

# MIX

PROFESSIONAL RECORDING · SOUND AND MUSIC PRODUCTION

## The Class of '94

A Look at 19 New Rooms

## Recording the Acoustic Piano

## Project Studio Design

## New Acoustical Materials

ON TOUR WITH  
**PINK FLOYD**



# Ten Reasons why **adat**<sup>®</sup> is *the* Digital Multitrack Recorder for YOU:

## 1. You want accessibility.

There are over 30,000 ADATs in use all around the world! Chances are, you already know of someone who has successfully recorded projects on ADAT.

## 2. You want dependability.

ADAT uses eight discrete tracks. You won't have to worry about losing that great lead vocal when recording on a neighboring track. *Other digital formats re-record adjacent tracks, even in safe mode!*

## 3. You want superior engineering.

The ADAT MultiChannel Optical Digital Interface™ is now a patented technology. There's no clearer choice for groundbreaking digital recording.

## 4. You want reliability.

Heavy duty S-VHS\* tape offers the widest track width and the best error correction of any modular digital tape recorder. From one ADAT to another, your tapes play flawlessly and last longer.

## 5. You want compatibility.

The ADAT Group™ of third-party manufacturers continues to develop products that set the standard in their class. Digidesign, Fostex, Apogee, Roland, Korg, JI. Cooper, Steinberg/Jones, E-mu, EMagic and dozens more have all signed on and are making great use of ADAT's proprietary interfaces.

## 6. You want the best audio quality.

ADAT employs 64x oversampling analog-to-digital converters and 18-bit low-noise DACs for state-of-the-art sound.

## 7. You want cutting-edge technology.

At ALESIS, digital audio is what we do. We always have. We stake our success on it. Our custom ASIC chips make the ADAT lighter, cooler and more reliable than any other digital multitrack recorder.

## 8. You want affordability.

The ADAT Digital Multitrack Recording System, featuring the BRC™ Master Remote Control, is available at a fraction of the cost previously associated with digital recording. You can't afford NOT to buy ADATs if you're serious about recording.

## 9. You want networking.

With the advent of the ADAT Worldwide Network™, thousands of songwriters, producers, engineers and studios now have unlimited access to each other. Creative collaborations around the world could not be made easier.

## 10. You want success stories.

ADAT recordings have already gone to the top of the Rap, Pop, Dance and Alternative charts, and received a 1994 Grammy award for "Best Country Instrumental Performance". Live recordings by platinum artists are now being readied for major label release.

**You want more? We could give you another 88 reasons why ADAT is the de facto standard in digital multitrack recording, but the best thing for you to do is to see and hear it for yourself.**



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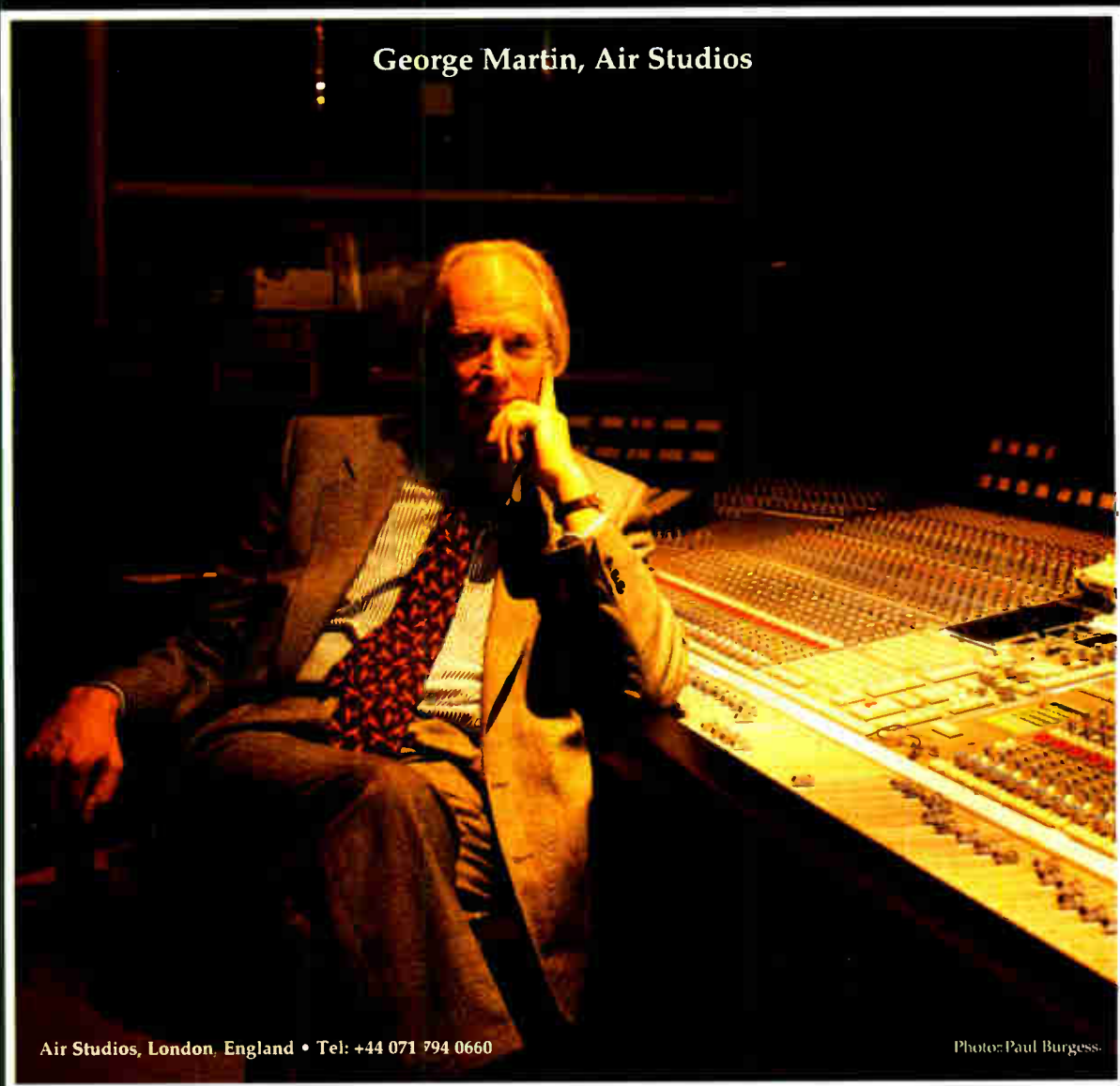
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# "The Sound Quality is Marvellous"

George Martin, Air Studios



Air Studios, London, England • Tel: +44 071 794 0660

Photo: Paul Burgess

*"I have always admired the ergonomics and automation of SSL consoles. Now, having compared the sound quality of our new SL 8000 console at Air Lyndhurst with the older SSLs that were in use at our former studio at Oxford Circus, I find that the sound*

*quality of the new console is marvellous.*

*"With the latest consoles, both their clarity and definition are noticeably better. Ultimation moving faders are also a great idea, providing precise control, without any of the sonic disadvantages of VCAs."*



## Solid State Logic

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World Radio History

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# a new state of the art



Studer Dyaxis II MultiDesk System

**E**XPERIENCE THE ULTIMATE in creative control and editing flexibility with MultiDesk™ for Dyaxis II. Our third generation modular, multi-track audio workstation with sleek hardware console provides a perfect balance between virtual and physical workspaces.

#### **Modular, Multi-channel Workstation**

*Up to 24 I/O channels & 48 playback tracks  
Digital mixing with five-band parametric EQ  
Unrestricted virtual tracks playback  
Integrated with MultiMix®, the leading workstation software*

#### **Fingertip Control**

*Moving fader dynamic automation  
Dedicated keys for editing, positioning  
& transport control  
Integrated computer & control surface*

#### **Universal Connectivity**

*Reads, writes and translates between AES, SPDIF, SDIF-2, & Yamaha  
File format compatibility with OMF, AIF, SD-2 & MacMix  
EDI compatibility with OMF, CMX, GVG & SMPTE*

*Multiple machine control*

#### **Advanced Signal Processing**

*Real-time ingredient gain, fades & envelopes  
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Time compression/expansion*

#### **Plug and Play**

*4:1 Dolby AC-2 compression provides full audio quality from inexpensive 3.5" media  
More than 90 track-minutes per disk*

Dyaxis II with MultiDesk provides unparalleled performance for a surprisingly affordable price. For the latest information on all Studer products, call:

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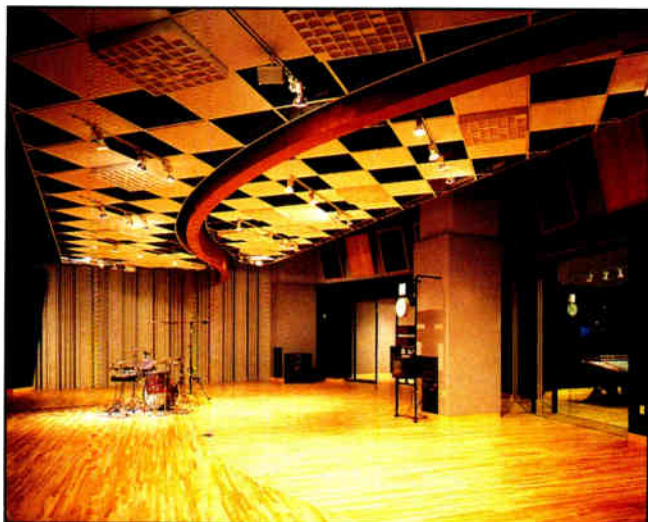
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**STUDER**  
PROFESSIONAL AUDIO EQUIPMENT

# MIX<sup>®</sup>

PROFESSIONAL RECORDING • SOUND AND MUSIC PRODUCTION

AUGUST 1994, VOLUME 18, NUMBER 8



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Cover: Sunshine Sound Inc., a dedicated Christian facility in Pensacola, Fla., is a 24-track room that opened in January this year. Including a Studer A827 recorder, the room is based around a 56-fader Euphonix CS 2000 console with DSC and dynamics. The room was designed by Steve Hartman, as were the custom-designed main and near-field monitors, all powered by Symphonic Lines RG1s. Photo: Ray Malinowski. Inset Photo: Steve Jennings.



# OUR 8•BUS REALLY

**We** get a lot of calls from folks asking about who's using Mackie 8•Bus Recording/PA consoles.



Recording/PA consoles.

Good question. After all, a board's only as good as its users.

So we grabbed the latest stack of 8•Bus Warranty Registration cards and hit the phones.

The names in this ad represent a cross section of current 8•Bus users. They range from platinum supergroups tracking new albums to high school choirs, from bar bands to sound designers working on network TV series and feature films. There'd probably be more names but we didn't want to make the type any smaller than it already is — or keep tying up our already clogged phone system.

As our production of 8•Bus boards increases, so does this list.

In a way, it's confirmation of the raves that magazine reviewers have heaped upon the console. Above all, it's proof that the Mackie 8•Bus is a serious tool for professionals. A tool that's getting used day-in and day-out for major projects.

Call our toll-free literature line 8AM-5PM PST and talk to a genuine Mackoid (no voice mail!). We'll send our obsessively-detailed 24-page color brochure on the 8•Bus Series.

Then become a part of this list by visiting your nearest 8•Bus dealer.

**Currently in Spain tracking new album on multiple Mackie 24•8 consoles.**  
Def Leppard

**Sound design & mixing of commercials for G.I. Joe, Kenner Toys, Hasbro Toys, Transformers 1/2-hour show, infomercials.**  
Lawrence Wakin • Tapestry Productions Inc. • New York, NY



**Tracking for Madonna.**  
Shep Pettibone • Mastermix Productions Ltd. • New York, NY

**Recorded Grammy-Nominated "Sunday Morning" off of the album Millenium on 24•8, currently working on new album exclusively on console. "The 24•8 survived the 7.1 San Fernando Valley earthquake. It's definitely built for rock 'n' roll."**  
Sheldon Reynolds • Earth Wind & Fire • Los Angeles, CA

**Music scoring for Pepsi Cola and McDonalds and Six Flags TV & radio commercials.**  
The Listening Chair • Dallas, TX

**Recording and mixing of acoustic music & sounds from the American West. Recent albums include "Charlie Russell's Old Montana Yarns" by Raphael Cristy and "Where the Red-Winged Blackbirds Sing" by Jim Schulz.**  
Bruce Anfinson • Last Chance Recordings • Helena, MT

**Pizza Hut commercial scored to film, scoring of theme presentation for The Baseball Network, self-produced album "Rick DePofi and the Mels," currently producing NY Noise's 1st solo artist, Aaron Heick (Chaka Kahn's alto player).**  
Rick DePofi & Craig Bishop  
New York Noise • New York, NY

<sup>1</sup> Former posts include quality assurance with Warner Brothers, Sheffield Labs, Rainbow

**Concert sound reinforcement at the Showcase Theater.**

Bob O'Neill, Manager of Entertainment • Six Flags Great Adventure Theme Park • Jackson NJ

**Used by students for learning recording and sound design.**

The School of The Art Institute of Chicago, Sound Department Chicago, IL

**Jazz choir sound reinforcement and recording.**

Dwayne Pedigo • Plano East Senior High School • Plano, TX

**Sound effects, music and voice for Atari arcade games.**

Brad Fuller • Atari Games Corporation • Milpitas, CA



Mackie 32•8 Recording/PA console \$4,995<sup>4</sup>

The Stand \$295 each<sup>4</sup>

24•E 24-ch. expander \$2,995<sup>4</sup>  
MB•E Expander Meter Bridge \$695<sup>3</sup>

MB•32 Meter Bridge \$895<sup>4</sup>

The Stand \$295 each

**Tracking for R&B and rap groups including vocals for Polydor artist T. Max.**

Brad Young & Dow Brain  
Underground Productions  
Boston, MA



**Dialog editing for Untouchables, TV series and Movies of the Week. "I work out of my home now. It's quite an achievement to be able to get a higher sound quality than most of the other sound houses in town."**

3-time Emmy winner David Scharf  
Helix Sound • Los Angeles, CA

**Wide range of multimedia projects including major motion pictures (the names of which can't be divulged).**

John Acoca<sup>1</sup> • Oracular Multimedia  
San Francisco, CA

**Albums for alternative groups Twenty-Two Brides and The Cucumbers, demo for Freedomland.**

John Williams • Ground Zero Studios • New York, NY

**"Praise Songs" contemporary Christian album/CD, "Body Builders" children's album/CD.**

Peter Episcopo • Bridge Song Media • Old Bridge NJ

**Sound design for Pepsi Cola TV spot aired during last January mondo-bowl.**

Hans ten Broeke<sup>2</sup> • Buzz, Inc.  
New York, NY

**Sound reinforcement for theater presentations and concerts in a 300-seat theater.**

Centre Culturel Franco -  
Manitobain • Winnipeg, MB,  
Canada

<sup>2</sup> Quote: "It's the only analog component in my room. You hardly know it's there, it's so transparent."

Records, Chief Mastering Engineer at JVC.  
Quote: "It's a great board, dude. Buy it!"



# CONSOLES WORK.



In studios...in clubs...in video and film production facilities...  
on the road: A sample of what satisfied 32•8, 24•8 and 16•8  
owners are doing with their consoles (as of late April, 1994).



Frank Serafine, feature movie  
sound designer/SFX wizard in  
the Foley Room at his Verice,  
CA production complex.

Scoring for two  
Fox Television  
NFL promos,  
theme & scoring  
for PBS children's  
series *Storytime*,  
song demos  
& album tracking,  
TV commercials,  
infomercials  
& demos.

John E. Nordstrom II  
Love Den Productions  
Pacific Palisades, CA

Album/CD tracking  
and mixing for the groups  
*Mean Solar Day*  
and *Product*.

Ramsey Gouda • Onion Head  
Studio of Chicago • Chicago, IL

Worship service and  
in-house  
concert  
sound  
reinforce-  
ment,  
recording  
of ser-  
mons.  
New Life  
Assembly of  
God  
Lancaster,  
PA

Sound  
reinforce-  
ment in  
a live  
blues club  
showcasing live,  
regional & national  
acts such as *Savoy  
Brown*,  
*Jr. Wells*, etc.  
Manny's Car Wash  
New York, NY

Rental for film mixing  
projects and home  
studios. "We love  
them because we  
never see them.  
They're great for  
our business."

Chris Dunn • Dreamhire  
New York, NY

<sup>4</sup> Suggested retail price. Slightly  
higher in Canada.



DNA sampling CD with  
mega-drummer *Bernard  
Purdie* (3000+ album credits!)  
Frank Heller<sup>3</sup> • Weasel Boy  
Recording • Brooklyn, NY

<sup>3</sup> Quote: "This job had extremely unusual  
and demanding monitoring & effects  
requirements. I honestly couldn't have  
done it without the 32•8."

## OTHER PROFESSIONALS WHO OWN AND USE MACKIE DESIGNS 8•BUS CONSOLES\*

**Dave Abbruzzese**,  
drummer for Pearl Jam

**Slash**,  
guitarist/songwriter,  
Guns 'N Roses

**Steve Brown**,  
guitarist/producer for Trixter

**Natalie Cole**,  
solo artist

**Greg Droman**,  
Grammy-nominated engineer  
for Linsey Buckingham

**Gregg Field**,  
drummer for Frank Sinatra

**Michael Frondelli**,  
Engineer-Producer (Eric  
Johnson, Crowded House, etc.),  
Creative Director for Capitol  
Records

**Bill Gould**,  
bassist for Faith No More

**Bashiri Johnson**,  
percussionist for  
Whitney Houston, Madonna

**Mick Jones**,  
producer for Van Halen,  
guitarist for Foreigner

**Art Neville**,  
producer, The Meters,  
keyboardist, Neville Bros.

**David Frangioni**,  
MIDI specialist/Engineer  
Aerosmith, Elton John, and  
Extreme

**Danny Kortchmar**,  
producer for James Taylor,  
Billy Joel, Rod Stewart

**Bruce Kulick**,  
guitarist for Kiss

**Kyle Lenning**,  
President Asylum Records,  
Nashville

**Clair Marlo**,  
Artist, Producer

**Queensryche**

**Dave "Snake" Sabo**,  
guitarist for Skid Row

**Ben Sidran**,  
producer

**Leo Sidran**,  
songwriter for Steve Miller

**Steven Tyler**,  
singer for Aerosmith

\*Mention in this list is intended to indicate ownership only  
and does not in any way denote official endorsement.



Producer Ricky Peterson's Pre/Post  
Production Room with Mackie Designs 24•8  
at Paisley Park.

R&B radio remix of *Boz  
Scaggs' "I'll Be The One"* for  
Virgin Records, recording solo  
album for the Japanese  
Go Jazz label.

Ricky Peterson, producer,  
Paisley Park  
Minneapolis, MN

# MACKIE

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# FROM THE EDITOR

**I**t will be 18 years this December since we started putting together a directory of Northern California recording facilities that at first was called *The Mix* and eventually became *Mix* magazine. The original idea back in 1977 was to do a one-shot look at the status of recording studios in our part of the world. My partner, Penny Riker Jacob, and I thought it would take about a month of our time, and then we'd go back to our real jobs, recording jingles and demos at Tres Virgos Recording in Mill Valley, Calif.

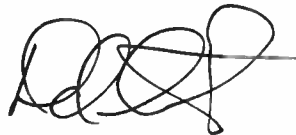
But, publishing got the best of us. It gave us an incredibly exciting opportunity to watch the rapid progress and invigorating action of the recording industry from 50-yard-line seats.

If I sound a bit maudlin...Yes, it's true, I'm changing my status here at *Mix* to become the senior consulting editor, a position that will allow me to begin doing what I seem to have been mainly talking about for several years—producing interactive media projects. As anyone who has been involved in publishing knows, this line of work has a way of making time disappear. So, in order for me to have the freedom to pursue a new venture, and with heartfelt thanks to the stellar *Mix* staff for giving me the room to do it, we have done a bit of restructuring around here.

As of this month, my partner of 15 years, and *Mix* publisher, Hillel Resner, assumes the title of publisher/editor-in-chief. Senior editor George Petersen becomes editor and begins his musings and insights on the industry in this very space starting next issue. Managing editor Blair Jackson also moves up to the new position of executive editor.

So this is my final "Editor's Notes" (please pass the Kleenex). I have to say, that *one* month became 18 years pretty damn quick. The experience has been amazing and wonderfully enjoyable, and I'll even kind of miss the frantic pace and deadlines of this job. A consulting editor's job has a slower pace, I'm hoping. As far as the pace being set in the multimedia production world, I'm not expecting that to be quite as slow.

Keep reading,



David Schwartz  
Editor-in-Chief

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Founded in 1977 by  
David Schwartz and Penny Riker Jacob



*More records go gold on Ampex than on  
all other tapes combined.*

**AMPEX**

Ampex Recording Media Corporation 401 Broadway, M.S. 22-02, Redwood City, CA 94063-3109 ©1993 Ampex Recording Media Corporation

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**Make sure you choose the right road.**



Our new TimeLine™ DAW-80™ digital audio workstation puts you on the road to success.



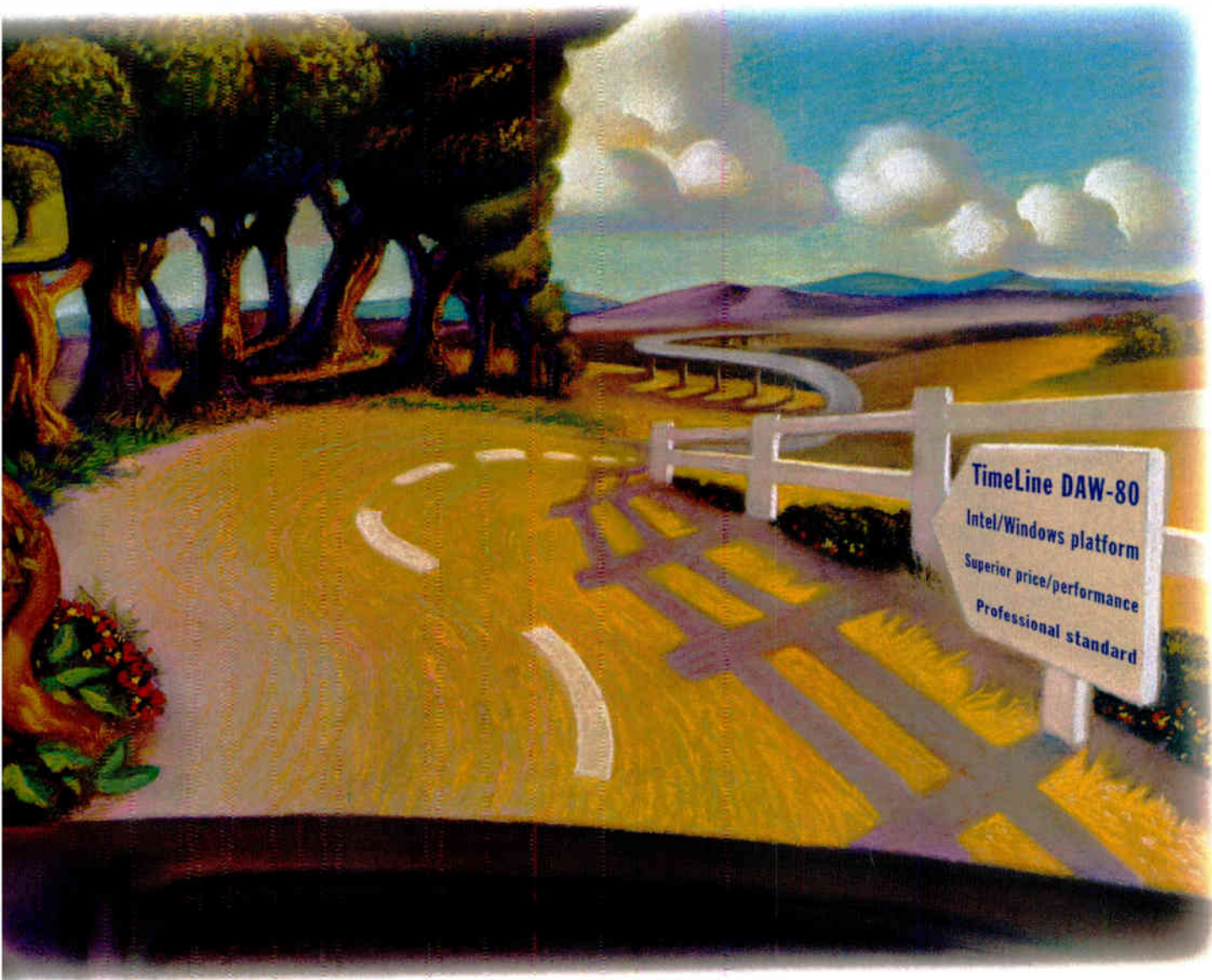
TimeLine DAW-80 running Studioframe™ Version 6.0 software.

