Series uses a high tech, dual-voltage supply in a "Class H" circuit configuration. This set-up is designed to switch in the amplifier's lower-level power supply voltage when the power demands are low. Similarly, when higher power levels are required, the Class H circuitry switches in the amplifier's higher voltage power supply.

Other features include bal-



anced XLR and TRS phone jack inputs, "5-way" binding post outputs, stereo or mono-bridge operation, rear panel level controls and "peak" and "protect" LED indicators

Circle 4 on Reader Response Card

Hidden Audio

Atlas/Soundolier has introduced an in-wall subwoofer for residential custom installations in its Soundolier Integrated Home Electronics line. The ThundraPro 3 is a passive 50W stereo subwoofer with an 8-inch diameter, dual voice coil loudspeaker. A built-in inverted stabilizer is designed to offer better piston action and lower distortion. The unit offers the same structural and installation features as the Aura-Style 8-inch in-wall loudspeakers.

The ThundraPro 3 features a high-density perf grille and black subplate, and measures 15 inches H x 10.7 inches W. Separate bezel/grille and subwoofer/subplate combinations allow the actual speaker plate to be wired at project end.

Circle 5 on Reader Response Card



Celestial Power

Celestion has introduced two high-powered 18-inch loudspeakers, the BX18-3085 and BX18-1485. The systems feature a three leg die cast chassis designed to provide rigidity and stability to meet the demands of extreme power peaks and rigors of touring sound.

The BX-3085 employs a magnet



structure weight of 325 ounces, and has a reported frequency response of 30 Hz to 500 Hz. Meanwhile, the BX18-4085 has a magnet structure weight of 367 ounces, and a frequency response of 30 Hz to 300 Hz. In addition, both speakers' magnet structure and motor assembly have been computer optimized

Circle 6 on Reader Response Card

Aiphone Chimes In

Aiphone's C-123LW Chime Com Dual Master Door Answering System is an open voice tape



system that can answer and monitor a door from two inside stations. The system provides door answering, door release control, and audio monitoring, and operates on either 6V DC or batteries.

In addition, Aiphone has introduced the LEM-1LS Access Sentry Business Entry Security Intercom. Based on the LEM-1 single station unit, the 1LS incorporates an electric door release control, and includes an LE-D door station and SKK-620 power supply. A dry contact closure is provided for door release.

Circle 7 on Reader Response Card

Sharing Video Info

Inline's IN40000 high resolution video network is designed to allow anyone to share video information. Connecting the video from each computer and local monitor to a V-Net node brings the video signal on the network.

V-Net's technology works with most computer platforms and requires no software. The video network is designed to function with up to 120 MHz bandwidth without image degradation. The size of the system readily available can accommodate up to 32 students and one teacher, although larger systems are available. In addition, Inline's existing set of video interfaces, switchers, distribution amplifiers and scan doublers can be fully integrated into

V-Net.

Circle 8 on Reader Response Card

A Compact First

Gemini Sound Products has introduced their first CD player, the CDJ-16. This system is a single-unit, rack mountable compact disc player with sliding pitch control. Features include a nine function wireless remote control (with batteries), a 3-beam laser pickup system, and LCD display showing track, and remaining/elapsed time. The CDJ-16 also has 16 bit, 8x oversampling.

Circle 9 on Reader Response Card



tures both Neutrik Speakon connectors as well as standard .25-inch input jacks. Certain models can be operated in either full-range or biamp mode, selectable via a low profile rotary mode switch. The cabinet design includes a metal recessed input cup, carrying handles, and corner protectors.

Circle 10 on Reader Response Card

Baffling Selection

ArgoSound, a division of The Argos Manufacturing Group Companies, has introduced a baffle line. The grill extends out to the edges of the baffle and the baffle itself is made of vinyl laminated MDF. Two standard finishes are available: walnut and crystal oak. In addition, other finishes are available as special orders. Grills are available in either dark chocolate brown or midnight black.

The baffles are sold with or without speakers, transformers, and volume controls. Sizes range from approximately 14-inches x 15-inches x 5-inches deep, down to the smallest unit at 6-inches x 6-inches x 3-inches deep. Speaker wattages range from 10 watts to 15 watts.