That's because the TimeLine DAW-80 is built around the world-standard Intel/Windows platform. So it offers blazing performance and superior productivity at low cost, plus all the benefits that come from being part of the computer industry's most accepted architecture.

At the dawn of the digital audio age, a company called WaveFrame created a line of workstations that developed a fanatical following among audio professionals. In fact, you'll find them in the best-

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**World Radio History**



equipped studios worldwide.

Then TimeLine acquired WaveFrame's legendary technology and set about improving on a good thing by adding TimeLine's reputation for uncompromising functionality, reliable out-of-box performance, and industry knowledge.

And now we've released Studioframe Version 6.0 audio editing software. The most important development in digital audio editing software ever, Studioframe Version 6.0 is simply the most

advanced and productive system available.

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# CURRENT

## PRODUCT HITS OF APRS by George Petersen

It was a tough job, and I got stuck with the assignment, but somebody had to spend a week in London covering the APRS Show (June 22 to 24). Now in its 27th year, the Association of Professional Recording Services (sort of the British equivalent of SPARS) holds an annual expo, with 160 exhibitors and several thousand audio pros from the UK and dozens of other countries. Although essentially an equipment expo, this year's APRS included a diverse selection of informative workshops and lectures.

The most talked-about product at the show was the debuting ProMix 01, Yamaha's under-\$2,000 digital mixer (profiled in last month's *Mix*). At the other end of the price scale, the Siemens booth showed updated software for its digital consoles: Neve Capricorn now offers time code capture and multi-engineer operation, and new software for the AMS Logic 3 features M/S metering, phase indicators and VCA-style grouping.

A lot of excitement was generated by the Series 900 console from Malcolm Toft Associates (distributed in the U.S. by David Michaels Associates, 818/888-2440). Designed by Trident founder Malcolm Toft, the MTA 900 provides the same quality as the top-of-the-line 980 board but in a package intended for the serious project studio. The 900 is a split design, available in a standard 32x24x24 configuration; however, each input module has two line inputs, providing 94 inputs in mixdown. U.S. pricing begins at approximately \$30,000.

Tony Larking's TL Audio line (available in North America through Sascom Marketing 905/420-3946) started out by offering affordable tube outboard gear but now includes consoles. The Valve 8:2 (\$4,495) is an 8-input/stereo output mixer in rack-mount or tabletop versions, with balanced mic and line inputs and 4-band tube EQ. Need more inputs? The TL Audio 1000 Series is a large-format console that's configurable as a split or in-line design, with 4-band EQ and up to 24 buses. Input modules

American distributor, and the mics will make their U.S. debut at AES in San Francisco. A series of tube mics are also planned.

Available in the States through QMI (508/435-3666), is the Soundfield MkV, the fifth generation of the pattern control mic which uses a tetrahedral four-capsule array and rack-mount electronics package to remotely create a wide range of directional patterns and stereo combinations. The new version is said to offer a 20dB improvement in dynamic range over the MkIV.

B&K is now delivering its 4021, a miniature condenser mic that combines the cardioid capsule of its popular 4011 mic with miniature SMD transistor electronics. With optional clip-on mounts designed for violin, cello or bass miking applications, the 4021 makes a quantum leap in string miking technology.

There were plenty of other interesting new products at APRS. Without ceremony, Tannoy unveiled its Limpet powered monitors (see article on page 117). In a more unusual twist, Soundcraft has entered the monitor market with its Absolute 2, a compact near-field speaker with pricing expected to be \$369/pair. Winner of George's "most appropriate name" award is Studer's Giant CD, a massive changer with a storage capacity of 6,000 discs. Foxtex showed its optional time code/RS422 card for its D-10 DAT deck—U.S. pricing was not set at press time but should be in the \$800 range.

The word is out: At APRS, Digi-design announced that its TDM system (profiled in the October

—CONTINUED ON PAGE 16



are available with IC, fully discrete or tube electronics, and up to 72 of these can be combined to suit user needs.

Having delivered more than 100,000 consoles worldwide in its Spirit line, Soundcraft expects to increase that number with its new Folio Lite, a 5.5-pound mixer in a 1-foot chassis. Folio Lite has four mono line/mic inputs, four stereo line inputs and two stereo returns: 16 inputs on remix. Price is \$369.

A.S. McKay Ltd. is the world export agent for the Russian-made NevaTon and Oktava microphone lines, and the company showed a range of current dynamic and condenser models, along with a display of vintage Russian mics. McKay is now setting up its North

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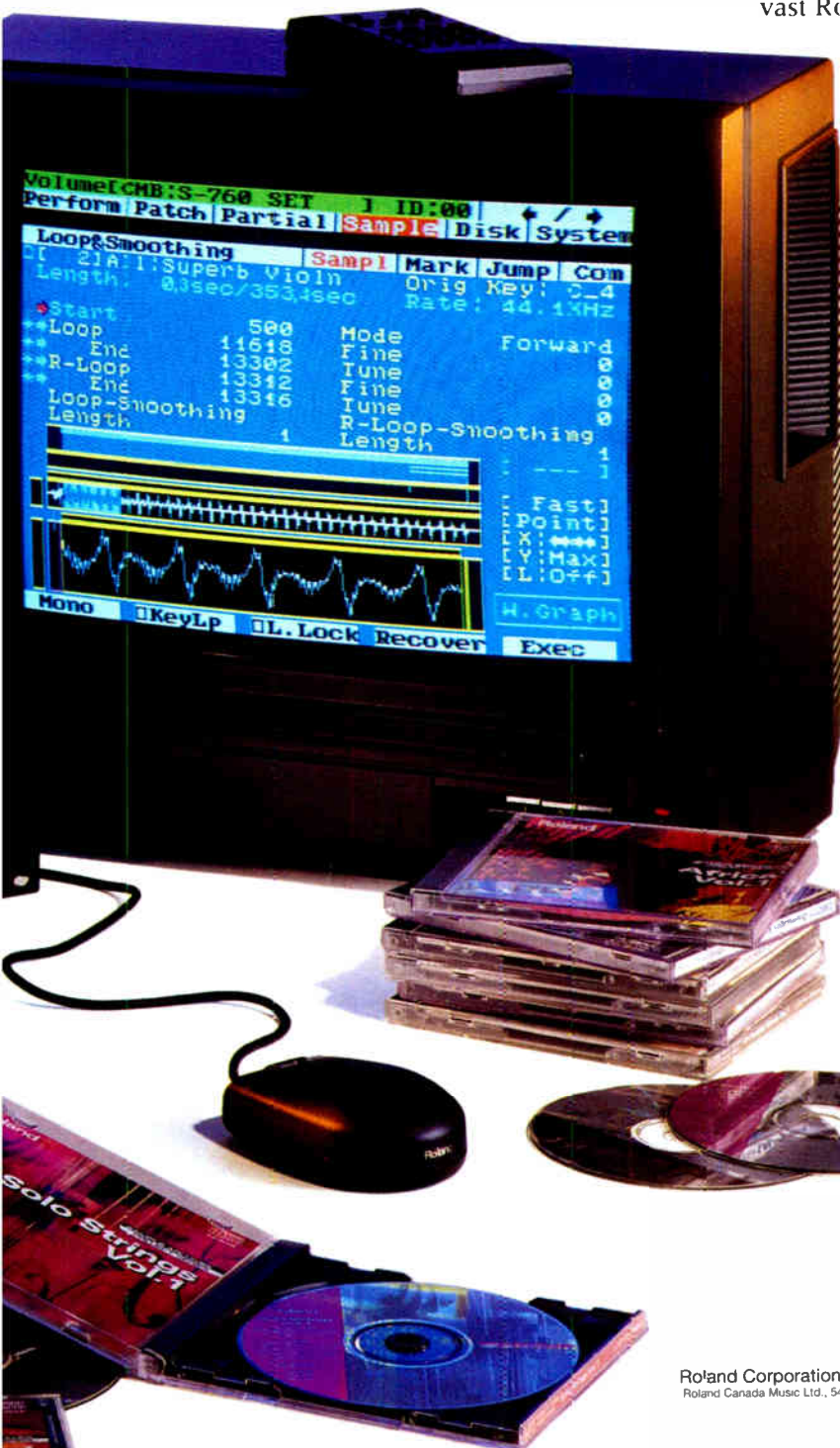
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# INDUSTRY NOTES

E-mu Systems Inc. (Scotts Valley, CA) promoted **Scott Emmerman** to North American sales director, a new position that combines the responsibilities previously held by East and West Coast regional sales managers...**JL Cooper** expanded its L.A. headquarters to accommodate increases in sales, manufacturing and R&D. The company also promoted **Chuck Thompson** to the position of vice president and general manager and added ten new international distributors...**Thomas R. Parkinson** was named president and CEO of **Shape Inc.** (Biddeford, ME)...**Tim Shuttleworth** joined Chicago's **Neotek Corp.** as senior design engineer...In an organizational change, **Mark IV Audio** (Buchanan, MI) announced the formation of a new company, **Mark IV Audio North America**, with responsibility for marketing, sales and business development in the Americas. **Paul McGuire**, president of **Electro-Voice**, was named president of the new company. New appointments at **Mark IV Audio** include **Roger Gaines** as vice president of manufacturing, **Dave Merrey** as vice president of engineering and **David McNutt** as manager of educational services...**Switchcraft Inc.** (Chicago) hired **B. Alan Berg** as director of engineering and **Bob Ross** as director of Telecom sales...New reps for **Group One Ltd.** (Farmingdale, NY): **Bay Roads Marketing Group** handles New England, New York and Northern New Jersey; **S.K. MacDonald Inc.** handles Group One lines in Delaware, D.C., Eastern Pennsylvania, Maryland, Southern New Jersey and Virginia. The company also hired **Lloyd Kinkade** as national sales manager for the Group One-distributed line of XTA signal processors...**TimeLine Vista Inc.** (Vista, CA) appointed **Kris Jackson** as product manager for its DAW-80 workstation and Mediasound software...

**Doug Wood** joined the sales and marketing department of **Foster City, CA-based Otari Corp.** as its new product manager...**Audio Techniques** named **Ken Patnaude** to the newly created position of vice president, technology and development...**Professional Audio Systems** (San Marcos, CA) appointed some new reps: **Taub Sales** will handle the Central Atlantic states, **Ferdinand Boyce and Associates** covers the Pacific Northwest, and **Mac Pacific Marketing Group** handles Southern California and Southern Nevada...**Audio-Technica U.S.** (Stow, OH) appointed **Michael Edwards** to the position of sales engineer and promoted **Garry Elliott** to international sales manager, professional products...**Graham-Patten Systems** moved to new headquarters. The mailing address, phone and fax remain unchanged, but the new shipping address is 13366 Grass Valley Ave., Grass Valley, CA, 95945...**SPARS** recently formed a Toronto chapter. For information, call **Anne Reynolds**, **Magnetic Music**, at (416) 367-3600...Keeping pace with its rapid growth, **360 Systems** moved to larger quarters. The company's new address is 5321 Sterling Center Dr., Westlake Village, CA, 91361. Phone (818) 991-0360; fax (818) 991-1360. Also, the company made two hires: **Steve Gordoni** joined the sales staff as sales engineer, and **John Longawa** is the company's new senior software engineer...**Crystal River Engineering** (Palo Alto, CA) appointed **Ted Tanner Jr.** to the position of senior DSP engineer...**Online Marketing** (Wadsworth, OH) hired **Clark Hill** as sales representative...The **Association for Technology in Music Instruction** and the **College Music Society** will hold their annual conferences October 20 to 23 at the Hyatt Regency in Savannah, GA. For more information call (406) 721-9616. ■

—FROM PAGE 12, CURRENT

1993 *Mix*)—the open architecture 256-channel, 24-bit digital audio bus for Pro Tools—is now shipping, bringing the power and flexibility of a true desktop production environment to reality.

One of the worst aspects of overseas shows is seeing cool items that are not available in North America—at least not yet. The Tascam booth included a prototype of the German-made Zahner PB-88D, a single-rack-space digital patch bay that allows a track in a DA-88 system to be digitally routed to any other track. Connect up to four TDF-1 lines to the back panel, key in the source and destination track numbers on the front panel, and away you go: It couldn't be simpler. Meanwhile, **Crookwood** (Cookham, Berks) showed the **Control Pot**, a remote commander that can control (and store settings for) up to 16 of its **Paint Pots**—the high-end mic preamp that has been taking the UK by storm over the past year or so.

Without a doubt, **APRS** is one of the great bargains in audio, a three-day technology feast priced at a modest £6—about \$10. Of course, there were many other products at the APRS, and we'll be covering these in our product columns in the months to come. Watch for it.

## CORRECTIONS

The "Tour Profile" of the **Scorpions** in our June issue had a few misspellings of key personnel. The correct spellings are as follows: The lead singer of the band is **Klaus Meine**; FOH engineer is **Achim Schultz**; and monitor engineer is **Horst Hartmann**. Also, our June report on digital multitracks listed incorrect prices for several recorders. The **Studer D827** 48-track system with recorder, converters, noise-shaping circuitry and locator is \$195,000; and **Fostex** has since increased the price of its **RD-8** modular digital multitrack deck to \$4,995. ■

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Incredible sound. Record Plant never hesitates to invest in the future when it comes to keeping our clients on top. Just last year, Record Plant completed a \$4 million expansion, building two new studios to house a pair of the largest Neve and SSL consoles in the world. This month Record Plant becomes the first major music facility to offer the Euphonix CS2000M, which features the revolutionary Total Automation™ and SnapShot Recall™ systems.

Combining modern technology with one of the world's largest collections of vintage and tube gear has always been the Record Plant approach.

Impeccable service. Amazing clients. It's said Record Plant is probably the only thing that Barbra Streisand and Nine Inch Nails have in common. You could add a score of other names from the galaxy of top stars of music and film who believe in Record Plant. Perhaps that's why Record Plant has been nominated for the second straight year for the TEC Award as the industry's leading recording studio!

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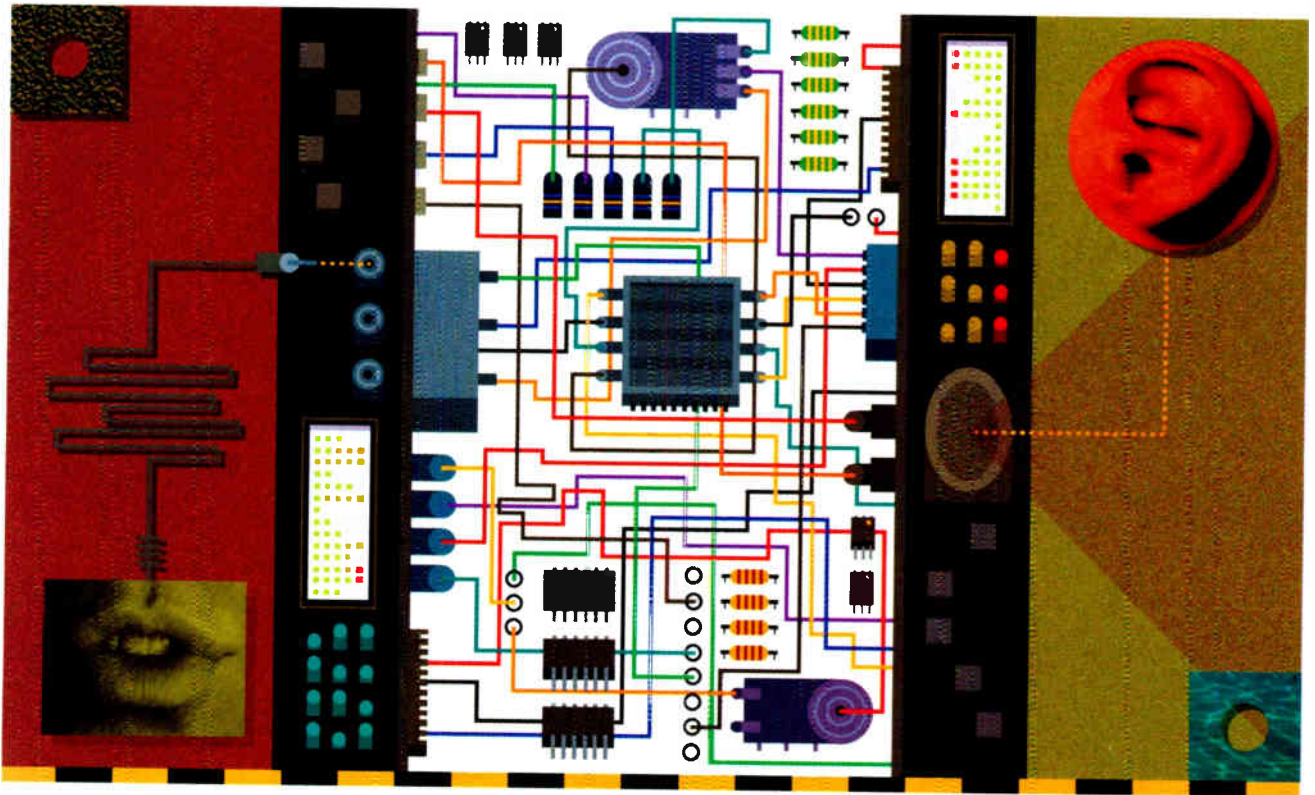


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World Radio History

by Stephen St. Croix



# SNAP, CRACKLE, DROP

**M**etal is kind of weird stuff. We tend to think of metal as metal, and rock, paper, glass, wood, silicon, petrochemicals, rubber and sushi as, well, *non-metal*. We assign metal a distinctive place in our world and in our minds. We feel it is different, special. It is shiny, but so is glass, diamond, polished granite and water. It conducts electricity, but so does the ocean, carbon and even ionized air. It can be melted and cast, but so can the very rock we live on. I guess we have to own up to the fact that we, somewhat technically advanced animals on the whole, still basically feel that metal is magic. I will give it one thing; it can be radically reformed while stone-cold, without cutting, and that is very difficult with most other materials.

But perhaps we should be a bit more realistic about this stuff, since

it is in every single thing we have that has more than a volt in it. Well, wait a minute, that's not true. When a cat rubs up against you in the dead of a Canadian winter and delivers a 10,000-volt gift-spark, which you then deliver to the laptop that you happen to be writing on, and the laptop in turn delivers all of its memory to the trash can, you can't blame the metal in the cat. Anyway, we are all basically aware that different metals conduct electricity with differing degrees of efficiency and that different metals oxidize at various rates, with various results. But as end-users, we don't seem to go very far with this, and we really should, because it can audibly affect our daily lives.

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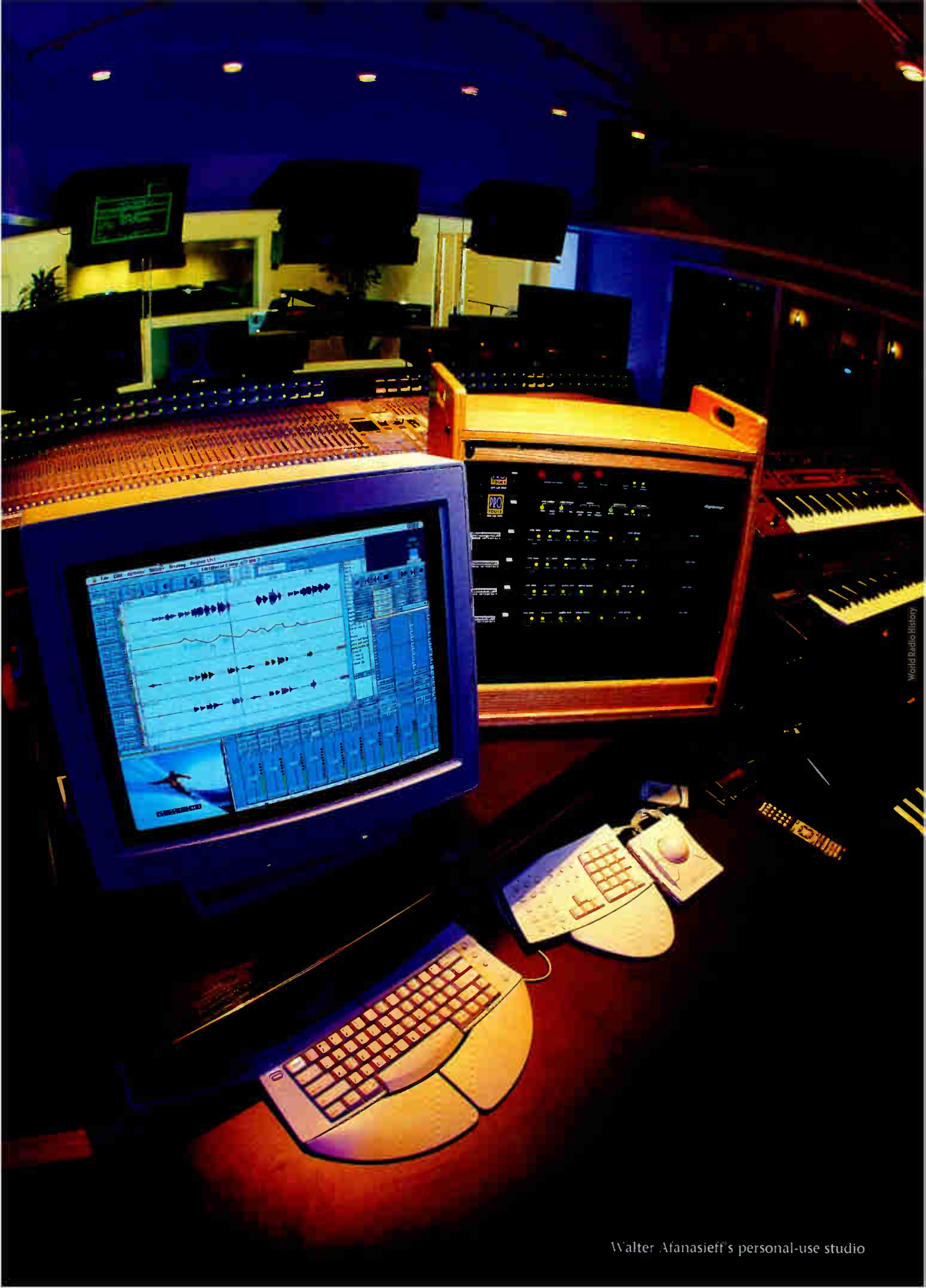
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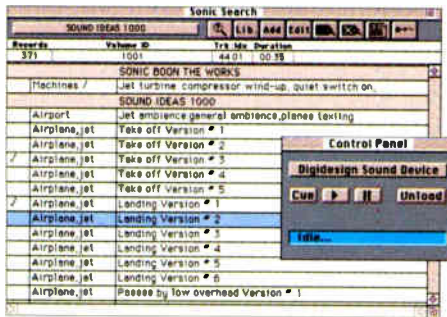
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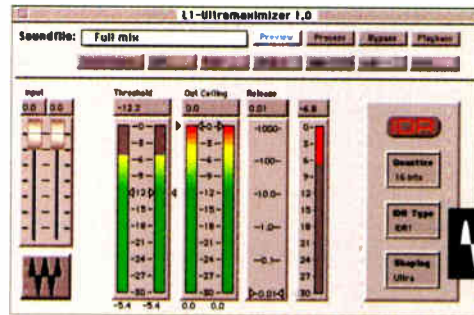
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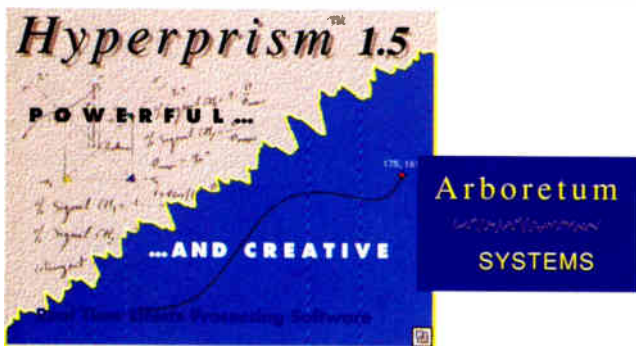
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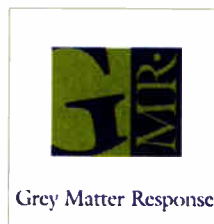
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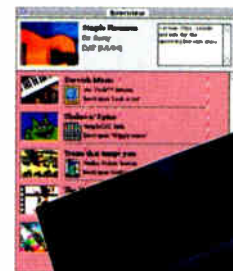
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ter) is that each one we use has two ends, and if they are patch cords or any other sort of interconnection cabling, each one has not one but *two* problematic connectors. (This is ignoring, for the moment, such metal-tech as aligned crystalline, low-oxygen, skin-optimized, hollow copper, dielectrically isolated, fine-strand, complementary counter-wound conductors.) Now, if the wires in question are not cables but are permanent wires used within our equipment, they still have to be connected at each end. This may be done by soldering, crimping, welding or pinching; and there are several ways to do each.

Then there are switches, where wires connect just by being temporarily held against each other. Luckily, we would never dream of putting anything valuable, like audio for instance, through one of these insane things, would we? Or through an even more ridiculous contraption, the patch bay—a veritable house of worship where cables and connectors of all sizes and denominations come together in one place to conduct their business. Sort of.

Now here is a place that really needs to be integrated and never is. Here color matters, yet is ignored. The rich and the poor, the clean and the dirty, the healthy and the sick, the young and the old, the white and the yellow, red, or brown, the strong and the weak—all attempt to communicate with each other here, all nobly ignoring their differences. And we, as keepers of the house, only attend to our flock, to the very connectors that we rely on every day, when they crackle or die. Pathetic, actually. But this column is not about cleaning your connectors, per se (well, it sort of is, but only as a side point). It is more about how they and your switches and solder joints talk to each other when they *are* clean. Yup, here is a topic that you probably haven't given much thought to, but you *should*.

#### YOU CAN BREATHE EASIER

Oxygen is our friend, in very small quantities. In large amounts, it burns and fries us. It, well, *oxidizes* us to death. It is amazingly violent. Many scientists feel that the first major natural disaster on this planet, and to date the most devastating in terms of

resulting deaths by far, was the worldwide appearance of oxygen in the atmosphere millions of years ago (except, of course, over Los Angeles County and some of the Valley). Our peaceful, geometrically growing, carbon dioxide-based planet was happy as could be, with its googleplex of life-forms oozing, sliming and multiplying madly. There was a *lot* of carbon dioxide to go around and a lot of room to lay out and breathe it. Happy times for all, until...

Because these life-forms were not exactly Einstein as far as mental complexity goes (actually, I guess they weren't even yogurt as far as that is concerned), they never saw it coming. They carelessly consumed their favorite life-giving carbon dioxide and happily released, as a result of their metabolic processes, of all things, oxygen. There was no control, no legislation (please try to understand that the legal process was difficult back then, with millions of square miles involved and lifespans of half an hour). So they simply filled the atmosphere with waste gas, a very aggressive, violent, burning gas at that. It finally got so bad that it burned everything to death, leaving behind a brave new fried world.

Eventually, creatures evolved that could actually *live* on this waste gas. Post-Armageddon inheritors of the earth. They actually used it in their metabolism, and as a final cosmic joke, released carbon dioxide back into their atmosphere as a waste product of *their* metabolism. Who says there's no cosmic humor? Then, after a little time to evolve, these creatures invented patch bays and chose to make them out of a substance that can't survive oxygen—I guess to honor those who have gone before us.

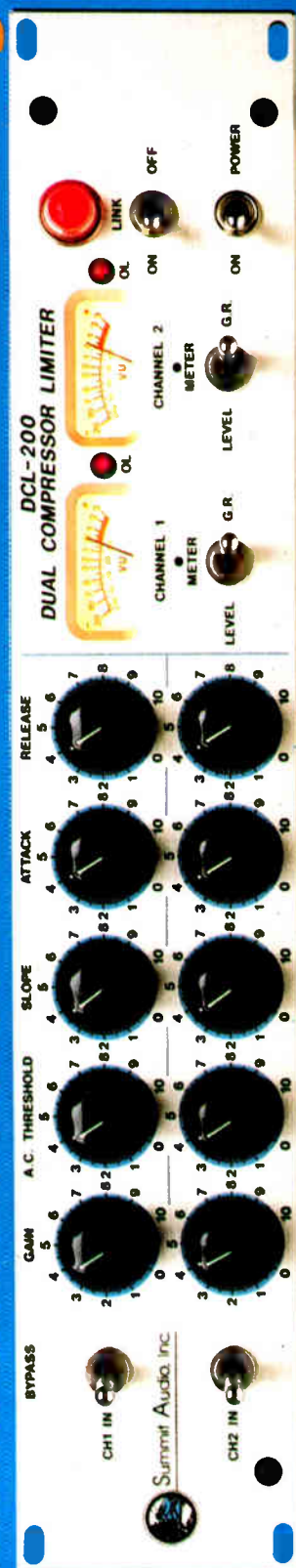
#### WHAT HAVE WE LEARNED?

Well, two things, I suppose. First, there might be more going on with metal than we thought; and second, if you think you were spared the rambling setup section of a "Fast Lane" column because it was not in the front, you might have celebrated too soon, because now you know that I might put it in the middle, just to keep one step ahead of you.

Okay, here's the content. You already know which metals have the best conductive properties and which ones have the best oxidation charac-

—CONTINUED ON PAGE 207

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by Charles Salter



*This video conferencing room at Pacific Bell's corporate television studio in San Francisco is a typical project for Salter Associates.*

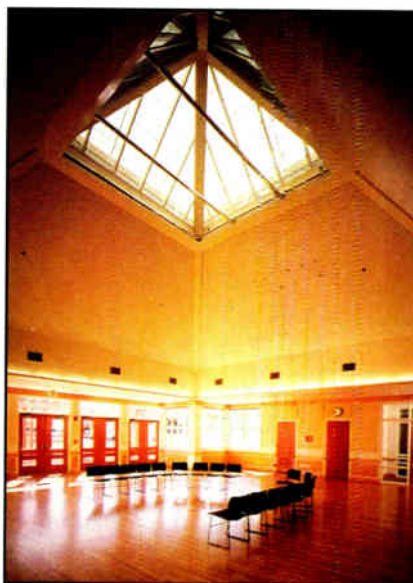
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quirements. Doors are typically specified to have a Sound Transmission Class (STC) rating, which is a measure of its ability to reduce the transfer of sound between spaces. This rating is stated in the project specifications along with the names of one or more door manufacturers whose products comply with this rating.

To save money, general contractors often attempt to substitute for the specified doors. The submitted information about the substituted doors must be carefully scrutinized. Sometimes there is no laboratory report to indicate that the specified STC rating

**C**onsider the risk of accepting a perhaps unknown, unrated product to save money. If the product does not meet the project needs, what will be the cost to fix it?

of a substituted door will comply with the specified STC rating for the project. We have had problems with substituted doors that do not meet specified acoustical requirements. These door manufacturers and suppliers often rely on a basic steel or solid-core wood door combined with residential-grade gaskets. Before a substitute door is approved, recent laboratory tests for the door and the associated gasketing should be reviewed. If a laboratory report is more than ten years old, there is a very good chance that the supplied door is not the same model that was tested in the laboratory.

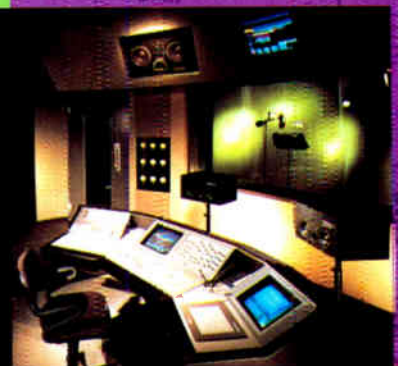
We find that sound-rated doors with cam-lift hinges and a double row of gasketing all around provide the most reliable gasketing seal for sound-rated doors. Because of various non-acoustical design limitations such as disabled access and fire requirements, it is often difficult for a single door to

—CONTINUED ON PAGE 215

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by Mr. Bonzai

# BOOKER T. & THE MGS RIDE AGAIN

Blues Brother Dan Aykroyd steps up to the footlights at the grand opening of L.A.'s House of Blues to introduce the band. "We went to high school with these guys. We went to college with them," he declares. "We fought a *war* with these guys...Booker T. & The MGS!"

With the distinctively cool touch that defined an era, Booker T. Jones on the eversteady Hammond B-3, guitarist Steve Cropper and bassist Donald "Duck" Dunn lay down a deep groove with Memphis drummer Steve Potts. Older fans lock into the groove while younger ones get a fresh whiff of "Green Onions" and a hearty helping of tunes from *That's*

*the Way It Should Be*, the band's first album in 17 years. This is the team that helped build the Stax and Volt empires, writing and recording with such soul gods as Otis Redding, Sam & Dave, Buddy Guy, Rufus Thomas, Eddie Floyd and others. Their saga as The MGS was launched in 1962, and in 1992 they were inducted into the Rock and Roll Hall of Fame. Last year's tour backing up Neil Young reminded many just how good this Memphis Group really is.

Along the way, Booker T. has produced recordings from such greats as Bill Withers, Willie Nelson, Carlos Santana and Rita Coolidge. Steve Cropper has produced Poco, Jeff Beck, Tower



**From left: Booker T. Jones, Duck Dunn and Steve Cropper**

PHOTO: JAY BLAKESBERG

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of Power, and with Duck Dunn made soulful comedy with Blues Brothers John Belushi and Dan Aykroyd.

Duck Dunn recently underwent throat surgery and "ducked" out on our interview, but Cropper and Jones have some insightful words about their bass man, as well as some amusing tales of The MGs on the highway to history...

**Bonzai:** Are you guys still groovin' after all these years?

**Jones:** Still "Groovin'," still "Green Onions," still "Hip-Hug-Her," still "Meltin' Pot"—and now some new grooves.

**Bonzai:** This is the first time you've been together in 17 years?

**Cropper:** Yes, for recording. It was a nice reunion for everybody.

**Bonzai:** What's the single?

**Cropper:** "Cruisin'," an uptempo R&B, rock 'n' roll number with a great melody. Should be a nice summer record.

**Bonzai:** Steve, I was looking at your writing credits and one recent tune

caught my eye. What's the story with "I Like to Smoke Weed and Listen to Hip-Hop"?

**Jones:** Knowing Steve Cropper, I would suspect that's a sample [from an old Cropper song, used on someone else's record].

**Cropper:** [Laughs] Yeah, that's a sample. You know, things are starting to pop up like that: We did a



radio show yesterday, and the guy named about four songs I'd never heard of. One that bothers me in a way, even though I had a lot to do with it, is "Soul Man." That's an Isaac Hayes and David Porter song. I sat down with Isaac the night before

and arranged that intro guitar thing.

**Bonzai:** You guys have been sampled quite a bit. How do you feel about that?

**Jones:** I don't mind being sampled. It keeps the music alive, and the kids have a lot of respect for our music. It pays very well, and we're making new music, so I don't mind. I don't think the music should be monopolized or hidden. It's used in a different context, but it's okay.

**Cropper:** What else have you got on me?

**Bonzai:** "Sittin' on the Dock of the Bay?"

**Cropper:** Well, I did write that one, with Otis Redding.

**Bonzai:** Where did you write it?

**Cropper:** He started it in Sausalito, an idea among several ideas. Otis always had more ideas than any writer I ever worked with. He had unfinished pieces of from ten to 15 songs every time he came in. We actually wrote that one in the studio. Most of the time we got together a day or two before recording, and we'd write all night long in a hotel room. This time he came down to the studio that afternoon and was so excited—we prob-

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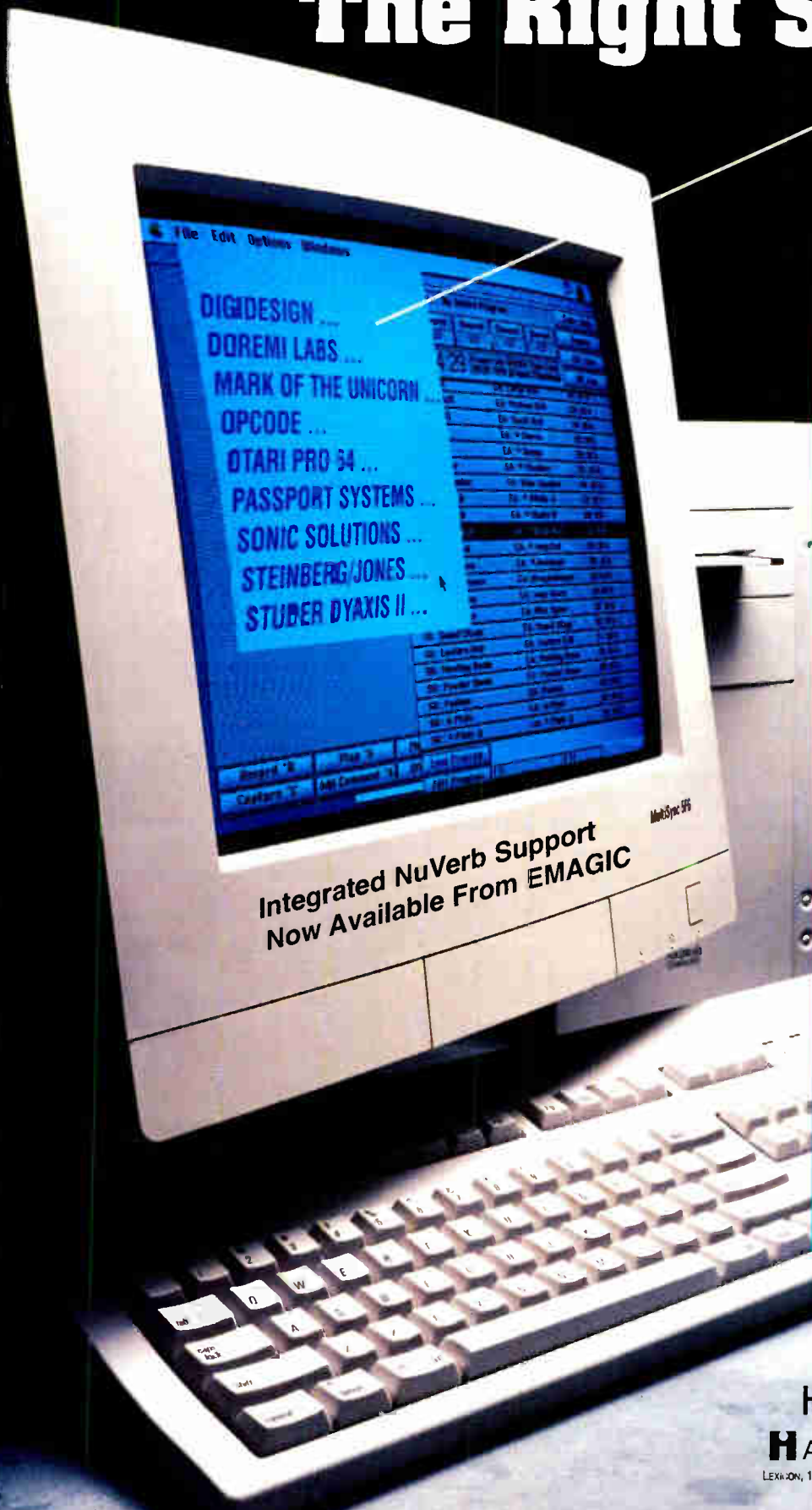
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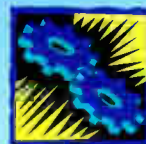


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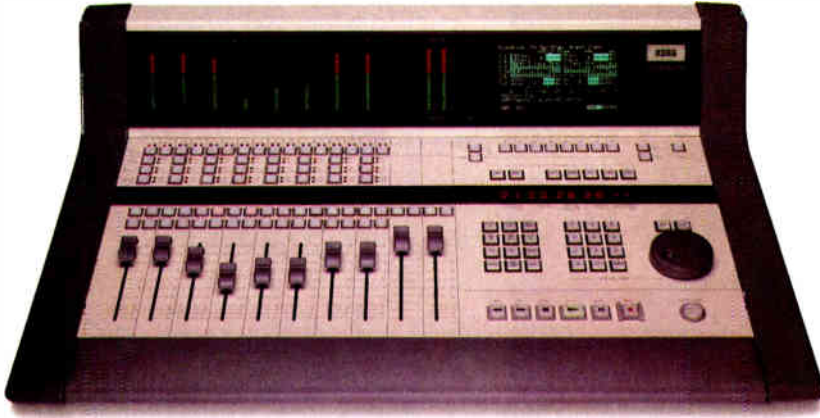
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ably finished it in less than an hour. He had an intro and that first little verse about "watching the ships come in and watchin' 'em roll away again." He was humming a little melody, and I sat there and finished the lyrics with him and wrote the bridge to it.

**Bonzai:** Steve, could you tell me a little story about working with Wilson Pickett?

**Cropper:** It's pretty simple what went down. No real bizarre stories—well, maybe one or two. Jerry Wexler called Jim Stewart and said he wanted to bring Wilson Pickett down from New York to Memphis. I went out to the record shop to listen to stuff that Wilson had sung on and found some Gospel music and some of those Falcon records. That was my first education, and I had something in my mind. He was really kind of a screamer, a church belter. "In the Midnight Hour" is really simple—if you go back and listen to the stuff he sang on in the late '50s and early '60s, he goes into these fade outs with "I'm gonna see my Jesus in the midnight hour." It was sort of his identity, and that's where I got the idea for the song. Of course he jumped right on it, and we wrote that song in about an hour, maybe less.

Jim and I went out to the airport and picked up Jerry and Wilson. We checked them into the hotel, and Jerry and Jim went out for a sandwich and told us to start writing. They were gone a couple of hours and came back, and we played them "Midnight Hour" and "Don't Fight It." They couldn't believe it! [Laughs] They said, "We're outta here—you guys keep writin'." After that we wrote "I'm Not Tired" and went into the studio the next day and cut all three tracks—all three were chart records.

**Bonzai:** Such a wide assortment of people have recorded your compositions; even The Simpsons. Can you explain the mass appeal?

**Jones:** No, I was surprised when The Simpsons did "Born Under a Bad Sign." I liked it—a good cut.

**Bonzai:** Do you remember writing that one?

**Jones:** The session was dynamite. Willy Bell and I wrote it for Albert King. We divided all the artists back then at Stax, and Albert was mine. We started playing the intro and every time we went through it, it was elec-

—CONTINUED ON PAGE 208

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# RECORDING THE PIANO

BY JOHN LA GROU

**O**ften cited by engineers as the most difficult instrument to record, the grand master of music, the piano, is our focus in this month's engineering survey.

With the emergence of adequate-sounding MIDI-based sampled pianos, acoustic piano recording has become less common; it's almost a dying art. However, even the best sampler systems cannot match the complexity and nuance of a live piano performance. Artists, engineers and producers seeking higher sonic standards will be generously rewarded by insisting on the real thing.

This month, a group of engineer/producer/

artist types share their piano recording knowledge with us.

#### DON MURRAY

Having received no fewer than eight Grammy nominations, Don Murray is clearly held in high regard by his industry peers. One of Murray's most recent recordings, the soundtrack to *The Firm*, was nominated for an Academy Award. What's noteworthy about *The Firm* soundtrack is that a piano (played by David Grusin), by itself, effectively provides the entire musical accompaniment for a major motion picture. Murray gives us a master's view into today's piano recording techniques.

"Most of the piano recording I do these days is with Dave Grusin and Bob

**"I generally find the most pleasing sound with the piano near the center of the room. In general, if a piano doesn't sound right in the room, the recording won't work."**

**—Don Murray**

*This photograph, showing a Yamaha C7-F, was taken at the Maybeck Recital Hall in Berkeley, California, courtesy of Dick Whittington and Marilyn Ross.*

**PHOTO BY MARK KOEHLER**

James [of Fourplay]," says Murray. "Both players like the sound of the Yamaha C7-F, so I'm able to maintain a fairly consistent style. The 'F' designates a slightly longer piano than a standard C7, and the bass strings cross over higher up in the register. Nine-foot grands tend to get boomy, especially in ensemble work, but the C7-F is very consistent. David Abell of Yamaha has been fantastic—allowing us to audition all the available pianos in L.A. before we start a session.

"Pianos are big mechanical devices, which require lots of fine-tuning—even during sessions. I've learned that a good piano technician is invaluable. Now, one of the best rooms for piano recording is Sunset Sound Studio One in Hollywood. At

**"The most important factor is the ratio of direct to reflected piano sound. Too much reflection and the recording gets washed out, too little and it becomes dry."**

**—Tom Lazarus**

Sunset, I generally find the most pleasing sound with the piano near the center of the room; there's very little of the annoying slap echo common with pianos in lesser rooms. In general, if a piano doesn't sound right in the room, the recording won't work."

After the piano is set up in the studio, Murray starts experimenting with mics. "I like a traditional two-mic approach to recording solo pianos. I keep trying three or more mics when I have time, but it never seems to hold together like a simple pair. Once in a while, I'll use ambience mics farther out in a big room, but they're ultimately mixed in at a much lower level. And on certain multitrack sessions, I may have multiple mics open, but the final mix normally uses only the best-sounding pair.

"Leaving the lid angled open on a piano really helps to focus the sound; I'll rarely remove it completely. I start with a single mic near the hammers over the sound board but

closer to the edge of the piano. The [Neumann] U47 or M49 are good choices here. When I get a good overall sound from a single mic, I'll then place an additional mic farther back over the bass strings, also near the edge of the piano. Another tube mic, such as a Stephen Paul [modified] C-12, works well here. The mics usually end up about two to three feet apart; both pointing toward the middle of the piano.

"From here, I may use Pultec EQP-1A equalizers to add just a touch of highs and lows. But not too much! I seldom use compression on piano. And I like to monitor piano through large JBLs, Genelecs or old Phillips speakers. My mic selection and signal path depend so much on the music, piano, and room. It's impossible to develop a set formula that covers every situation. As time permits, my advice is to always try new techniques based on things that have worked for you in prior sessions."

Murray went on to discuss a method of sequencing the grand piano for acoustic overdubs. "Some of the Fourplay recordings with Bob James require grand piano overdubs. The Yamaha C7-E is a MIDI grand, which sends MIDI data just as it was originally performed. So, the pianist can be in Montana, perform the part to perfection and modem it to a Yamaha Disklavier-fitted piano for acoustic recording in L.A., though we find the Disklavier doesn't always catch the subtle nuances of the original performance.

"On *The Firm*, we actually used two pianos; a nine-foot Steinway grand and a C7-F. The Steinway was used sparingly, however. Listen to *The Firm's* chase scenes—we used highly effected sampled percussion effects taken from various acts of random violence on the piano strings, but it's all piano."

#### **TOM LAZARUS**

In his 20 years as an audio engineer, Tom Lazarus has worked with a broad spectrum of piano artists, ranging from Ray Charles to Vladimir Horowitz. His early experience was as chief engineer for New York's Vanguard Records. Later, as president of Labyrinth Sound, Lazarus worked with a host of different artists including Kathleen Battle, Neil Sedaka, Itzhak Perlman and Yo Yo Ma. Recently, Lazarus merged Labyrinth

with Classic Sound, and I spoke with him from one of Classic's new mastering rooms on West 61st in New York City.

"I just finished a piano recording with Alicia de Larrocha for BMG/RCA," says Lazarus. "Alicia and her producer, David Frost, chose the instrument from Steinway's basement of great pianos here in the city. Choosing a piano in the Steinway basement takes a little imagination because the sound down there is not the greatest. But when we were able to hear the instrument on the stage in the recording venue [the American Academy of Arts and Letters in Manhattan], we were confident that it would make a beautiful recording.

"I prefer a big hall for piano recording—even if the mics are inside the piano. Without a good hall, it's very difficult to control early reflections and capture a spacious sound. However, the last Horowitz records were recorded in his living room. In this instance, the compromise in Horowitz's concert sound was probably outweighed by the remarkably sublime recordings he made in the serenity of his own home. I actually rigged a little switch box, which allowed him to basically do his own recordings in private when he felt like it.