Circle 11 on Reader Response Card

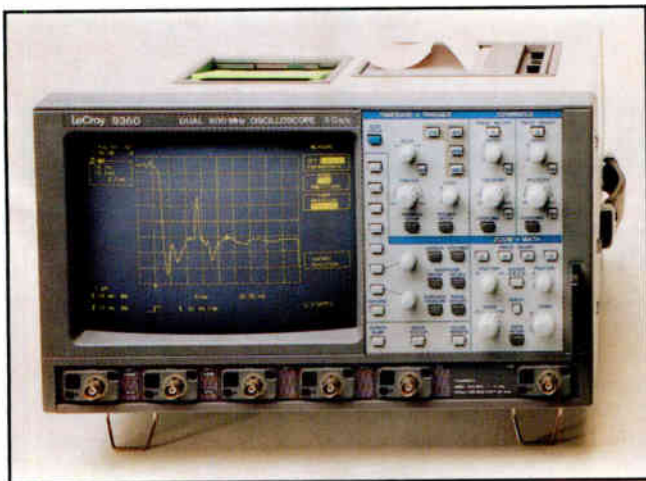


LeCroy's Oscilloscope

LeCroy's Model 9360 Oscilloscope features a sampling rate of 5 GigaSamples per second, a bandwidth of 600 MHz, two channels that sample simultaneously at 5 Gs/s

and the standard user interface.

In addition to Edge and Window Trigger, the unit's SMART Trigger offers FastGlitch, Pulse Width, Interval Width, State and Edge Qualified, Dropout and TV Trig-



gers. Basic Waveform Math and Averaging are included in the standard instrument, with optional firmware packages for FFT and Extended Math.

Circle 13 on Reader Response Card

Proteus for Windows

Panasonic's Closed Circuit Video Equipment Division has introduced Proteus for Windows model PFW-300. The software operates on IBM compatible computers in the Windows environment, and is capable of providing comprehensive system control capabilities.

By enabling users to import custom-created maps, diagrams and floor plans of their facility, Proteus

can be customized to meet specific user needs. Proteus allows a system operator to selectively view more than 100 cameras on a VGA computer screen. A built-in frame grabber provides features such as 2x zoom with electronic pan/tilt, freeze frame and save to disk. The system also supervises and controls up to 32 time lapse recorders and 24 switchers. A tape-end warning system helps avoid loss.

The system features eight operator access levels with operator personalized passwords. An operator's access to certain functions can thereby be restricted. There is no limitation to the number of operators in the system.

Circle 14 on Reader Response Card

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* Indicates tie

SURVEY METHODOLOGY

1. The sampling pool for the survey consists of sound and communications contractors from Sound & Communications' subscription list. Only contractors within the United States and Canada are called.
2. In a telephone survey, contractors/installers selected at random are asked to identify what brand they used for various products in installations completed in the past six months and those in progress. A different type of installation is highlighted each month.
3. On completion of the survey, results are tabulated and the product brands are ranked on a scale from one to three, with number one having the most votes. Separate rankings are made for installations occurring in the past six months and for those in progress.
4. An asterisk (*) denotes a tie for that ranking.

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"Flexibility and the auxiliary routing function were the key factors in selecting the GL3."

Frank Kleczewski - Conseps

"We like the GL3 a lot, it's a reasonably priced board with a British EQ and the main to monitor function is extremely handy."

Al Smith - Paragon Productions

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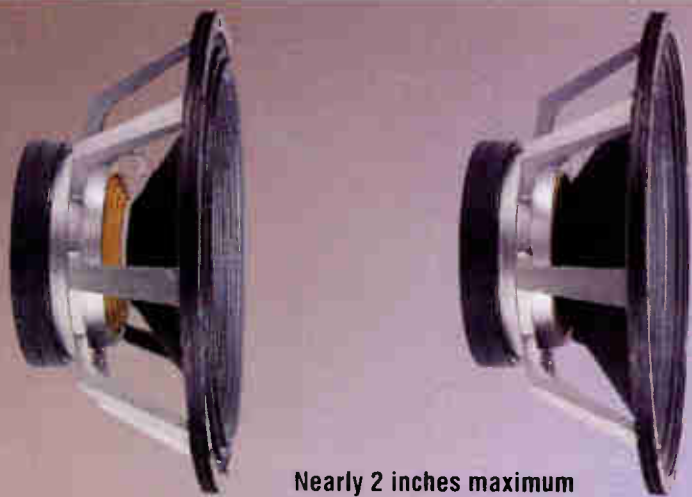
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