"We try to select a recording hall well in advance, because the best halls are usually booked up months ahead. We do about half of our work here in the city at the American Academy of Arts and Letters." Some of Lazarus' other favorite piano recording venues include Skywalker Ranch in Northern California, the Manhattan Center, Watford Hall in London and the Troy Savings Bank Music Hall in upstate New York. "Unfortunately," says Lazarus, "the best recording halls are usually located in the noisiest surroundings.

"When setting up for a session, we frequently take quite a bit of time rolling the piano around the room until it sounds right to everybody, including the artist. I'll even place a baffle behind the pianist if he or she is having trouble hearing. I actually prefer to reserve the first day for setup. If the talent isn't available, or wants to save fingers, we'll hire another pianist to help us hone in on mic placement. It helps to stand away from the piano and hear the hall itself; flutter echo is a familiar nemesis with pianos and should be

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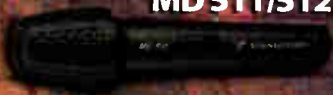
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minimized.

"The piano should arrive at the hall a day in advance to become acclimated to the room, particularly in cold or damp climates. And as we begin recording, it is essential that a full-time piano technician be on hand at all times. All instruments, even those with extremely solid pin-blocks, require continual tuning, voicing and regulation throughout the sessions.

"After we've determined the best position for the piano and everything's in place, I'll begin placing microphones and listening to the results through the monitor system. A great deal goes into the monitor system because with location recording in venues such as these, there really is no control room per se. We work very hard to make whatever 'control room' we are using sound as good as possible. On some occasions, we are less than confident about our playback situation—and if time allows—we will actually return quickly to our editing suites at Classic Sound to analyze results of different mic tests."

I asked Lazarus to probe further

into what defines the right mics and placement. He continues, "It's important for the engineer to have an internal aural concept of what the recording should sound like. If it doesn't meet with your expectations, keep experimenting.

"There's a priority I use when choosing mics and placement. The most important factor is the ratio of direct to reflected piano sound. Too much reflection and the recording gets washed out, too little and it becomes dry. The next priority is timbre. If you were to line up half a dozen Steinways side by side, each one would exhibit a totally unique timbral character. This goes way beyond such simple issues as the amount of bass or the 'brightness' of the instrument. The mic technique should complement the piano's tonal identity.

"Finally, the stereo image must be reconciled. It should be spread evenly between left and right speakers to enhance timbre and ambience. Again, too wide a spread and the piano becomes unfocused. Too narrow an image and the piano loses

life. One way to maintain focus while enhancing spaciousness is to mix a Blumlein pair near the piano and a spaced omni pair farther back. The omnis will normally be 80 to 90 percent of the sound, while the Blumleins are barely present—just enough to anchor a center image.

"Some of my favorite piano-recording mics include B&K 4003, Schoeps MK2s, Neumann TLM-50 and KM-131, and Sennheiser MKH-20. The Sennheiser MKH-30 also make a fantastic Blumlein pair. Mics feed Benchmark, Millennia Media and Boulder mic preamps and are sent line-level to a Neotek console, or are often sent by fiber-optic transmission directly to a Mitsubishi X86 20-bit recorder. We edit at 20 bits using a house clock throughout the entire chain. The monitoring system at Classic Sound utilizes Apogee D-to-A converters, Audio Research and Krell power amplifiers, and B&W 801 Matrix loudspeakers."

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duction credits with BMG, Koch, New World, Pro Arte, Ess.A.Y., Arabesque and Musical Heritage, Adam Abeshouse has successfully merged the musical and recording arts.

His most recent engineering/production assignment, with acclaimed classical pianist Garrick Ohlsson, is a multi-CD set of Chopin's complete works for solo piano. Abeshouse spoke with me from his home in Pelham, New York.

"Garrick just won the coveted Avery Fisher Prize," says Abeshouse. "It's only given once every few years, and the last musicians to win it were Yo Yo Ma and Emmanuel Ax. Ohl-

sson is a remarkable musician who's concertized all over the world. I'm very fortunate to be engineering and producing this new Chopin cycle for Arabesque.

"I'm attempting to maintain sonic consistency throughout the Chopin CDs, so we're recording all of them in the same hall with the same piano. Our Chopin room is one of my favorites: Theater C in the Performing Arts Center at SUNY in Purchase, New York. It's a 600-seat hall that sounds remarkable.

"Garrick uses a Bosendorfer Imperial Grand with the extended bass notes. It acclimates in the hall for a

couple of days before we begin a session. Garrick's piano technician is there with us for the entire duration of the sessions.

"In my opinion, the most important aspect to recording solo piano is balancing the instrument's direct presence with the bloom of the room. Ohlsson plays with a remarkable

**"The most important aspect to recording solo piano is balancing the instrument's direct presence with the bloom of the room."  
—Adam Abeshouse**

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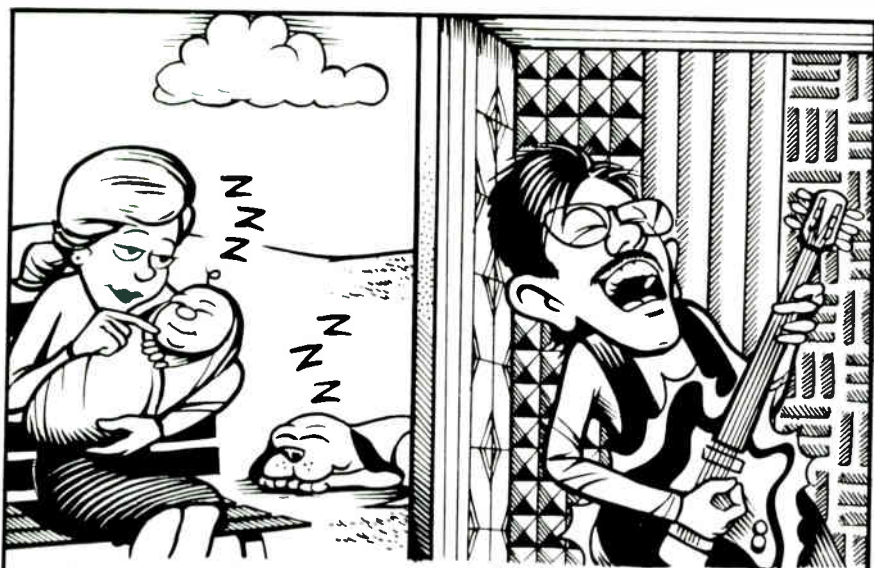
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**“If possible, it’s important to keep the piano out in the open with the band. And a good piano technician is essential.”**

**—Al Schmitt**

Garrick’s recording of the complete *Polanaises*, which will be released this month on Arabesque, is a wonderful example of this.”

### AL SCHMITT

After 40 years of active audio engineering, Al Schmitt needs little introduction. Having recorded practically everybody, he’s learned a thing or two about recording pianos. Schmitt spoke with me from his home in L.A.

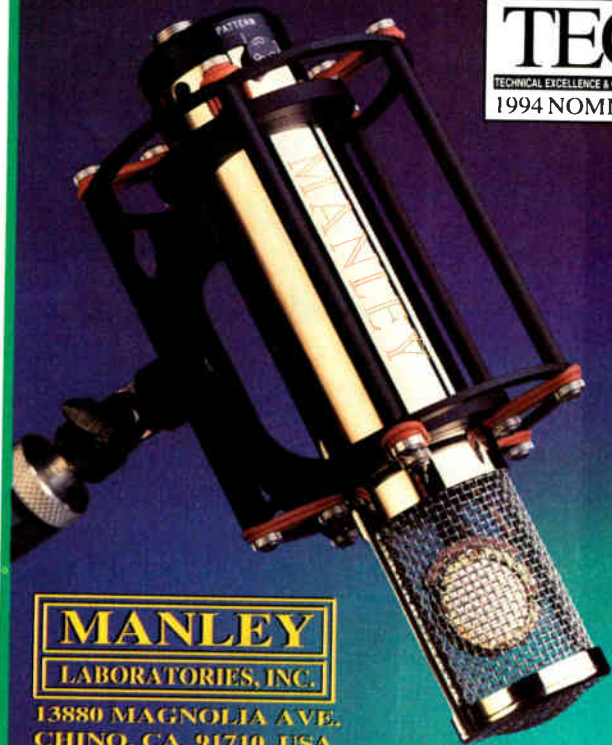
“I love recording the piano, yet it’s one of the hardest instruments to record well. There’s almost always something different I experience with each new piano session. If possible, it’s important to keep the piano out in the open with the band. And a good piano technician is essential—someone like Keith Albright here in L.A.; he’s the best.

“Piano recording technique depends on the style of music being played. On the [Grammy-winning] *Toto IV* album, the one with ‘Rosanna’ and ‘Africa,’ we recorded the piano live with the rest of the band; no overdubs, no isolation—the piano and band were in the same room. I needed a close pickup on David [Paich’s] piano with strong isolation, so I used a pair of C-12As really tight, directly over the hammers and spaced at one-third and two-thirds distance across. We kept the lid on a medium-stick.”

Schmitt continued by contrasting the Toto recording with a different format. “The recently released Bill Evans Trio record *You Must Believe in Spring* is softer jazz, again with everyone playing together in the same room—Capitol Studio A, in fact. I wanted to get the sound of the piano naturally mixed with the other instruments, so I experimented with a C-24 stereo mic setup in line with the piano’s curve, but up and away. Then I spread a pair of C-12s about 18 inches above the hammers and

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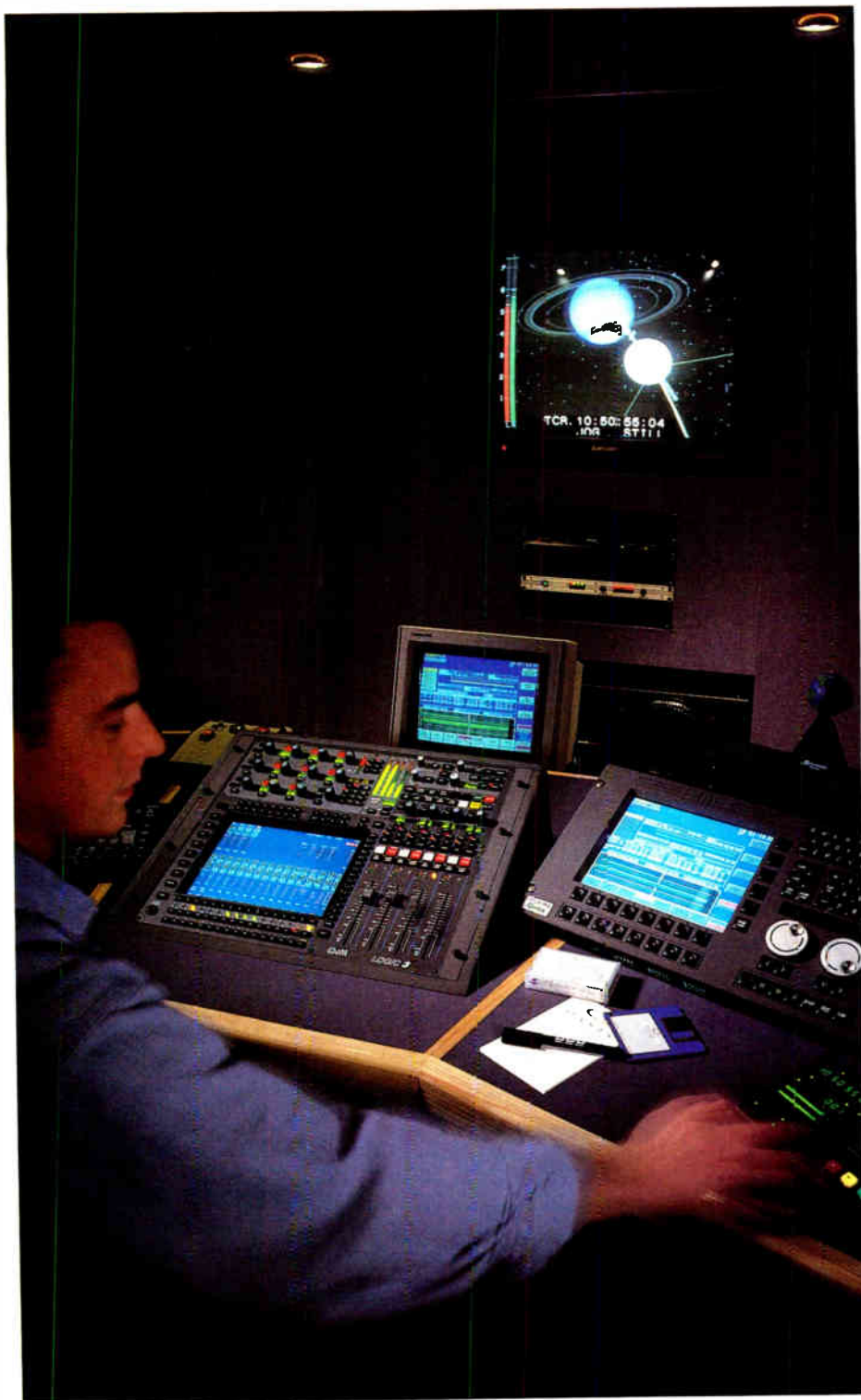


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"The first thing I liked about the new Logic 3 was its size. For all the things it can do, it's very compact, so it doesn't take up the whole studio. It makes the place more relaxed, so you can plan around it.

"Conceptually it's very different, but it feels like a normal desk. I got into it very quickly, there are no complicated manuals to learn.

"But it's still very powerful. You don't need to buy extra stuff like EQ and compressors, because they're already in there. And you don't have to touch the patch bay, because the Logic 3 has assignable routing.

"Yes, feel is very important, the ergonomics are very good. The physical contact you have with a desk is integral to mixing and even though there's a lot of automation with the Logic 3, you still get physical things to do. I really like its character.

"And its speed is a great asset. You never need to compromise, even if time is short. You always get exactly what you want.

"That's why a lot of people call it the 'What-iff' machine. Because there's so much it can do, you don't reach technical limitations.

"I did look at other systems, but you can't touch the heritage of AMS Neve. The Logic 3 and AudioFile really is a well integrated digital audio workstation. It's like having a thousand hands."

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mixed the two pairs until there was just the right amount of ambience and direct.

"A similar situation occurred with Joe Sample's records *Ashes to Ashes*, *Invitation* and *Spellbound*. We found this amazing instrument at Pro Piano in New York and did the recording in Studio A at The Power Station. Now, Joe likes to grunt and hum while he plays, so I cut some acoustic ceiling tiles and built a little

**"If budget allows, hire a piano technician for your recording sessions. It's remarkable what a difference it makes."**

**—Suzanne Ciani**

wall to isolate the mics from Joe's playing position. As with Bill Evans, I found the C-24 to be a natural in the piano's curved area. For direct sound, a pair of Schoeps MK21, in XY pattern as high as possible over the hammers worked fine. For these two records, we kept Joe isolated from the rhythm section."

Schmitt then recounted an unusual piano session. "Sometimes, you don't have an opportunity to place mics wherever you desire. With the Sinatra *Duets* record, Frank insisted that he be in the middle of the room with the pianist—lid down. Well, I knew this was not going to be the greatest piano sound ever recorded, so I made the best of a tough situation.

"First, I strapped two PZM mics to the underside of the piano's top. We moved them around a bit until there was a reasonable balance. Then, we fastened some of those C-Ducers onto the sounding board and selected the best-sounding locations. With EQ boosts in double figures, that piano came out like a barroom piano—which turns out to be what the song required anyway! The name of the tune is 'One for My Baby' and Phil Ramone, who produced it, still calls me and asks, tongue-in-cheek, 'How did you get that piano sound?'"

"I guess my favorite piano recording tools include some of Bill Schnee's or Allen Sides' C-12s and C-24s, the B&K 4000 Series, Schoeps MK21, the ELAM 251, and an occa-

sional U67. It really depends on the piano, room, player, music and mix. Even a rainy day can affect the sound of a piano. My favorite pianos to record, in order of increasing brightness, are the Bosendorfer, Steinway and Yamaha. I like to run the mics into old Neve mic preamps or Doug Sax's tube preamps. And I monitor on Doug's Mastering Lab speakers."

#### SUZANNE CIANI

Suzanne Ciani is one of those unique artists who have successfully bridged the gap between performing and engineering. On her solo piano album, *Pianissimo*, and the soon-to-be-released *Dreamsuite* project, Ciani played an active role in the recording process. She shares her experience with us.

"*Pianissimo* is a solo piano record on the Private Music label," says Ciani, "which was recorded at Yamaha corporate headquarters in Buena Park [Calif.]. For the style of playing on this project, I preferred the 9-foot concert grand; the Yamaha grands are my favorites. I've grown to really appreciate the consistency of these instruments, which is important when I'm touring—knowing what to expect sonically from town to town.

"My engineer, Peter Kelsey, and I like to experiment with different recording techniques. We'll typically reserve a half-day for trying all kinds of mics and moving them around until we get the right sound. The rooms at the Yamaha facility are not large, so we had to close-mic the pianos. We finally settled on a pair of Neumann KM-140s about one foot above the piano strings but near the long open edge. One mic was positioned near the keyboard end and the other near the far end. The top was fully open.

"We were hoping to use the Yamaha Disklavier system for final recordings, but it didn't have quite the resolution I expected, so we just recorded everything in real time. I wanted more of a concert hall sound than close-miking would normally provide. We found a combination of Lexicon 224XL and Bedini Audio Spatial Environment [B.A.S.E.] to create the ambience and depth we desired."

On Ciani's upcoming record, *Dreamsuite*, she plays her own compositions in concert with the Young Russia Orchestra of Moscow. She says,

—CONTINUED ON PAGE 232

**BETA** *Bio*



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**THE CLASS OF '94**

# A Look at Some of the Year's Best New Rooms



PHOTO MICHAEL GLUCK

*City Sound Productions, New York, N.Y. This relocated facility was designed by Francis Manzella of FMRTS and opened in September, 1993. Built as a dual-purpose personal/commercial studio, City Sound features house-synched digital recording and video lockup with 24 tracks of ADAT and a Pro Tools system. Equipment includes Tannoy DMT-15 main monitors, a 70-input Soundtracs Megas Studio console and Genelec near-fields.*

*Soundtrack, New York City. Pictured is Studio I, the ninth room at Soundtrack, opened in October '93. Based around a 48-frame API Legacy with 32 inputs and Uptown automation, the room was designed by Jim Falconer and features a 14x16-foot overdub booth, Tannoy DMT-215 monitors, and Studer 827 and Sony 3348 recorders. The control room features natural lighting from three large windows and a wide-open design for spaciousness and client comfort.*



PHOTO ROBERT LEWIS



PHOTO: TOM HUMPHREYS/APERTURES



**Basement Boys, Baltimore, Md.** Completed in December, 1993, this facility was designed by New York's System Development Group. Equipment includes consoles from SSL and Allen and Heath, a Sony PCM-33424S DASH multitrack recorder and Tannoy Double 15 monitors.

PHOTO: MAXWELL MACKENZIE



**National Public Radio, Washington, D.C. Studio 4A**, which opened in March this year, is one of fifteen suites designed by Russ Berger Design Group for NPR's new 152,000-square-foot broadcast center. This room features an SSL 4048 G Plus console, RPG diffusor blocks and a Sonic Solutions workstation, and it can handle a 40-piece orchestra.

PHOTO: ED FREEMAN



**Palm Tree Recording Studios, North Hollywood, Calif.** Designed by Chris Pelonis, this new room at producer Vassal Benford's Palm Tree opened in February. Though available commercially, the studio is heavily booked by acts on Benford's Vaz Records label, a joint venture with Arista. Incorporating diffusors and bass traps designed by Pelonis, the room includes Tannoy 215 DMT 11 monitors and a 48-channel Euphonix CS 2000 console.

PHOTO: JOHN LEHN



**Paisley Park, Chanhassen, Minn.** This famous facility's Studio A was redesigned by Glen Phoenix of Westlake Audio. Its extensive equipment list includes an SSL 8088 G Plus console with Ultimotion, a Westlake HR-1 four-way monitor system, and Yamaha and Auratone reference monitors.

**BMG Studios, New York City.** Mix A opened April 1, 1994. Acoustical design is by Francis Daniel of Shen Milson & Wilke, and architecture is by Victor Schwartz of ARCooustics. Equipment includes a Neve VR60 console with Flying Faders, and Genelec 1038A tri-amped monitors. The rear wall has an all-glass, primitive root diffusor system, offering a view of the city and the Hudson.



PHOTO: VICTOR SCHWARTZ AND ROGER BROOME

## THE CLASS OF '94



PHOTO: MICHAL PADO

**Hinge, Chicago.** Hinge, which opened in January, caters to the record and commercial music community. Based around Chicago's first Euphonix CSII 9656 console, the studio was designed by Stan Roller Inc. Other equipment includes an Otari MTR-90 II 24-track, 24 tracks of ADAT, Tannoy 215 DMT and Genelec 1031A monitors.



PHOTO: DAVID TEEFT

**Woodhouse Recording, Chesapeake, Va.** Beginning in 1992, Larry K. Carr tore down one end of his two-story home to refurbish and enlarge his 24-track studio, Woodhouse, which has been in commercial operation since 1988. Carr handled the studio and system redesign himself. Reopened in January '94, the studio includes a 40-channel Amek Hendrix console with Supertrue automation, a Studer A800, and Tannoy System 10 II DMT monitoring.

**Major Recording, Wheaton, Md.** After 35 years in business, Major Recording underwent substantial renovations, designed by owner John Major, with system design by Washington Professional Systems. This room, which reopened last September, is equipped with a Sony MXP-3036 console with 8-wild faders and computer automation, JBL monitors and an 1899 Steinway grand piano.



PHOTO: GARY WALPOLE

**Rockingchair Recording Studios, Memphis, Tenn.** Studio A, designed by Murphy Odom and Associates, went online in December, 1993, and features a Trident Series 90 console with Trimix automation, an Otari MTR 90-II, 24 tracks of ADAT, custom JBL 4435 monitors and a large selection of near-fields.

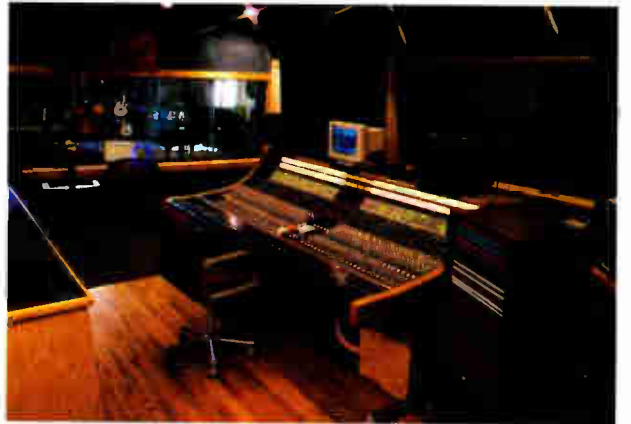


PHOTO: DION OGUST

**Dreamland Recording, W. Hurley, N.Y.** Studio owner Joel Bluestein and engineer David Cook redesigned this facility with the help of architect Vincent A. Van Haaf. An API 48-input Discrete Series console with Flying Faders is featured, along with Studer and Otari recorders, custom JBL 4350 monitors and more than 100 microphones.

**Southern Sound Studio, Knoxville, Tenn.** Opened in December, '93, this Steven Durr and Associates-designed 24-track facility serves a variety of music and jingle clients. Southern Sound features a custom-designed TAD monitoring system, a DDA Profile 56-input console with Uptown automation, and an Otari MTR-90 II recorder.



PHOTO: GEOFF KILMER/PHOTO WORKS

PHOTO: RUDY ARIAS



PHOTO: ROBERT WOLSCH

**Classic Sound, New York City.** This new audio post facility, designed by Walters-Stork Design Group, specializes in classical music and jazz. Classic Sound opened August 1, 1993, and is equipped with B&W 801 Matrix loudspeakers, Krell power amps, and digital editing on the Sony DAE 3000/PCM 1630 and Sonic Solutions. The facility also maintains complete mobile recording units.



PHOTO: GEORGE HALLOWELL

**Ultrasonic Studios, New Orleans.** Studio Pacifica Ltd. redesigned the main studio last July, adding a variably angled reflective ceiling with concealed panel absorbers. An existing steel girder was disguised with a mirror and curtain track trompe l'oeil. Equipment includes a 52-input Sony console and monitors from JBL, Tannoy and Yamaha.

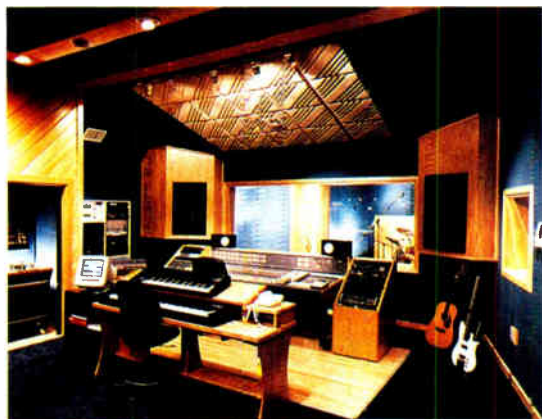


PHOTO: ELIZABETH CLARK/IMAGE INC

**Houston Sound Studio, Houston, Texas.** This facility opened January of this year and, according to manager Randy Miller, boasts the city's only Studer 24-track with Dolby SR. Based on a Westlake Audio design modified by Miller, Houston Sound offers a Sony MXP-3036 console with JL Cooper automation, Tannoy monitors and outboard gear from Lexicon, Eventide, Yamaha and Roland.



PHOTO: JON LAMAR

**Anthem Recording, Phoenix, Ariz.** Anthem opened at its new location last December, in a facility designed by owner Billy Spoon with John Gibson of EAR Professional Audio and Jim Harrison, with consultation by Acoustic Science Corporation and Cutting Wedge. Equipment includes a 56-channel Otari Concept I console, 24 tracks of ADAT, a Tascam MS-16 16-track, a Pro Tools system, and Genelec 1031A and Yamaha NS-10M monitors.



PHOTO: ED COLVER

**Cyberia, Santa Monica, Calif.** Studio A was designed by BOTO design and completed in October, 1993. The facility offers a custom Soundcraft 80-channel, 160-input, 32-bus console with Neve Flying Faders, and recorders by Otari, Akai, Alesis, Studer, Tascam, Panasonic, Sony, Magnavox and Nakamichi.



PHOTO: PHOTOGRAPHY BY DONJEL MONIE

**Bazzbo Productions, LaVerne, Calif.** With a new design by Carl Yancher of Lakeside Associates, Bazzbo (originally an in-house production facility for A to Z Studios) opened to commercial clients in January. The facility offers a D&R Orion console, a Sony APR 24-track, a Sound Tools system, and Meyer HD-1 and Yamaha NS-10 monitoring.



# NEW

# EW

# DEVELOPMENTS IN ACOUSTICAL MATERIALS

by George Petersen

Let's set our clocks back a half-century. Though we might look back to that Golden Age of audio with a wishful eye—perhaps toward picking up a dozen mint-condition tube microphones for a pittance—in terms of studio design, those early days were no picnic. Acoustical measurement tools were virtually unknown. Choices in commercially available acoustic materials were extremely limited—usually no more than perforated sound tiles, drapes and perhaps some furniture stuffing placed behind wall panels or into home-brew gobos. And the chances of finding spec sheets on the performance of acoustical materials were slim at best.

Fortunately, things are different today. Computer-based tools have made measurements of reverb time and time/energy/frequency curves into a simple matter of selecting the right peripherals for your PC. And there are now dozens of acoustical materials to choose from, including absorbers, diffractors, diffusors, reflectors and combination materials offering multiple characteristics simultaneously. Whether implement-

ed into a new design or brought in to tweak an existing room, the right acoustical materials can make a substantial improvement in the audio character of any acoustical space.

Acoustical materials fall into three general categories: absorbers, diffusors and reflectors. The latter category needs no special explanation. Reflectors are "hard" surfaces with the ability to reflect or bounce sound. Typical reflective surfaces in the studio are glass, wood paneling, hardwood floors and, occasionally, exotics such as suspended overhead Lucite panels. A few well-placed reflectors can go a long way toward livening a dead-sounding, over-damped room.

Diffusors are surfaces that redi-

The right acoustical materials can make a substantial improvement in the audio character of any acoustical space.

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rect incident (incoming) sounds into a wide, diffuse field, with the shape and design of the diffusing device controlling the directionality of the resulting sound. Commonly used along rear walls—to create a sense that the listener is hearing sounds in a much larger space—diffusion materials are also useful on side walls, ceilings and occasionally as free-standing units that can be moved to various locations within the studio, depending on acoustical needs.

In 1984, RPG Diffusor Systems (Upper Marlboro, Md.; 310/249-0044) launched the QRD™ diffusor, the first broad-bandwidth, reflection phase

grating RPG™ sound diffusor. The single-dimension RPG consists of a computer-designed series of wells of equal width but differing depths, separated by thin dividers. New from RPG is Primitive Skyline, a two-dimensional diffusor, based on primitive root number theory. The 2x2x8-foot unit uniformly scatters sounds arriving from any direction into the half-space and is called Skyline because its profile resembles a city skyline. RPG's Golden Pyramid is a symmetrical, pyramid-shaped diffusor designed for use in applications where cost is an issue, such as project studios or covering large expans-

es of ceiling. Both products are made of lightweight, fiber-reinforced plastic and can be mounted in T-bar ceilings or attached to walls with supplied Velcro strips.

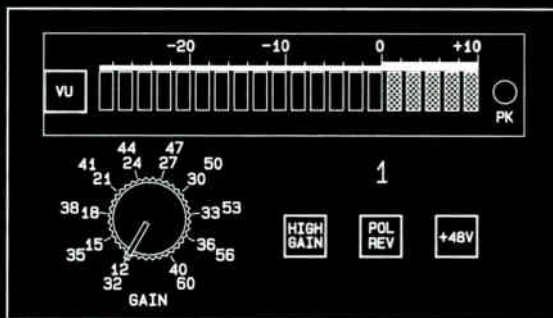
New from RPG is Acoustic Tools™ for Project Studios, a line of low-cost, high-performance acoustical treatment packages for small studios. Three systems are available for various-sized rooms and include wall and/or ceiling Abflectors, Skyline 3-D Diffusors and B.A.S.S. (Bass Absorbing Soffit System™) bass traps for wall or ceiling installation.

Systems Development Group, of Frederick, Md. (301/846-7990), offers the Cutting Wedge line of foam absorbing tiles, as well as the Art Diffuser (a broadband acoustic diffusor sold in 15-inch squares or 15x30-inch rectangles.) The original line of wooden diffusors has been expanded with the Model E, constructed in a 15x15x9-inch molded polystyrene form. Debuting this fall is the Model C, a reinforced thermoplastic diffusor designed for installation in 2x2-foot dropped ceiling panels. Also due this fall is the Structural Member diffusor (Model B), which at 16x2 inches wide, can be combined with three other Model B diffusors and incorporated into a wall made of standard 16x8-inch concrete blocks. By varying the number of SMDs (and the placement of the four individual SMD blocks in each block), a variety of diffusing walls can be created.

Absorbers can appear in just about any form, but most commonly as acoustical foam panels. These can vary widely in size, shape, color, fire rating (an important consideration when used in businesses and public places) and absorption characteristics. A common misconception is that there is some wonder-foam or -fabric that can soundproof a room. Unfortunately, soundproofing involves increasing the sound transmission class (STC) of the wall itself, which typically requires techniques such as floating floors and double-wall construction. The realities of physics dictate the usefulness of foam absorbers in any given situation, but these products are most effective at attenuating mid and high frequencies, and are often used to eliminate unwanted reflections and reverberation, such as increasing intelligibility in vocal booths.

Alpha Audio (Richmond, Va.; 804/346-8350) has expanded its line

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of absorber products (they also distribute the Alpha Pyramid foam) with the AlphaSorb Panels. These rigid, high-performance absorbers are available in 1- or 2-inch thicknesses, in standard and custom sizes up to 4x10 feet. Covered in a wide selection of fabrics, AlphaSorb panels are Class 1 fire-rated and install easily on ceilings or walls.

Hot House Professional Audio Products (Highland, N.Y.; 914/691-6077), markets Anechoa, an acoustical batting material originally developed for internal dampening in speaker enclosures, but now available in 2-foot-wide, 100-foot-long rolls that are said to meet tough NYC fire codes for flame retardance. Although only 3/4-inch-thick, this cellulose batting supposedly has an absorption characteristic that is equal to several inches of fiberglass. The Anechoa rolls can be shipped by UPS and can be covered in fabric to suit any decor.

Illbruck (Minneapolis, MN; 612/521-3555) manufactures Sonex acoustical products, available in thicknesses ranging from one to six inches, in numerous sizes and colors.

Sonex has expanded its product line with Sonex Fabrix, created from a fire-resistant fabric and melamine foam and available in a variety of colors. The new material is designed for applications where some absorption is necessary but a product more aesthetically pleasing than thick foam is required. Another new addition to the Sonex line is Classix ceiling tiles, which snap into existing 2x2-foot suspension grids. Classix are made of a fire-resistant, open-cell, melamine foam that meets Class 1 building requirements. Three color choices, five pattern/thickness combinations and custom designs are offered.

Netwell (Minnetonka, Minn.; 612/939-9845) manufactures a variety of acoustical materials, such as foam pyramid- and wedge-shaped absorbers, with optional Class-A fire ratings. Netwell's Acoustical Wedge is an absorbing foam panel measuring 24x18-inches, with other sizes and different facial convolutes available. One of the company's unique offerings is Silence Wall Art, which consists of acoustic wall panels that can be decorated with computer graphics in stock designs or custom

elements, such as a client's corporate logo, etc.

The Polonis Edge, from Pelonis Sound & Acoustics, (Downey, Calif.; 310/869-0944) is a large, wedge-shaped, broadband absorber/reflector designed for ceiling or wall mounting. The device uses multiple internal chambers and is said to provide reflection characteristics at high frequencies and trapping/absorption at frequencies below 400 Hz. Multiple units can be combined to create a modular studio acoustical treatment system.

Silent Source (Northampton, Mass.; 413/584-7944) carries a variety of acoustical materials on a retail basis but also distributes Hush Foam (anechoic wedge-shaped absorbers) and Silent Pyramids (pyramid-shaped foam panels), both available in 2-/3-/4-inch thicknesses and assorted colors. The company also markets fabric-wrapped wall panels in either suede-look cloth or wall art panels in custom and stock designs, as well as Flamex acoustical tiles for standard 2x2-foot ceiling grid installations.

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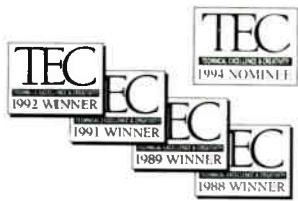
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Foam (Indianapolis, Ind.; 317/251-2992) include Studiofoam, a wedge-foam in 1-1/2-1/4-inch depths in 2x4-foot or 4x8-foot panels in assorted colors, with State of California fire code rating. New from USAFoam are Wedgies, 12x12-inch foam squares sold in 20-piece cases; and 12-inch-deep wedges for bass trapping applications.

Acoustic Sciences Corporation (Eugene, Ore.; 503/343-9727) is best-known for its Tube Traps™, which offer midrange diffusion with low-frequency absorption. New from ASC are Custom Super Traps, a corner-loaded bass trap with a Helmholtz resonator providing high-Q tailoring of low frequencies to specific customer requirements. The Standard Super Trap is a vented bass trap combining an outer fiberglass (resistive) layer with an inner air space; if desired, the air volume of the inner section can be increased using an adjacent chamber. ASC's latest product is a project studio treatment system, which combines a selection of its Sound Flags corner/perimeter bass traps with wall panel attenuating reflectors, creating an affordable acoustical control package.

One of the most unusual absorption materials is Coustone, from Systems Development Group (maker of the Art Diffuser). A formed product of crystallized flint in a compressed aggregate (similar to paving stones), Coustone is an attenuated stone facing for indoor (studio or music venue) or outdoor applications, such as amphitheatres or sports facilities. The material is available in 20x20-inch square slabs that are 1 1/8 inches thick. According to SDG, Coustone is fairly lightweight for a stone material and can be made in numerous colors.

One other important yet often overlooked class of acoustical materials are isolators. Neoprene slabs are often used in floating floor and wall construction, and one new entry in this area is D-Vibe, from Hot House Audio Products. Sold in sheets and pads, D-Vibe is said to offer better isolation than neoprene and can be used not only for floating floors but also under monitors in speaker soffits or between meter bridges and console-top speakers. Another new development in isolators comes from Netwell, which offers dB-Block, a 0.1-inch thick isolation material that can be placed between layers of gypsum wallboard. ■

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All inputs feature professional standard connectors: TRS balanced line inputs, and individual 48 v phantom power switch (avoid embarrassing pops and fully power your hottest, power hungry microphones.) Our mic/line switch works as a 20 db pad on the XLR connector allowing you to plug into balanced XLR line level inputs when you need to.



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All four discrete subgroup outputs, Left, Right and Main output, feature balanced XLR connectors and TRS insert points for simple interfacing of your finest signal processors.



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Stereo inputs featuring more EQ than most consoles have on their mono inputs. With two sets of inputs per channel and an A/B switch, you have the flexibility to select between 4 stereo sources (keyboards, CD etc.) For multitrack recording, used in conjunction with the 4 AUX/tape returns, you can bring in 8 tracks of tape while still tracking all of the other 10 inputs and getting a full function studio monitor feeds as well!



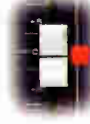
### Auxiliary Section

6 discrete auxiliary sends selectable pre-fader/post-fader for monitor or studio headphones, sub-disk or post fader for effects sends. Flexibility not found on mixers costing hundreds, even thousands more!



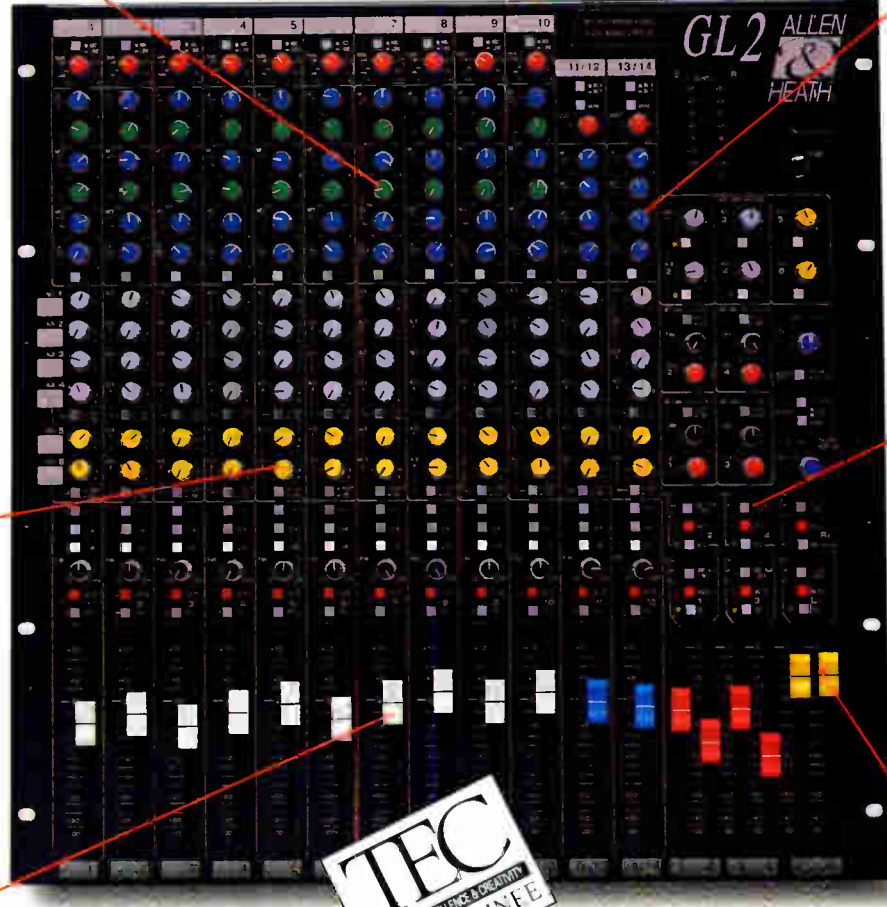
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Four discrete subgroups, left and right outputs, and the AUX reverse section allow the GL2 to adapt in ways impossible on other compact mixers.

## Under the Hood

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# Acoustics for the '90s

HOW  
TO  
KEEP  
UP



by Chris Stone

Studio time buyers expect their acoustic recording environments to be fresh-looking and sonically up-to-date. This is what keeps the clients coming back: the comfort of knowing that "their" studio has a contemporary feel, the sonic clarity everybody demands today, and a competitive price and proper equipment. Once they are assured of that, they can get on with the important business of making music. They are secure that it will sound right almost anywhere they play it back.

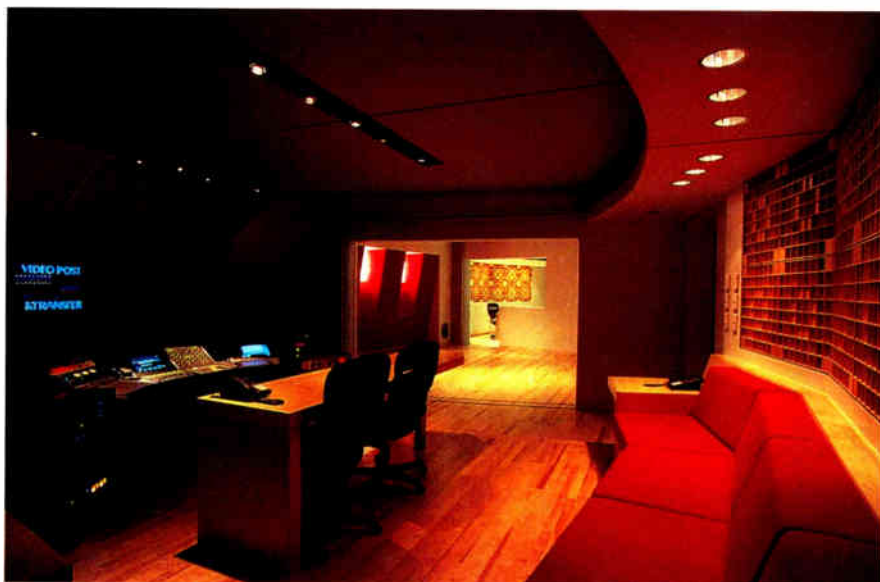
Achieving that level of acoustic acceptability in your facility is no longer a totally subjective matter. In the past, acoustic recording environments that sounded totally different to even the untrained ear could be commercially successful. That was yesterday. Now, with 20- to 24-bit digital clarity available, there are specific response requirements with increasingly specific parameters. Recorded material has to sound the same wherever or however you listen to it—anywhere in the world. That's right, the world. Studios are the same almost everywhere: same problems, same equipment, same varying prices and levels of quality. Same acoustic designers for the top of the line.

When we built the first Record Plant studio, my partner Gary Kellgren, one of the great audio engineers, knew in his head how a control room or studio should sound. After a lot of trial and error (like

putting up and tearing down walls several times after drawing the dimensions of the control room or the isolation booths on the floor with chalk), he finally got the rooms to sound the way he wanted. And then we cranked out the hits. In the beginning, we were given a lot of leeway by our clients to "fix it in the mix." That was until we walked into TTG Studios in L.A. one night in 1968 and heard this incredible playback in a control room that some tech maintenance guy there by the name of Tom Hidley had designed. We had been turned on to the studio by Jimi Hendrix, who had done some overdubs there during the recording of *Electric Ladyland*. Suddenly the acoustic world changed for us. Hidley joined us, and from our point of view, we proudly set out to provide a new standard for the clarity and depth of sound quality in an acoustically controlled environment.

What about today? Where do you fit in? What pleases you, and what do you demand of a control room or acoustic studio sound so that the quality of the music meets your standards? Whom do you

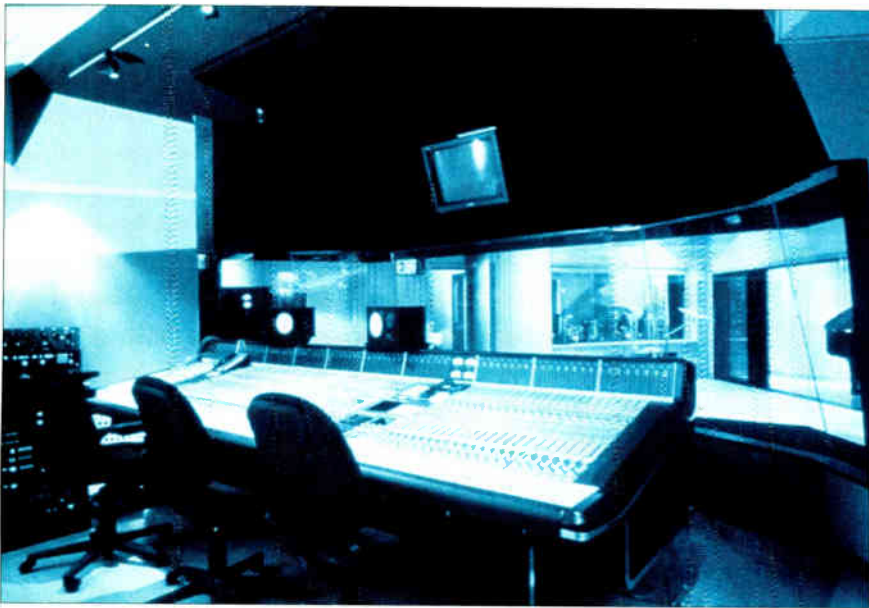
**Right: Russ Berger Design Group designed an audio area for Dallas-based, Video Post & Transfer that includes a Scenaria room, a networked SSL ScreenSound room, a recording Foley stage and a central Machine room.**



Ross – Wembley Arena. Roskilde Festival with Mieskuuro Huutajat, Clawfinger, Sepultura, Gnags, Lucky Dube, Peter Gabriel, No means No. 2nd Diana Ross – Wembley Arena. Hot Shoe Shuffle Queens Theatre, London. Sarratt Classical Music Festival, Sarratt, Hertfordshire. Roskilde Festival with Skanbeat, Rollins Band, Sandmen, George Clinton & the P – Funk All stars featuring Parliament / Funkadelic, Mercyful Fate. Peter Gabriel – Tourhout Festival. 3rd Pink Floyd – Camp Randall, Madison. Depeche Mode + Primal Scream – Pine Knob Music Theatre Clarkston, Diana Ross – Wembley Arena. Hot Shoe Shuffle Queens Theatre, London. Peter Gabriel – Werchter Festival. Roskilde Festival with The Posies, Inspiral Carpets, ZZ Top, The Levellers. Sarratt Classical Music Festival, Sarratt, Hertfordshire. 4th Depeche Mode + Primal Scream – Pine Knob Music Theatre. Hot Shoe Shuffle – Queens Theatre, London. 5th Pink Floyd – CNE Stadium Toronto. Diana Ross – SECC Glasgow. Hot Shoe Shuffle – Queens Theatre, London. 6th Pink Floyd CNE Stadium Toronto. Depeche Mode + Primal Scream – Riverbend Music Centre Cincinnati. Diana Ross – SECC Glasgow. Peter Gabriel – North Sea Jazz Festival – The Hague. Hot Shoe Shuffle – Queens Theatre, London. 7th Pink Floyd – CNE Stadium Toronto. Depeche Mode + Primal Scream Marcus Ampitheatre Milwaukee. Hot Shoe Shuffle – Queens Theatre, London. 8th Depeche Mode + Primal Scream – Deer Creek Music Centre Noblesville. Out in The Green Festival with The Hooters, Steve Lukather & Los Lobotomys, Chris Rea, Peter Gabriel. Hot Shoe Shuffle – Queens Theatre, London. 9th Pink Floyd – RFK Stadium Washington. Peter Gabriel Sonoria 94 Milan. Out in The Green Festival with Aerosmith, Whitesnake, Fish, Jimmy Cliff, Pride & Glory, 4 Non Blondes. Hot Shoe Shuffle – Queens Theatre, London. 10th Pink Floyd – RFK Stadium Washington. Out in The Green Festival with ZZ Top, Paradise Lost, The Pogues, Helmut, Die Toten Hosen. Hot Shoe Shuffle – Queens Theatre, London. 11th Hot Shoe Shuffle – Queens Theatre, London. 12th Pink Floyd Soldiers Field Chicago. W.O.M.A.D with Caifanes, Geoffrey Oryema, Arrested Development, Stella Chiwise, Shikisha, Ashkabad, Mustapha Tettey Addy, Lucky Dube, Guo Brothers, Live, The Levellers, Peter Gabriel, Midnight Oil, Songcatchers Lakewood Ampitheatre Atlanta. Hot Shoe Shuffle – Queens Theatre, London. 13th Hot Shoe Shuffle – Queens Theatre, London. 14th Pink Floyd Silver Dome Detroit. W.O.M.A.D with Caifanes, Geoffrey Oryema, Arrested Development, Stella Chiwise, Shikisha, Ashkabad, Mustapha Tettey Addy, Lucky Dube, Guo Brothers, Live, The Levellers, Peter Gabriel, Midnight Oil, Songcatchers – Polarix Ampitheatre Columbus. Hot Shoe Shuffle – Queens Theatre, London. 15th Pink Floyd Silver Dome Detroit. W.O.M.A.D with Caifanes, Geoffrey Oryema, Arrested Development, Stella Chiwise, Shikisha, Ashkabad, Mustapha Tettey Addy, Lucky Dube, Guo Brothers, Live, The Levellers, Peter Gabriel, Midnight Oil, Songcatchers Jones Beach Ampitheatre New York. Hot Shoe Shuffle – Queens Theatre, London. 17th Pink Floyd – Giants Stadium East Rutherford. W.O.M.A.D with Caifanes, Geoffrey Oryema, Arrested Development, Stella Chiwise, Shikisha, Ashkabad, Mustapha Tettey Addy, Lucky Dube, Guo Brothers, Live, The Levellers, Peter Gabriel, Midnight Oil, Songcatchers – Saratoga Performing Arts Saratoga. Hot Shoe Shuffle – Queens Theatre, London. 18th Pink Floyd – Giants Stadium East Rutherford. Hot Shoe Shuffle – Queens Theatre, London. 19th W.O.M.A.D with Caifanes, Geoffrey Oryema, Arrested Development, Stella Chiwise, Shikisha, Ashkabad, Mustapha Tettey Addy, Lucky Dube, Guo Brothers, Live, The Levellers, Peter Gabriel, Midnight Oil, Songcatchers – Great Woods Performing Arts Centre Boston. Hot Shoe Shuffle – Queens Theatre, London. 20th Hot Shoe Shuffle – Queens Theatre, London. 21st Hot Shoe Shuffle – Queens Theatre, London. 22nd Pink Floyd Stadium Alvalade Lisbon. Hot Shoe Shuffle – Queens Theatre, London. 23rd Pink Floyd Stadium Alvalade Lisbon. Hot Shoe Shuffle Queens Theatre, London. 24th Hot Shoe Shuffle – Queens Theatre, London. 25th Pink Floyd San Sebastian. Hot Shoe Shuffle – Queens Theatre, London. 26th Hot Shoe Shuffle – Queens Theatre, London. 27th Pink Floyd – Olympic Stadium Barcelona. Hot Shoe Shuffle – Queens Theatre, London. 28th Hot Shoe Shuffle – Queens Theatre, London. 29th Hot Shoe Shuffle Queens Theatre, London. 30th Pink Floyd – Chateau de Chantilly Paris. Feile' festival with Swampshack, Sack, Grant Lee Buffalo, Del Amitri, Aimee Mann, The Beautiful South, Sharon Shannon, The Stunning, Crowded House, House Of Pain, Primal Scream, Sound Crowd Orchestra, The Prodigy. Hot Shoe Shuffle – Queens Theatre, London. 31st Pink Floyd – Chateau de Chantilly Paris. Feile' festival with Glee Club, Puppy Love Bomb, Honky, Kerbdog, Yothu Yindi, Aslan, Bob Geldof, Crash Test Dummies, Blur, Rage Against the Machine, Cypress Hill, The Cranberries, Elvis Costello, The 4th Dimension. Hot Shoe Shuffle – Queens Theatre, London. **Production and Sound Personnel** – For Depeche Mode: Baron J. Kessler, Andy Franks, Alan Sullivan, Lee Charteris, Tom P Wilson, Jon Lemon, Anzac (Ian Wilson) and BRP crew Dave Bracey, Scott Ashtom, John James, Paul Johnson. For Hot Shoe Shuffle: David Atkins and BRP crew Mark Solomons, Lorna Watson. For Diana Ross: Richard Glasgow, Chris Adamson, James Williams, Michael Warren, Ron Reaves, Kem Parkin and BRP crew Dick Webber, Dee Miller, Anna Bendall, Steve Spencer. For Pink Floyd: Steve O'Rourke, Robbie Williams, Tara Goldsmid, Jerome Walton, Mike Epstein, Timm Woolley, Tony Howard, Marcus Shields, Jane Senn, Juliette Slater, Dave Russell, Mark Fisher, Steve Thomas, Paul Maudrain, Alia Dann, Liz Holden, Phil Taylor, Andy Jackson, Seth Goldman and BRP crew Colin Norfield, David Lohr, Paul Addison, Alan Bradshaw, Gerry Fradley, Jock Bain, Sarne Thorogood, Pete Baigent, Paul Giansante. For Jackson Browne: Donald Miller, John Langenstein, Mike Sexton, Dennis Scrimo, Buford Jones, Bill Szocska and BRP crew Gareth Williams, Dave Dietrich. For Roskilde Festival: Paul Jensen, Neils Bundagard, Leif Skov and BRP crew David Pringle, Micky Sturgeon, Doug Pope, Simon Thomas, Guy Gillen, Chris Hey, Kez O Dwyer. For Out in The Green Festival: Hienz Meier, Harry Sprenger, Chris Goetz, Abbett and BRP crew David Pringle, Micky Sturgeon, Doug Pope, Simon Thomas, Guy Gillen, Kez O Dwyer. For Peter Gabriel: John Gray, Dave Taraskevics, Lourdes Gonzalez, Peter Walsh, Bryan Olson and BRP crew Huw Richards, Rick Pope. For W.O.M.A.D: David Stallbaumer, Joe Wirsing and BRP crew John Gibbon, Dave Bracey, Anna Bendall, John James, Micky Sturgeon,

Gareth Williams, Craig Lilley,  
Bruce Bradley, John Shearman, Rod  
Price, Kez O Dwyer. For Sarratt Music Festival:  
Mr & Mrs Mclean, The Cancer Research Fund, and  
BRP crew Dave Dietrich, Chris "Privit" Hedge, Craig  
Lilley, Chris Mounsor. For The Feile' Festival: Denis  
Desmond, Padraic Boran, Caroline Henrys and BRP crew  
David Pringle, Gareth Williams, John Gibbon, Doug Pope,  
Simon Thomas, Guy Gillen, Craig Lilley John Shearman.  
**Britannia Row Personnel** – Vava Tsioupra, Martin Williams,  
Chris Mounsor, Aideen Jennings, Suzanne Martyn,  
Catherine Grant, Pete Brotzman, Steve Spencer, Chris Hey  
Bev Smedley, Ian Callander, Pascale Lecomte, Nick  
Conway, Gerry Wing, Rene Iacopini, Darrell  
Martyn, Greg Smith, Steve Hyde,  
Mick Staplehurst, Eddie Mulrainey





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have to please? What do your clients expect from your room(s)? How do you acoustically satisfy these expectations with your budget and space limitations? Get professional help!

There are a number of excellent acoustical designers qualified to answer your questions. *Mix* interviewed four of the best to compare the Do's and Don'ts of 1994 recording studio acoustic design and implementation.

Tom Hidley (The Dean) has designed more than 600 and built more than 500 recording studios in countries around the world. He currently concentrates primarily on multimillion-dollar ground-up facilities such as BOP in South Africa (three identical 12Hz control rooms). Today, his attention is divided between the building of a large, multistudio film post-production complex in Paris and several other multiple-room projects in other parts of the world. He does not need more work. In fact, he has tried to retire at least three times. If you want him, you have to convince him that your project "presents extremely difficult acoustic or isolation problems to overcome and/or pushes the frontiers of acoustic performance to new sonic plateaus" (and that budget is not a problem). I think of him as the Frank Lloyd Wright of facility designers, and I would never build or rebuild a room without his input.

John Storyk, of Walters-Storyk Design Group in Highland, N.Y., is a Princeton graduate who also has more than 500 rooms to his credit.

The first time I met him many years ago, he had a Skil saw in his hand, and I thought he was a carpenter, not the studio designer who had been hired. His design concentration has been in the U.S., with studios such as Margarita Mix in L.A. and Time Machine in Vermont, with a sprinkling of projects in other countries, including a new multistudio complex in Malaysia (see "International Update," p.156). He currently is working on 32 projects of all shapes, sizes and budgets, from small home studios to the above-mentioned complex. A three-time TEC Award winner, he truly lives for the thrill of a new design challenge. His wife and partner, Beth Walters, is an interior designer, which enables them to provide complete design services.

Russ Berger of Russ Berger Design Group in Dallas is a former studio owner and a hands-on kind of guy who has been involved in the design of around 600 studios of all types and sizes. His credits range from National Public Radio's headquarters and studios in Washington, D.C., to Dead Aunt Thelma's in Portland, Ore., as well as a number of home studios. Also a multiple-TEC Award-winner, Berger is truly multifaceted and says he learns something from every job. "We help our clients, no matter what their size, strategize what relationship their facility design will have to their business profit centers, so that the philosophy and direction of the business drives the major design decisions." And they do it well.

The "new kids on the block" are studio bawtun in Los Angeles. Peter Maurer and partners Peter Gruen-

eisen and George Newburn have been together in the studio design business for more than four years. They have built more than 60 studio rooms worldwide, including Bad Animals Studio X in Seattle, for which they won a prestigious award from the American Institute of Architects, and the recent upgrade of Record Plant, Los Angeles, which earned them their second TEC Award nomination. They specialize in high-end studio design but are quick to emphasize that "high-end design does not have to mean high cost." They currently are working on projects ranging from a few thousand to millions of dollars. Their staff includes eight architects.

The answers below summarize the panelists' responses, with attribution where appropriate.

***What questions should a client ask a potential studio designer so that they know quickly what the project involves and what it would cost?***

Most important is: "Where can I visit three or four of your recent rooms and speak to the owners about their satisfaction, on all levels, with your work?" All levels means: Did the job come in on time and on budget? Were there any problems with the design meeting local building codes? What is the sonic performance compared to what was promised? How do the rooms "feel"? Are the clients comfortable and happy with the recorded results in this designer's signature type of environment, no matter where they play back? Second, know what you want and what you can afford to pay for building your studio and control room.

Key questions that a designer might ask are: What are the space limitations (if you are locked into a piece of real estate)? If it is a new facility, it is best to engage the acoustical designer before you commit to your space because an expert knows what can be accomplished in a given space. If you have several potential locations, make a video and send it to your potential designer to save their time and your money. A designer also will ask you: How many musicians do you want to record in your room? What is the budget for the list of equipment you have decided upon for your control room (which will help to determine the minimum room size required)? What are the amenities you must provide, such as lounges, a

kitchen, accommodations, etc.? All of these require space and integration with the studio design. If you know what you want before the designer puts pencil to paper, you save time and money. The designer sells time just like you sell studio time. Changes to the design have the same effect as when you listen to a finished mix and realize that you have to do it over again because it just is not right; by the time you realize it, you can't afford the time or the money.

*What are the economics of studio design and construction? In your experience, what is the cost per square foot to design, build and decorate a ground-up structure in an existing space, or to design and renovate an existing studio?*

Russ Berger had a great response: "Asking how much a studio will cost to build or rebuild is a little like the question of how much does a car cost? That might mean going to the used car lot to find something for a few hundred dollars or custom-designing a Formula One racer for a million or two. Or it might mean buying

a new set of tires for the car you already own and running it through the car wash. What's important is that you spend your money wisely, which means balancing the desired results against the budget it takes to get there. The key word becomes 'compromise.' There is no magic number. The more you can afford, the better it is going to sound, assuming you have enough real estate to be flexible."

Three of the designers came up with a standard range of \$50 to \$200 per square foot; the other said the cost could go above \$400. Our experts were understandably nervous about answering this one, because it depends on the location, the cost of labor and materials, local building codes, the sonic performance and "noise floor" you demand, and your time constraints (another reason you should pick an acoustic designer as early in the project-planning phase as possible). For example, Hidley has been known to buy all the building materials in the U.S. for a particular project (down to the last nail and roll of speaker cloth), load them into a 747 cargo jet and fly them to some re-

mote studio site. This is one very good reason that the dollar cost per square foot varies.

The designers also cautioned that smaller does not necessarily mean cheaper. A smaller facility can be more expensive per square foot because of isolation requirements and ergonomics, which require much more concentrated design efforts and creative ways to meet installation requirements.

All agreed that "ground up" is ideal because you can build in flexibility. Most of us dream of starting from the ground up and have to settle for budget compromise. You know the cost of equipment up front, but the cost of construction always changes because there is inevitably something you want to add or change that you couldn't have known about when you approved the plans and accepted the bid. Believe me, I have been there.

*Clients expect recording studios to make cosmetic and acoustical improvements continually to keep their studios up-to-date. What advice*

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would you give to studio owners about how to do this most efficiently? These tricks of the trade boil down to "planning ahead." Russ Berger says, "Many times, simple cosmetic upgrades can be coupled with minor acoustical changes that will be perceived as major improvements by a studio's clientele." Also remember that downtime is very expensive. The amount of time you can afford to spend upgrading your studio can be your most expensive cost factor.

John Storyk says, "Cosmetic changes make the place look new without construction. New carpet, paint, materials on traps and walls,

This is a good reason for using acoustic treatment techniques that involve removability. Three years down the road, it's a lot easier to stretch new fabric on removable panels than onto those which are glued or permanently installed.

"Acoustic changes should only be done if there is a demanding reason," Storyk continues. "Technology and changing studio marketing niche agendas will naturally force modification to take place. A new console, changing from pure audio to audio-for-video, converting a control room into a workstation suite, a need for different monitors. For flexibility, use

wire troughs and raceways rather than conduit, because studio wiring requirements are changing quite rapidly. Make electrical as flexible as possible, because it is expensive and time-consuming to change. Desktop computers and ancillary equipment, which can have special power requirements, are going to come and go as the shakeout of production formats continues. In addition, changing air-conditioning-noise-reduction requirements dictated by different equipment configurations and acoustic parameters can become impossible to accomplish unless you already have the excess power available."

*Where is the art of studio design moving between now and the year 2000? How can today's studio owners economically prepare for what you see as the future of acoustic design?*

Peter Maurer of studio:bauton summarized it well: "Many studios are moving toward more diversity in their services, such as offering multimedia rooms, adding film and video post-production and even starting to think about the impact of virtual reality upon their facilities. With the ever-increasing resolution in the digital domain, now at 24-bit, if we should add +6dB dynamic range for every bit increase, we have to lower the residual ambient noise level in studio acoustic areas, which could increase construction cost. Because of increased competition between studios, we must find methods and materials to reduce that cost. That is our immediate challenge."

John Storyk adds, "New acoustic materials embodying what may be called the 'scattering coefficient' will give the industry much more accurate information as to how materials influence propagated sound. This, in turn, will give us more information, which will enable us to make fewer mistakes and get better results at a lower cost."

All four designers' responses indicate that the best way for you, the studio owner, to approach facility design is to be as flexible as possible—be able to alter acoustic and aesthetic features quickly and inexpensively. This approach will allow you to pursue whatever direction or niche you see as your facility's future. ■

*Chris Stone has built or rebuilt 38 recording studios of all shapes and sizes. Most of the time, he missed coming in on budget by about 10%, because he always forgot something.*

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World Radio History

## FROM THE GROUND UP

# The Building of Akashic Studio

**L**ocated six miles outside of Boulder, Colo., at an elevation of 7,650 feet, Akashic Recording Studio is nestled amidst pine and aspen trees and offers a breathtaking view of the surrounding mountains and forests. It's no wonder that studio owner Prasanna (nee Tim Bishop), a recording veteran with extensive experience in L.A. and Colorado, chose this spot to make the move up from a serviceable 16-track to a truly top-flight facility. Noted designer Rich Zwiebel worked

up the plans for the studio, and Doug Kirk served as general contractor. Although there were budgetary constraints on the project, the design and construction team didn't cut any corners in key areas, and the result is a solid, comfortable, virtually noise-free studio. Since it opened this past winter, Akashic has hosted music sessions in a number of different genres, including jazz, rock, dance/house and even a classical chamber choir. Below, we offer a series of photos taken during different stages of the studio's construction, lest we all forget the incredible amount of work it takes to build a studio from the ground up. —BJ



**The foundation is 8-inch-thick concrete going down to 24-inch footers buried at least 26 inches. It is laced with high-quality rebar used horizontally and vertically. The soil is decomposed granite, suitable for rugged construction. The outer walls are grout-filled, 8-inch-thick masonry at 4-foot lifts with rebar every four feet. Zwiebel: "Perched up there on the hill, the studio is susceptible to strong winds, which can give you a low-frequency hum. So having the mass-dead air-mass walls gives you better sound isolation. It also addresses another potential problem: forest fires."**

**Engineered trusses support the roof, which is triple-layer ½-inch chipboard with 2x4-inch sleepers in between to prevent impact noise transmission, sealed with acoustic sealant from Tremco. Double-thick Fiberglas dimensional tile will go on top.**



Drywall framing is steel studs 16 inches on center with cross-braces at 48 inches, all suspended from acoustic isolators from above and from the sides. All inner walls are double-layer  $\frac{5}{8}$ -inch drywall with screws at 9-inch spacing and acoustic sealant everywhere.



In the control room, main speaker pedestals are double-tiered to isolate high- and mid-frequency drivers from the woofers. Sand-filled masonry supports 3-inch flag rock, then bricks support the woofers' 3-inch flag rock slab. Zwiebel: "One reason to have the control room and recording rooms side-by-side is it's much cheaper, because you don't have to have an isolated control room with expensive steel frames and a window in there. But also, Prasanna wanted to bring in the outside as much as possible, so when you're at the mix position, you're overlooking the mountains. It worked out fine. If you need to see the musicians when you're tracking, you turn your head a bit. It's no big deal."

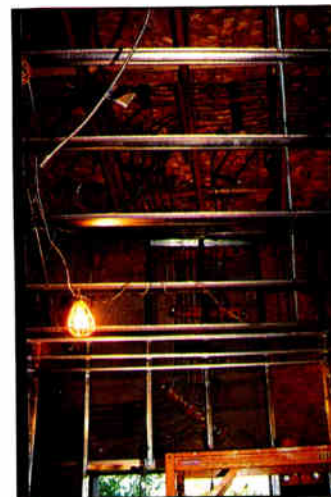


HVAC (heating, ventilation and air conditioning) designed by David Khan of Acoustic Dimensions and Design Mechanical. High-volume plenums are recessed between trusses with ducts going to them. Plenums are  $\frac{5}{8}$ -inch drywall lined with 2-inch plenum liner and lots of acoustic sealant. All ducts hang from acoustic isolators from Kinetics and are decoupled from the plenums. Zwiebel: "My hat's off to the HVAC designer. It's the most amazing HVAC system I've ever seen. It's below the threshold of hearing, even when you're standing under a heat vent."



Full frequency-response diffusion with varied well and depth spacing is installed on the entire ceiling of the studio and iso booth, as well as parts of the walls and the back control room wall. Most are now covered with more visually pleasing, acoustically transparent cloth. Duct penetrations are feathered neoprene and acoustical sealant. Under windows are three isolated cable raceways.

The electrical system is new copper cable from the 240V service to a custom-designed, balanced AC60V to ground step-down transformer with surge protection and filtering. All AC runs stay 36 inches from mic- or line-level cables. They are acoustically isolated such that a cable acoustically coupled to one building envelope is decoupled from the other two.



The finished studio, with its heavily modified Tascam 3500 board in the control room, has seen a steady stream of different music sessions.



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# THE MUTABLE ROOM

When discussing studios with those who design them, one often gets the impression that recording facilities achieve a permanence on a par with the Great Pyramids at Giza. And while some rooms have remained intact over a period of years, the fact remains that studio longevity is the exception to the rule. Many forces contribute to their transient nature: the economics of studio ownership, changes in design ideologies, and the whims of artists and producers.

Studios, however, have shown a remarkable resilience and capacity for mutability as tastes and technologies change. If space cannot be totally conquered, it can be configured and controlled to a large degree. And the tools required to do so seem to be evolving as rapidly as the proliferation of music genres. In fact, the ability to adapt and evolve—in a cost-effective manner—has become an imperative in today's economic environment.

## **PRAGMATISM AT SOUNDTRACK**

Rob Cavicchio, CEO of the multi-room Soundtrack facilities in Boston and New York, has implemented a

## *Practical Applications*

### *For the SigTech*

### *Acoustic Environment*

### *Correction System*

### *At Soundtrack*

BY DAN DALEY

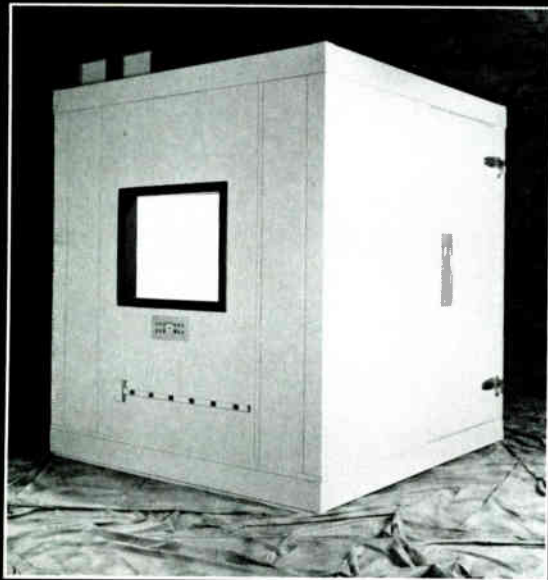
relatively new analog and digital room effects system, the AEC 1000 Acoustic Environment Correction system from SigTech of Cambridge, Mass. The system was selected for two specific applications: dealing with the physical effects of prolonged monitoring use and the changing demands of a wide variety of clients.

Soundtrack put AEC 1000 systems in three of its nine New York rooms and in one of six suites in Boston. "You tend to think of a recording room as a set environment and it's right from day one," Cavicchio explains. "But then three years go by and maybe it's not so right any-

more—younger producers want to work on a different curve; rooms change physically as consoles move and couches get fluffier; and you're dealing with more and more speaker fatigue." That last observation is a direct reference to the large percentage of urban/contemporary clients that Soundtrack and other major facilities in New York see, clients whose projects tend to emphasize both greatly enhanced loudness and low-end frequencies.

You can try to get the room back through redesign, Cavicchio says, but that can be a very expensive proposition, especially if you're trying to accommodate increasingly smaller niches of clients. Instead, Cavicchio invested in the SigTech technology. According to SigTech, the AEC 1000's most pronounced benefits have been found in less-than-optimum environments, yet in a good room, it knows when to leave well enough alone. That was certainly the case at Soundtrack, where Cavicchio summed up his approach to the use of the AEC 1000 by saying, "We're using it as much to maintain a room as to correct any fatigue problems."

Using programmable digital filtering, the AEC 1000 essentially creates a virtual inverse room. Via a multitap digital signal delay circuit, the system



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sends out a succession of wave launches with the same time delays as the room reflections and then measures the response at several listening positions, comparing the send and return of the signals and doing an analysis in both time and frequency domains. Based on that data, the system's software (external PC-based) designs continuous inverse-filter parameters that work in both domains, correcting for both frequency and phase by filling voids and canceling peaks.

The system is designed to work optimally within a 50-millisecond range, the area in which, according to SigTech president Burke Mathes, the ear attempts to integrate direct and reflected sound as a single source, and perfectly suited to the relatively short (six feet or so) throws from main monitor to console position at Soundtrack. When those reflections, such as the inevitable ones from the console, are combined, the result is an unwanted ripple in the response curve.

Cavicchio implemented the AEC 1000, which was originally brought to his attention by Jim Falconer (the primary designer of both Soundtrack facilities), in three UREI 813-equipped studios in the New York Soundtrack. The UREIs, an older design than the Tannoys used in the other rooms, were more vulnerable to fatigue, Cavicchio reasoned. His conclusion was buttressed by input from users of the facility. "We were blowing two speakers a day," he says. "Constantly replacing drivers has an effect on the room's sound and balance, and that in turn was affecting the way the rooms sounded to the pop and jazz people using the rooms during the day. I used to tune the rooms to Donald Fagen's *Nightfly*, but you can't do that effectively anymore with the type of clientele that New York is seeing."

The fact that the suggestion came from the designer removed any ideological element in the decision and provided additional reassurance to Cavicchio. "I was looking for a way to get rooms back quickly to within ten percent or better of what they were originally supposed to deliver, at a reasonable cost," he says. At a price of about \$8,000 for a complete system including software and four filters, and around \$5,000 for individual units, Cavicchio felt he had an economical and potentially fail-safe method.



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Studio technician John Kiehl implemented the systems and developed several curve settings for each room based on user tastes. The curves have tended to be relatively close to one another, Cavicchio notes, but he says it provides clients with a level of customization without radically departing from the design intent of the room.

The result has been excellent, Cavicchio states, with a consensus from clients and his in-house staff. Blown drivers no longer need to be replaced in pairs; the AEC 1000 helps compensate for uneven left-right speaker fatigue. Midterm benefits include an ability to modify the rooms' reactions to changes in physical layout, for instance if consoles are moved or speaker soffits are changed or altered.

#### NOT A PANACEA

In terms of longer-range planning, Cavicchio stresses that the system is not designed to delay the inevitable if a complete room design is desired or required. "That's a physical decision that's based on allocation of square footage," he says. "But the good part is that we've got more latitude in terms of changing around the room ergonomics without changing our sound. Even though you're trying to please a wider range of clients, you still want to keep the elements of acoustic design that made you successful in the first place. That's why we've stayed with the same designer over all these years. The SigTech isn't there to be a general panacea, but something to help you maintain consistency."

Cavicchio tried using the AEC 1000 in conjunction with the Tannoy monitors but found that the results weren't as dramatic, noting that speakers fatigue at different rates. And he has eschewed using the system on near-field systems, noting that the amount of reflections involved are insignificant. "It's brought the 813 rooms back quickly and effectively," he says. "You can always spend \$100,000 to correct a room, but I think it makes sense to try an \$8,000 solution first. Here, the system has become an integral part of the ongoing design process that I think has become the norm for studios these days." ■

Dan Daley is a Mix editor.

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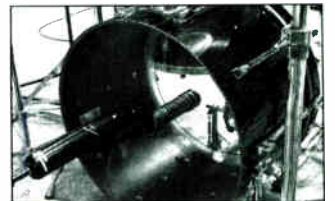
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by Dan Daley

# BETTER HOMES AND STUDIOS

## PROJECT STUDIO DESIGN

**A**rchitect Frank Lloyd Wright once said, "No house should ever be on any hill...it should be of the hill." Comedian Steven Wright once said, "You can't have everything; where would you put it?"

Observations by both Wrights are valid in relation to project studio design. Project studios tend to be a part of other structures, most often someone's home, apartment or garage. The proliferation of equipment designed for these environments makes the effective use of space a critical design consideration.

Rudimentary project studios need to follow the basics of acoustical design. Monitoring tends to be near-field, which eliminates most of the acoustical problems of studio spaces—but not all of them. Reflective surfaces need to be dealt with, by simple means of absorption or diffusion. Absorption can be as simple as drapes, curtains or some carpeting on the wall. I've seen diffusion handled—and rather well, too—by the installation of slotted bookcases up against rear walls of studio rooms. Makes for good reading, too.

Moving up the food chain, we find that project studio design is a process of compromises. Paul Avgerinos (who blithely says his name is pronounced the same way it's spelled) moved from a basement project studio in Bridgeport, Conn., where he did new age recording and film scoring, to a new home in more rustic Redding. A former family room has become his in-house project studio, affording him the two things he was looking for: more space and natural light, which a lot of basement studio owners crave.

The first order of business was determining what not to spend money

on, so his initial move was to hire an acoustical consultant—in this case, Francis Daniel. Daniel supervised the pink noise evaluation of the room, looking for the acoustical transmission properties of the room to determine the internal structure of a room within a room, which would become the studio.

The process is fairly straightforward. Daniel cautions that precise interpretation of the results requires more than a passing knowledge of acoustics. But the basic premise is simple enough: With a \$50 level me-



**Studio Unicorn, Redding, Conn.**

ter from Radio Shack, measure the dBA levels at various interior parts of the rooms—particularly along walls—while playing a test CD with pink noise at relatively loud levels. With that same level of noise still playing, do the same measurements on the exterior portions of the same walls, as well as the roof, if applicable. At working levels, the interior reading could come in around 100 dBA or more. External readings might, depending upon the construction, come





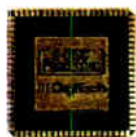
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in around 55 to 70 dBA. The differential—30 dBA—is known as the transmission loss factor. "In simple terms, that corresponds to the perceived annoyance factor for neighbors," explains Daniel.

The next step would be to find construction materials and techniques that would mitigate the loss. U.S. Gypsum Corp. has several pamphlets available on the subject that can be obtained from any construction supply company. But the transmission factor alone is a less than perfect value because mechanical coupling will affect it. Walls and floors are connected, and any vibration caught by an interior deadening wall could also be transmitted to the floor. If you're more ambitious, remove the existing interior wall layer, installing resilient channeling (a standard construction attachment system) and reapply layers of sheetrock. This approach increases the loss factor and the mass of the interior layer.

#### OTHER CONSIDERATIONS

"The divergence from a full-blown studio is in the amount of light I wanted," says Avgerinos, who will have it coming from both sides of the control room as well as into the isolation booth once the construction is completed; sliding glass doors were used for entrances, and the picture windows were double-paned.

"Everything else was pretty much determined by the budget," he says. "I would like to have floated the floors or mounted the monitors in poured concrete, but you have to weigh what you want with what can be done and with what actually needs to be done."

Obviously, the load-bearing capabilities of the overall structure need to be taken into account, for anything from the weight of the console to more elaborate construction. The bottom line here, and in most project studios, is that expectations have to jibe with certain realities, like the physical structure of the building and the types of projects that the studio will be used for.

#### INTERIOR DESIGN

Interior design is as important as structural design and layout—not so much for aesthetics but for ergonomics. Film scorer Gary Chang laments that his Los Angeles home

project studio, which has functioned at one level of complexity or another since 1984, looked more like a band's backstage setup than a studio for most of its incarnations. "Up until recently, I was working out of Anvil cases," he says.

Chang finally decided to spiff things up, and the results are aesthetically and ergonomically pleasing. "The thing is, you can't really deal with [design] until you turn the corner on your equipment decisions," he notes. Chang went to Omnix (Sausalito, Calif.) at the recent NAMM show in Anaheim and discussed a basic layout with the company, finalizing it via fax. The finished product

**E**xpectations have to jibe with certain realities, like the physical structure of the building and the types of projects that the studio will be used for.

is a pair of combination angled and vertical racks that support a desktop for his Soundtracs Megas console. The right rack holds basic outboard gear, and the left one holds 25 Neve mic pre's. A third rack is dedicated to MIDI equipment. "This way, nothing is taller than 36 inches," he says. "So I had special 36-inch pedestal stands made up for the Meyer HD-1 speakers. It's a bizarre detail, but in the end, that kind of detail makes a difference in how much you enjoy working in the room."

Chang's experience indicates that the project studio presents as many design considerations as a commercial facility. The key difference is that project studios seem to allow more of the owner's personality to come through, unburdened by the need to be all things to all clients. And in an age when so many presets on so many black boxes have made much of professional audio all too predictable, a little personality in the environment can make for that little bit of inspiration that keeps things just a little bit different. ■

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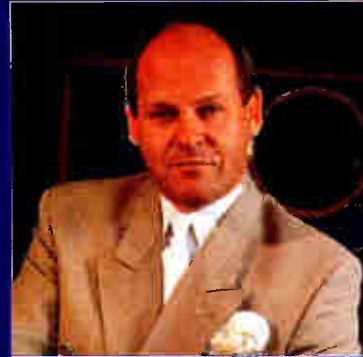
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by Paul Potyen

# DISTORTED INTERACTIVITY

## POP ROCKET'S MULTIMEDIA VISION

M

usic-oriented CD-ROM titles seem to be coming out of two camps these days: There are those big-budget titles that take advantage of existing content from big-name stars such as Pete Townshend, Peter Gabriel and the artist formerly known as Prince; and there are titles that use completely original audio and visual material created by unknown multimedia artists working in garages and

lofts. And the most creative interactive titles don't necessarily come from the former camp. One case in point is *Total Distortion* from San Francisco-based Pop Rocket. It's the closest thing I've experienced to spending an evening with Robin Williams while seated in front of a computer.

Pop Rocket consists of Joe Sparks (who vaguely resembles Robin Williams in one of his rare quiet mo-



PAUL POTYEN

**Above left:** Total Distortion's onscreen video editing suite; **above right:** Pop Rocket's lead musician/sound designer Kent Carmical in his San Francisco Studio; **right:** Carmical, Maura Sparks and Joe Sparks.



PAUL POTYEN

ments); Sparks' wife, Maura, who does a lot of the writing and video production; composer, musician and sound designer Kent Carmical; and the most recent addition to the team, sales and marketing manager Kevin Krejci. *Total Distortion* is this group's first title, and it's scheduled for release this month on Macintosh CD-ROM. A Windows version is expected in the fall.

This is not Sparks' first foray into the daunting world of interactive multimedia. Carmical explains, "Joe did stuff for NASA, as well as trade show kiosks and work for Passport Designs. Then [in 1991] he got hooked up with another guy to do *Spaceship Warlock* [the first color multimedia title on CD-ROM]. After it came out, we decided that we'd try to get together to form Pop Rocket."

Sparks and Carmical both hail from Taft, Calif., near Bakersfield. "Maybe if you broke down on the way to L.A. you might know about it," says Carmical in his best Taft drawl. "Actually, Hollywood film companies have used Taft as a location when they want a real desolate, married-to-your-cousin kind of backwater, red-

neck town. We played in a band together in high school. I came up to San Francisco State, majoring in two of the most unemployable fields you can imagine: philosophy and music. They had this electronic music lab there, which I really got into. Meanwhile, Joe was still living down there, and he bought a Commodore 64 computer with a really funky-sounding chip and software program called a Kawasaki synthesizer.

"After I got out of school," he adds, "I answered an ad in *BAM* [Bay Area Music magazine] for TRS Studios in Sunnyvale—for an engineering job. Studio owner Scotty Smith taught me everything about recording. This was four or five years ago. I decided to get into the software side of computers and music, so I got a job in technical support at Passport Designs. I was there for about a year and a half. Then I got a chance to do music for video games at Tengen, the game machine division of Atari. The kind of tools that were available to put music on those games at that time were really primitive. They made you long for something as convoluted as a Commodore 64."

*Total Distortion* is described as combining the creativity of music video production with the thrill of adventure gaming. It is full of fast-moving and zany parodies of everything from *Jeopardy* to radio commercials for any number of bogus products and services. "A big part of the game," Carmical says, "is that you go to this other dimension of distortion. The premise is that it's the near future and these devices start appearing on Earth. People discover that they are time-space-displacement doohickeys that can go to other dimensions. The other dimensions correspond to certain Earth cultures.

"For example, there's an Elvis velvet painting dimension and an Oklahoma trailer park dimension," he continues. "In this particular game, you're a video producer and you decide to go to the dimension called the plane of distortion, where you're a video producer and you hock everything you have to get there. You gotta find new characters, new tunes and stuff, and make videos of them and try to sell the videos to producers back on Earth to make enough money to get back." A pretty imaginative

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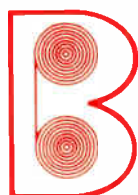
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scenario. As it turns out, *Total Distortion* is sort of like Monopoly for the MTV generation: Throughout the game you can monitor your financial resources and your energy level, which helps you determine what to do next in the game.

A set of QuickTime tutorial movies helps to establish the main premise. You can browse a library of "interactive books" on subjects ranging from the Haight-Ashbury of the '60s (narrated in the style of Robin Leach) to unusual arcade games. There's a section where you can listen to a radio, tuning in stations by hitting the scan button for an hour and a half of hilarious fake commercials played randomly.

Throughout *Total Distortion* you meet various characters, including rock stars Johnny Fame, Betty Pink and Edgar Death. You can control the performances of the more than 50 original songs that are included in the game. You can travel to the bedroom, where you can decide to go to sleep. Once you've fallen asleep, you can pick the dream you want to dream. Or you can go to the kitchen and have a mechanical contraption make a sandwich using some Taft "Food Goo." You can even have it with tomatoes, hold the onions and get it to go.

And then there's the video-editing suite, where you can assemble your own videos (along with music and sound effects) using footage that you have shot with your video camera during your travels. In a very clever slight of digits, Sparks has created overlapping sets of background, mid-ground and foreground animations that you can assemble, resulting in a dazzling variety of options. You can save your videos to send to a producer back on Earth, whom you can then call up and pitch on the videophone. The video producer judges the quality of your video and provides feedback. Based on your conversations, you can develop ongoing relationships with the producers. You can also save videos to floppy disk for sharing with other people who have the CD-ROM.

Sparks is the designer, programmer and artist/ animator, and he is ultimately responsible for the ideas that went into the title. He has a general idea of what he wants and crudely sketches out different scenarios in a notebook. "That's where things get

going," Sparks explains. "For example, when I first started thinking about a kitchen, I just did some minor sketches of how it would look. I don't do a whole lot of work on paper. All I need is a little grain of an idea before I go into a 3-D modeling program. I build every element, every little knob on a door. It's a long process to get from the point where you build all these tiny little models, link them together and create a big world."

As he's talking, Sparks creates a chalice, colors it, puts a finish on it and twirls it around on the screen—it takes about 45 seconds. Then he

***"There are other games that  
 are cool, but sometimes  
 they're lonely because you  
 end up just walking around  
 trying to solve puzzles. We  
 wanted to give it characters  
 that you interact with."***

**— Kent Carmical**

announces, "So that's a little cup. Then I put the cup on a table and put legs on the table and give it wood grain, and I light it. There could be hundreds of pieces in one scene, and there are hundreds of scenes. I create a lot of the elements in Swivel3D, then I use two rendering packages to set up lighting and render scenes. That's a long and tedious process and represents about 40 percent of what I do in the product.

"You've got to build your world," Sparks adds, "keeping in mind what the challenge is going to be when you make it live—how it's going to work when you wire it all up. About 20 gigabytes goes into making a final CD-ROM of 600 megabytes. That's thousands and thousands of files. My main toolkit includes Adobe Premiere and Photoshop, Macromedia Director and SoundEdit Pro, and Swivel3D."

While Sparks works on some of the audio and music, he leaves the bulk of it to Carmical, who works on a Macintosh IICI with an AudioMedia

card in a studio at his home in the Sunset District of San Francisco, a couple of miles from Sparks' Haight-Ashbury digs. "StudioVision is my main software tool. I mix down to cassette at this point," Carmical says. "Pretty much everything is done on a shoestring. When I started this project two years ago, I felt like I had the latest tools, but after being locked away for this long, I come to find out there's a lot of really fantastic new stuff out there."

The interactive disc seems to be packed wall-to-wall with sound, and much of it is of the in-your-face, wild, electric guitar-laden rock 'n' roll variety. With this title, Pop Rocket has taken the approach of providing a lot of low-resolution audio rather than a lesser amount of CD-quality sound. "There's a lot of grunge at 8-bit, 11kHz," Carmical explains, "but that's sort of in now. One of our design parameters was that we didn't want the user to have to have anything other than a Mac to dig it. So it's mixed to sound as good as possible coming out of a Mac speaker. It was a conscious choice to not put any Red Book Audio on the title for that reason, as well as for disc space reasons. *Total Distortion* is a huge game, so we couldn't afford the disc space to have audio at 16-bit.

"You have to make a lot of compromises when you do a CD-ROM: 8-bit graphics, 8-bit sound," he adds. "There are some places where it's stereo for shock value, but most of the time I mix down to mono. When you have a lot of action on the screen, and it's spooling audio off the disc, it can gum up if it's stereo. It's a trade-off between speed of play and high quality. That's my really big gripe with CD-ROM. Most of the stuff is 11kHz for that reason. It's a drag watching your stuff dwindle down to 8-bit, 11kHz, but *Total Distortion* has been optimized to be as speedy as possible." Sparks concurs, adding, "There's a lot of work involved to make it play this fast. There's a lot of programming and a lot of optimizing and making good edit decisions."

"One result of all this is that I have to mix it super bass-heavy," Carmical says. "If you mix it to sound good on these [JBL Control 1s, powered by a Yamaha amp coming out of an Alesis 1622 mixer], then when you play it at 8-bit, you can't hear any bass or drums."

All of Carmical's audio winds up

in SoundEdit Pro. He uses some specific EQ settings in that software package to help compensate for the low-resolution audio, which will come blasting out of the computer speaker. Through trial and error, he has picked the best ways to render his style of music. "In particular, translating a decent guitar sound is a challenge," he says. "I find that the less dense it is, the better it sounds in the end. For example, for the thrash rock stuff, I miked my Peavey practice amp, with minimal doubling. It's hard to thicken the sound without muddying it up."

Carmical digitizes his mixes back from cassette into SoundEdit Pro at 8-bit using the AudioMedia card rather than convert from 16-bit to 8-bit within the computer. His other music and audio equipment is not up for any TEC Awards this year—a room full of common and obscure acoustic and electric guitars, an Akai S950 sampler, a Roland D-110, a Yamaha TX81Z, a Korg 01W, and his "trusty old Ensoniq ESQ-1 for weird sound effects and such"—but the proof is in the listening, and Carmical knows how to make his gear sing. Completed files are generally mixed down to

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AIFF and put on Syquest carts or sent over the modem to Sparks.

Most of the sounds Carmical creates are generated in his studio. "I want to do a lot more sampling of ambient sounds, but until I get a portable DAT, that's pretty impractical," he explains. (But that doesn't mean he doesn't do it anyway. Oil fields are a fixture in his hometown of Taft, so Carmical dragged a Tascam Porta I out there to record weird industrial sounds coming from the oil rigs.)

"I really love just tripping on see-

ing what kind of sound you can make out of things," Carmical says. He finds sounds in his kitchen, like a Braun hand mixer he used for doors opening and a pitch-shifted coffee grinder for the sound of the warped-out tower that the player travels in. "If I've got more than a couple of audio files," he says, "I use SoundEdit for mixing several tracks. For sound effects, it's pretty much enough."

The biggest problem for Carmical—other than finding the inspiration and energy to follow through with what you say you'll do—is storing, cataloging and keeping track of

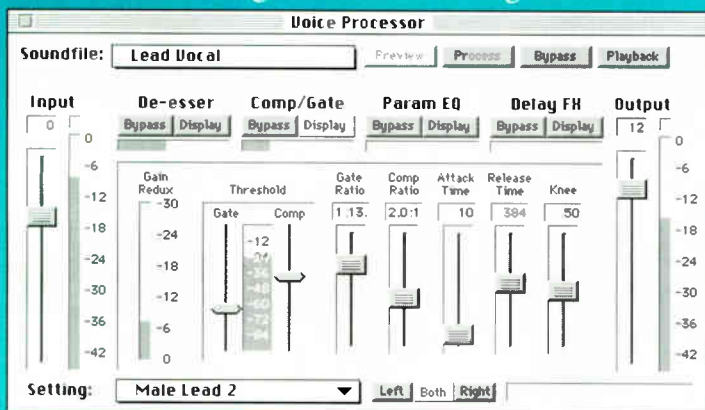
all the sounds. "First of all," he says, "if you've got some weird sound effect, what do you call it? Bloopey click-whirr? And then how do you remember what you called it when you want to use it somewhere? That's the daunting part for me. When this project is over, I want to create a database for all these sounds."

How is *Total Distortion* different from other CD-ROM titles? "First of all, a lot of stuff out there is totally linear," Carmical replies. "You play it, and maybe it's got a level that's more difficult, but it's essentially the same thing every time you play it. It ends up being a coaster to set your drink on. We wanted to provide more playability. We're hoping it will appeal to the hard-core gamers, but there are enough mind-numbing puzzles to make it more intriguing than a simple game. We also want people to want to just go in and trip out, without having to worry about there being a game attached to it. Considering what's out there, I think we succeeded. There are other games that are beautiful and cool, but sometimes they're lonely because you end up just walking around trying to solve puzzles. We wanted to give it characters that you interact with.

"Also, Joe and I don't have an aversion to having things blow up," he adds. "So there's that element of the game, too, but it's handled more creatively. For example, you can buy guitars of varying strength. The cheap models sound real twangy, and the high-end ones sound like a wall of Ozzie Marshalls—and have more force. You can be attacked by these guitar warriors who jump out and hit a chord, and if you're on the easy level, all you have to do is match the color that you see on the screen with your guitar. But if your difficulty level is higher, you have to do it by ear, where if they play a G chord, you'd better play a G to block theirs, or else it'll hit you. It's still a computer game, and it suffers the slings and arrows that all computer games do, but compared to what's out there, we think we have something new."

*Total Distortion* is distributed by Electronic Arts (1450 Fashion Island Blvd., San Mateo, CA 94404) and retails for \$99. ■

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Mix associate editor Paul Potyten is also a multimedia producer at ESC:Tech media inc., based in the San Francisco Bay Area.



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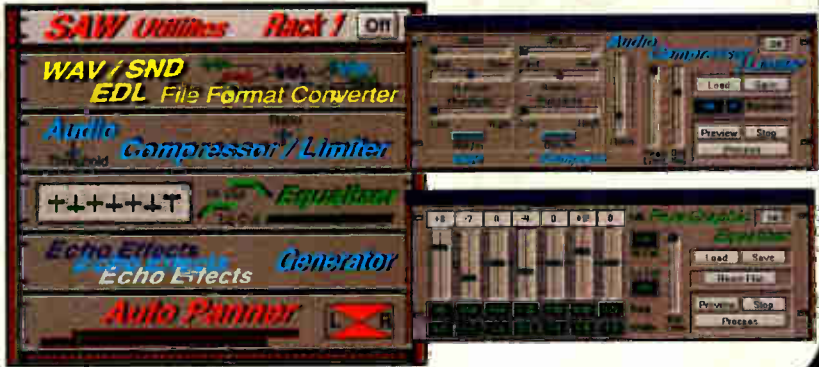
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by Philip De Lancie

# MUSIC & MULTIMEDIA '94

## CONVERGING INDUSTRIES MEET AT S.F. CONFERENCE

**L**ife on the cutting-edge of multimedia offers both rewards and hazards, as attendees discovered at Music & Multimedia '94, a groundbreaking conference on how the emerging field of consumer multimedia will affect the art and industry of making music—and vice versa.

Organized by the San Francisco chapter of NARAS and co-sponsored by the San Francisco Film Festival, *Mix*, the Multimedia Development Group and Interactive Records, M&M '94 drew a near-capacity crowd to San Francisco's Castro Theatre. More than a dozen second-generation music multimedia titles were showcased at the 14-hour event, which also included panel discussions and a small exposition area.

The first generation of music mul-

timedia titles actually began appearing a few years ago from companies such as Warner New Media and Voyager (see *Mix*, December 1993, for reviews of five such discs). But because this conference was the first to focus specifically on the relationship between the music and multimedia industries, there was a feeling of being in on the ground floor.

The exciting part is that the field is still open, still being defined. It may be hard to repress a smirk when thinking of the music business as a mature industry, but it is true that both the definition of success and the mechanisms by which it is achieved are now relatively entrenched and inflexible. In multimedia, by contrast, the rules are still being made, and it still seems possible for anyone with



Screen shot from a CD-ROM put out by the artist formerly known as Prince

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This era won't last forever, of course. The number of panelists at the conference representing big-name media conglomerates underscored the fact that the slumbering giants have begun to awaken. As they become more active in multimedia, they will bring with them their preconceptions of what entertainment should be, along with the clout—in terms of both development money and distribution channels—to force much of the industry into their mold. But for now, there is the excitement of big possibilities open for exploration.

Along with the excitement, the ground floor has its risks. The most obvious, amply displayed at the M&M '94 event, is the danger of being carried away by wishful thinking. It may be, as some panelists claimed, that "rock 'n' roll will bring multimedia to the masses." But before diving in with your life savings, it is probably wise to keep in mind that as of today, most of the masses have only the vaguest notion (if any) of what multimedia is. And even the "multimedia aware"

probably don't equate sitting at their computers with the rock 'n' roll experience. So it remains too early to say when consumer multimedia will develop into a viable, stand-alone industry (i.e., not subsidized by investors gambling on the future) and what role music will play in that transformation.

#### THE PANELS

The most exciting part of M&M '94 was the chance to see what new titles had been developed. But the event's panels also yielded some lively exchanges on topics such as defining the market, how the intellectual property rights issues should be handled and what the value of music is in multimedia.

On the "Issues for Artists and Developers" panel, there was general agreement that today's typical buyers of multimedia software are 35-year-old males, about half of whom have children in the house. Former Pink Floyd saxophonist Scott Page, now involved in multimedia development with his company, 7th Level, argued that the key to survival for development companies is to remain mindful of the interests of this existing

market, creating for those who already have the playback technology in hand. Following this strategy, Page said, 7th Level is on the verge of actually making a profit just a year after its founding.

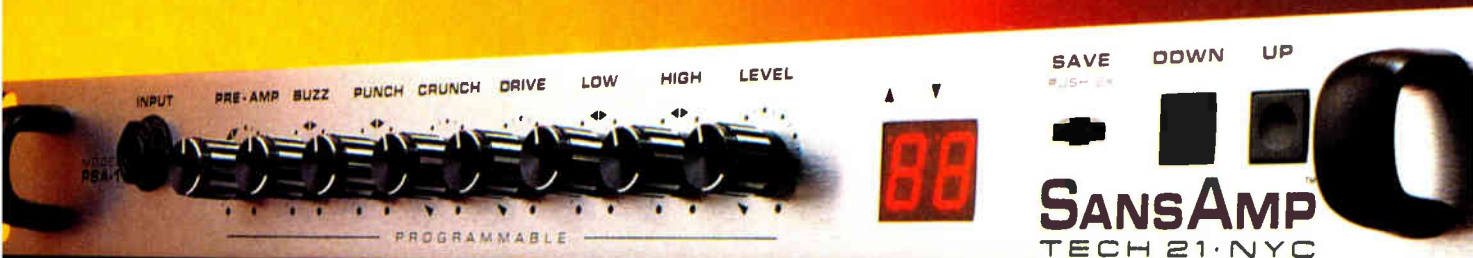
Page's co-panelist, Joey Tamer, a multimedia consultant and deal-broker, had a different take. She pointed out that the buyer profiles tend to downplay the importance of women. Women tend not to like computer stores, she said, "because they are rude to us," so they send males to buy for them. As book, video and record outlets become more common multimedia distribution channels, Tamer said, the importance of women to the market will become better recognized, which will in turn influence the types of titles considered viable.

Beyond the question of which kinds of stores will be important in broadening the user base was the question of whether stores will really be necessary at all. Reflecting a utopian populist strain in the audience, many questioners raised the idea that the Internet provides an al-

—CONTINUED ON PAGE 218

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## **ALDUS HITCHCOCK DIGITAL VIDEO EDITOR**

Hitchcock is an offline nonlinear digital video editing software package for the Macintosh from the CoSA division of Aldus Corporation (Seattle). It is compatible with Radius VideoVision Studio and SuperMac DigitalFilm cards and features standard EDL export, RS-422 VTR control, variable-pitch audio scrubbing and SMPTE support. Suggested list price is \$1,995.

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## **OPCODE STUDIO VISION PRO AND STUDIO VISION AV**

Opcode Systems (Palo Alto, CA) has released two new versions of its popular MIDI/digital audio sequencer for the Macintosh. Studio Vision Pro incorporates all the features of the Vision 2.0 MIDI sequencer, as well as 16-channel audio compatibility with Pro Tools systems and support of DAE (Digidesign Audio Engine). The latter enhancement integrates Digidesign's TDM bus system, which allows internal routing of digital audio information among supporting third-party software and hardware on the Mac. Studio Vision Pro is available for \$995.

Studio Vision AV allows four



*MountainGate VideoGig*

channels of 16-bit digital audio record/playback without additional hardware on a Mac 840AV (three channels on a 660AV) or on any Mac with third-party audio cards, such as Audiomedia LC, Audiomedia and Audiomedia II from Digidesign or Spectral Innovations' NuMedia card. Priced at \$595, Studio Vision AV also is compatible with Apple's Sound Manager, making 8-bit playback of Studio Vision files possible from any Mac Quadra.

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## **GALLERY SOFTWARE SAMPLESEARCH**

Developed for users of AIFF, Sound Designer II and Doremi

DAWN sound files, SampleSearch from Gallery Software (London) is a search-and-retrieve file manager for the Macintosh. Main features include fast instant search of mounted drives; catalog and search for offline volumes; auditioning of SampleCell sample sounds; the ability to transfer and record audio from Red Book CD to AIFF via SCSI; and archive/resolve capabilities for Pro Tools EDLs.

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ASL's (Irvine, CA) MegaMotion multimedia video card can accept and display two flicker-free, full-motion images with 4:2:2 YUV at 320x240-pixel resolution on any Windows 3.0-based PC. It includes an on-board SVGA adapter with 1 MB of VRAM and a 2MB frame buffer to hold video images in the Microsoft Video for Windows format.

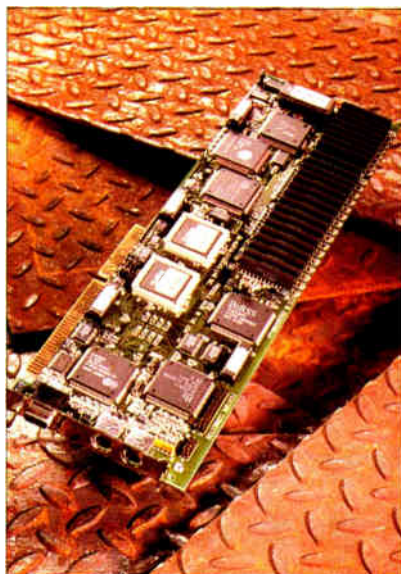
MegaMotion also comes with Adobe Premiere for Windows, which provides a full range of video editing features. The hardware offers an array of professional editing special effects and is compatible with most audio cards, including ASL's Cyber Audio family. Suggested retail price is \$1,095.

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From miroComputer Products Inc. (Palo Alto, CA) comes another Windows-based digital video system. The miroVIDEO CD1 tv is a video capture/playback card that ships with Adobe Premiere for Windows and VideoStudio digital video and still-image editing and effects software. Using JPEG compression, the system can capture and play back 30-frame, full-screen (640x480) video. Edited video can be recorded back to standard videotape via the board's RCA or S-Video output connectors. miroVIDEO CD1 tv is compatible with AVI, Video For Windows and QuickTime for Windows formats and is priced at \$899, including VideoStudio and Adobe Premiere.

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## VOTER'S GUIDE

Beginning on page 89 are eight pages of nominee descriptions and biographies. Please take the time to read the nominee information before voting. (Ballots in subscribers' issues only.) Ballots must be postmarked by **Wednesday, August 31, 1994.**

**Friday,  
November 11, 1994**

The Westin St. Francis  
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**Reception**

**Dinner**

**Awards Ceremony**

The Technical Excellence & Creativity Awards was created in 1985 by the publishers of *Mix* magazine to recognize and promote outstanding achievement in recording and sound production and technology. Proceeds of the TEC Awards benefit organizations dedicated to the cure and prevention of deafness and hearing impairment, scholarships for students of audio, and nonprofit organizations serving the professional audio industry. In its nine-year history, the TEC Awards has raised nearly \$225,000 for charity and scholarships, while offering attendees the opportunity to mingle with audio and music industry luminaries at what has become one of the most important annual events for audio professionals.

The TEC Awards are divided into three major categories—Outstanding Institutional, Creative and Technical Achievement—and 24 subcategories. Voting for the TEC Awards winners is a two-step process. A Nominating Panel, comprising approximately 170 prominent members of the professional audio industry, makes initial selections in March. Their nominations are printed on the Voting Ballot in this issue of *Mix*. The winners of the Tenth Annual TEC Awards will be announced at a ceremony on Friday, November 11, at the Westin St. Francis in San Francisco.

### TEC Awards Hall of Fame

The TEC Awards Hall of Fame was created in 1988 to recognize the contributions of those special individuals who, during their lifetimes, have exemplified the pursuit of excellence in professional audio and music production. Past inductees include Ray Dolby, Wally Heider, Deane Jensen, Quincy Jones, Bob Lifting, George Martin, George Massenburg, Bob Moog, Rupert Neve, Les Paul, Bill Porter, Bill Putnam, Phil Ramone, Bruce Swedien and Rudy Van Gelder.

This year the TEC Awards will honor the late **Frank Zappa**. Frank Zappa was one of the most influential, innovative and controversial musical artists of the past 25 years. Beginning in the early 1960s, before his first recording contract, Zappa owned and operated a recording studio in Cucamonga, Calif. His first recording in 1965, *Freak Out*, proved to be groundbreaking, simultaneously introducing the "concept" album and the first double-rock 'n' roll LP. The entrepreneurial Zappa maintained his publishing rights and owned his own recording label. He developed a mail-order and merchandising company, and in 1987 formed Honker Home Video, which was committed to offering a slate of productions that otherwise would not be accessible through traditional home video and television programming outlets. Zappa released more than 50 LPs during his career, was a renowned composer who was commissioned to score a symphonic work, and a Grammy Award winner. He passed away in Los Angeles earlier this year.

### The Les Paul Award

The Les Paul Award was created in 1991 to honor individuals or institutions that have successfully combined art and technology and have continuously set the highest standards of excellence in recording and sound production. Their contributions must have been widely acknowledged by their peers, including, but not limited to, past recognition by the TEC Awards.

This year's recipient is **Herbie Hancock**. Keyboardist-composer Herbie Hancock was a precocious musical talent who performed Mozart with the Chicago Symphony at the age of 11 before turning to jazz in high school. Hancock went on to work as a jazz session artist and then started a solo career, recording a number of classic albums on Blue Note. In the 1960s, he performed with legendary trumpeter Miles Davis in one of the most influential jazz groups of the era. After leaving Davis, Hancock went on to break new ground in electronic jazz, winning his first of three Grammys in 1983, for R&B Instrumental for "Rock It" from *Future Shock*. Hancock also won an Academy Award for the soundtrack to *Round Midnight* in 1987. He recently signed as a multi-label artist with The PolyGram Label Group, with his first release to be on Mercury Records.



## Mix Foundation for Excellence in Audio

The Mix Foundation for Excellence in Audio was formed as a nonprofit, public-benefit corporation in the State of California in 1990, to help realize to the greatest extent possible the objectives of the TEC Awards. Its purpose is to encourage public interest in and understanding of audio, video, music and other communications media arts, and to assist programs such as those benefited by the TEC Awards.

Half of this year's TEC Awards proceeds will once again be donated to the Hearing Is Priceless (HIP) campaign, co-founded by *Mix* magazine and the House Ear Institute of Los Angeles. The HIP campaign seeks to educate the music listener that excessive sound levels can cause irreversible damage to hearing. The House Ear Institute, a worldwide leader in the research and treatment of hearing and balance disorders, is a nonprofit organization supported entirely by private donations, and has been a recipient of TEC Awards funds since 1986.

Forty-five percent of the TEC Awards proceeds will be distributed to past winners and nominees of the TEC Award for Recording School/Program, which have previously established scholarship or grant programs with TEC Awards funds, and to scholarships and other audio educational programs of the Audio Engineering Society Educational Foundation and the Society of Professional Audio Recording Services (SPARS).

The remainder of the proceeds will be contributed to Hearing Education Awareness for Rockers (H.E.A.R.), a San Francisco-based nonprofit organization that works to educate the public, especially musicians, about the dangers of noise-induced hearing loss,

For information about the TEC Awards, contact Karen Olson, Executive Director at (510) 939-...

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To help realize to the fullest extent possible the charitable goals of the TEC Awards, the board of directors of the Mix Foundation for Excellence in Audio has created a sponsorship program. There are four levels of sponsorship: Platinum (\$10,000), Gold (\$5,000), Silver (\$3,000) and Bronze (\$1,500).

This year, as of publication, JBL has joined the TEC Awards as a Platinum Sponsor, along with five Gold Sponsors: Alesis Corporation, Ampex Recording Media Corporation, AMS/Neve, Cardinal Business Media, and Solid State Logic. The Mix Foundation wishes to express its gratitude for their support, as well as the Silver and Bronze Sponsors, all of whom are listed on the next page.

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**Ampex Recording Media Corporation** • The Ampex Recording Media Corporation manufactures and markets a complete line of professional audio, video and data storage tapes for entertainment, education and government applications. The only magnetic media company dedicated exclusively to meeting the needs of the professional market, Ampex products are engineered to deliver consistently reliable state-of-the-art performance.

**AMS Neve** • AMS Neve plc is one of the world's leading manufacturers of professional audio equipment. Based in the UK, the company supplies facilities worldwide with mixing and editing systems for film, video post-production, broadcast, music recording and live/theater applications. Distributed in North America by Siemens Audio Inc., AMS Neve's product range includes the 1992 TEC Award-winning Capricorn digital mixing console; the Logic Series digital mixing consoles; the internationally acclaimed AudioFile hard disk recorder/editor; the VR Legend analog console; and the 55 Series broadcast analog console.

**Cardinal Business Media** • CBM, the parent company of *Mix* and *Electronic Musician* magazines and Mix Bookshelf, is a diversified business information company. Headquartered in Ft. Washington, Pa., it publishes 15 other business magazines serving the high technology, sports/fitness, vision care and supermarket industries, operates three trade shows, and a growing newsletter and seminar business. *Mix* is the leading professional publication for audio and music production, with 40,000 subscribers in the U.S. and more than 90 foreign countries. *Electronic Musician* is devoted to the application of electronic instruments and computers in music performance and production, and has a circulation of more than 50,000. Mix Bookshelf is the largest direct-mail source of books and software dealing with audio, video and music production.

**Solid State Logic** • Solid State Logic changed the world of recording and mixing forever when it introduced a fully functioned, in-line console with direct control of external tape machines and a built-in automation system. Since then it has continued to improve and refine the art and science of recording and mixing, as well as address the specialists' needs of sound for broadcast, video and film. Most recently, SSL has helped establish new standards in sound-to-picture applications with a unique family of digital audio systems. These systems manage all aspects of soundtrack production, from recording and editing, to large scale surround-sound mixing entirely in the digital domain. SSL's clients range from artists such as Sting, Prince and Bryan Adams to NBC, CBS, and most major film studios.



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# THE 1994 TEC AWARDS NOMINEES

## I. OUTSTANDING INSTITUTIONAL ACHIEVEMENT

Awarded to those companies, facilities or institutions that have contributed most significantly to excellence and innovation in audio during the eligibility year.

### A. Acoustics/Facility Design Company

**ARCoustics, Inc.**, New York, NY: During the eligibility period, the ARCoustics team completed 11 studios for music publishers, the Bertelsmann Music Group (BMG) in New York City (seven acoustically identical mastering rooms, one mix room, one CEDAR room and two dub rooms); three control room/live room/booth suites for Music Works in Kingston, Jamaica; a new studio/live room/booth for Studio Unicorn in Bridgeport, CT; a personal studio for drummer Omar Hakim; and a renovation of Soul Convention for the Fat Boys in New York City.

**BOTO Design Architects Inc.**, Venice, CA: During the eligibility period, BOTO Design served as architects and acoustical designers for a 17,000-square-foot renovation of Pacific Ocean Post-Sound, Santa Monica, CA. This "all digital" complex includes three film mix rooms, two commercial mix rooms and an ADR/Foley stage. BOTO completed the 8,000-square-foot Cyberia (Hans Zimmer/Jay Rifkin) studio complex for music in films and commercials in Santa Monica, and finished the personal-use mix room for Bob Clearmountain's residence in Pacific Palisades, CA.

**Russ Berger Design Group, Inc.**, Dallas, TX: This year's more than 50 projects included Sony Music Entertainment and Sterling Sound, NYC; National Public Radio and BET, Washington, DC; personal studios for Mariah Carey and Alan Menken; Mel Tillis Theatre and Silver Dollar City Theatre, Branson, MO; TNN, Sony/Tree, Warner Bros. Records, Ryman Auditorium/Opryland and MasterMix, Nashville, TN; Toys "R" Us and USA Network, NJ; and AMS Productions, TM Century, Tom's Easy Way, Video Post & Transfer and West End Post, Dallas.

**studio bau:ton**, Los Angeles, CA: During the eligibility period, studio bau:ton completed the MiniPlant suite at Record Plant, Yello Music and Motion Pictures, an online video suite at S2S Post Productions and a new THX control room for Fidelity Studios, Los Angeles; completed a studio for Ice-T; remodeled Ground Control Studios (Los Angeles) with new monitoring and a large-screen video; broke ground on a multi-studio complex for C+C Music Enterprises in New York City; and began a 10,000-square-foot complex for Alias Records in Los Angeles.

**Walters-Storyk Design Group**, Highland, NY: Design projects during the eligibility period included an 18,000-square-foot audio/video facility for Syncrosound, Malaysia; a 7,000-square-foot facility for Interlochen Public Radio, Cotter Schools, MN; Coupe Studios, CO; First Edition, NYC; Georgia State University; Prodigit West, AZ; Time Machine, VT; a 25,000-square-foot audio/video facility for

Henninger Video, VA; new post-production facilities for Chiat-Day Advertising, NYC; and Kampo Cultural Center and Mitch Leigh Productions, NYC. Acoustic consulting projects included Taj Mahal, Xanadu Theater, Atlantic City, NJ, and Time Warner's Selwyn Theatre, NYC.

### B. Sound Reinforcement Company

Three-time consecutive winner Showco is not eligible this year.

**Audio Analysts**, Colorado Springs, CO: During the eligibility period Audio Analysts worked with Bruce Springsteen, Ringo Starr, Van Halen, Garth Brooks at Texas Stadium (NBC special), Black Sabbath, Pantera, The The, The Beach Boys Summer '93 in Europe, Toni Braxton, Front 242, The O'Jays/Whispers/Levert Tour, Maze featuring Frankie Beverly and the tour of World Figure Skating Champions. They provided specifically designed systems for Nissan/Isuzu Conventions, the BMG Records Convention and MCI. They were the official sound company for the 1993 Papal Visit to Denver and installed a sound system at the Grizzly Rose Club in Denver.

**Clair Brothers Audio Inc.**, Lititz, PA: During the eligibility period, Clair Brothers worked on world-widetours for U2, Elton John, Bon Jovi, Madonna, Michael Jackson, Aerosmith, Tina Turner, Lynyrd Skynyrd, Billy Joel, Robert Plant, Sade, Sting, Bob Dylan, Michael W. Smith, Don Henley, Steely Dan, Kenny Rogers, Indigo Girls, Foreigner, Steve Miller Band, Simon & Garfunkel, Midnight Oil, Johnny Hallyday, DC Talk, Scorpions and Young Messiah. Clair Brothers is headquartered in Lititz, PA, and has offices in Europe, Mexico, Japan, Australia, South America and Singapore.

**Electrotec Productions, Inc.**, Canoga Park, CA: During the eligibility year Electrotec tours included Rod Stewart, Lenny Kravitz, Lollapalooza '93, Alan Jackson, Guns N' Roses, Brooks & Dunn, Rush, Bruce Hornsby, Damn Yankees, Suicidal Tendencies, Ted Nugent, Def Leppard, Alabama and Izzy Stradlin.

**MD Systems**, Nashville, TN: During the eligibility period, MD Systems supplied sound for the Garth Brooks World Tour (including the NBC special at Texas Stadium) and Dwight Yoakam's 1993 "This Time" tour. MDS also was contracted by NARM to provide sound at its convention in Orlando, FL, which included 20 live performances over a three-day period.

**Sound Image**, San Marcos, CA: Touring clients for Sound Image included Jimmy Buffett, Heart, Melissa Etheridge, Harry Belafonte, John Hiatt, Lindsey Buckingham, Barbara Mandrell, Mary Chapin Carpenter, Kenny Loggins and Humfrey's Concerts By the Bay. Corporate services work included American Music Operators Association, Japan Gray Line, Lincoln National Life, San Diego Civic Light Opera (Starlight Musical Theater), Future Business Leaders of America and Amway. Sound Image also built and installed permanent systems at Hollywood Bowl (proprietary Sound Image SG and G2 enclosures); Carpenter Performing Arts Center, California State Long Beach; and LaQuinta City Council Chambers, LaQuinta, CA.

### C. Mastering Facility

**Bernie Grundman Mastering**, Hollywood, CA: During the eligibility period BGM mastered projects for k.d. lang, Yanni, Dr. Dre, Van Halen, Diana Ross, Prince, Janet Jackson, Luis Miguel, Yumi Matsutoya, Michael Jackson, Xscape, B.B. King, Ice Cube, Kenny G., Barbra Streisand, and the *Philadelphia* soundtrack. The facility has three fully equipped studios with the capability of audio processing completely in the digital or analog domain, or both simultaneously. Most of the systems were custom-built by partner, Karl Bischof, and contain many proprietary innovations. The three primary engineers are Bernie Grundman, Brian Gardner and Chris Bellman.

**Bob Ludwig's Gateway Mastering**, Portland, ME: During the eligibility period Gateway Mastering worked on projects by Nirvana, *In Utero*; Pearl Jam, Vs.; Mariah Carey, *Music Box*; Tori Amos, *Under the Pink*; Bryan Adams, *So Far So Good*; Phil Collins, *Both Sides*; Gloria Estefan, *Mi Tierra* (Grammy Award winner); John Mellencamp, *Human Wheels*; Rush, *Counterparts*; Melissa Etheridge, *Yes I Am*; ZZ Top, *Antenna*; Cowboy Junkies, *Pale Sun-Crescent Moon*; The Bee Gees, *Size Isn't Everything*; Velvet Underground, *Live*; Tears for Fears, *Elemental*; and with engineer Brian Lee: *The Beavis and Butt-head Experience*, Gipsy Kings.

**Masterdisk Corporation**, New York, NY: During the eligibility year Masterdisk worked on projects for such artists as Donald Fagen, Shaquille O'Neal, Smashing Pumpkins, Stanley Jordan, Soundgarden, Bruce Springsteen, The Breeders, The Ramones, Freddie Jackson, Jazzmatazz, Judgment Night, Bruce Dickinson, Arrested Development, Queen Latifah and the Curtis Mayfield Tribute.

**Masterfonics**, Nashville, TN: During the eligibility period, Masterfonics worked on projects for Reba McEntire, Linda Davis, Rodney Crowell, Kim Hill, Steven Curtis Chapman, Marty Stuart, Michael Card, Dan Seals, George Strait, Patsy Moore, Dolly Parton (Cedar 9 to 5 and *Jolene*), Alabama (Cedar *In The Beginning*) and Willie Nelson (Cedar *The Complete Liberty Recordings* and *The Early Years*), Vince Gill, Michael McDonald, DC Talk, Trisha Yearwood—Int'l Interview Compilation, Cracker, Dixie Dregs, Mike Snider, Turner Nichols, Mason Ruffner, Jamie Kyle, The Mullins, Terry McMillan, Forefront Radio Singles, the RCA CRS Sampler and the soundtrack for *8 Seconds*.

**Sterling Sound**, New York, NY: During the eligibility period Sterling Sound put their mark on some of the year's top-selling projects, including works by David Foster, Crash Test Dummies, Meatloaf, Spin Doctors, Mary J. Blige, Frank Sinatra, Motley Crue, Billy Joel, Pantera, Illegal, Barbra Streisand, Bruce Hornsby and Pat Metheny.

### D. Audio Post-Production Facility

**Howard Schwartz Recording Inc.**, New York, NY: During the eligibility period Howard Schwartz Recording provided audio post-production and/or mixing for the 1994 *Winter Olympics* (CBS, in New York and Norway), *The Simpsons*, *The Lion King*

(Disney), *Pink Panther*, *Tim Burton's The Nightmare Before Christmas*, Steven Spielberg's *Animaniacs*, Hanna-Barbera's *Pagemaster*, CBS News, NBC Sports, ABC Sports, ESPN, MTV, Showtime, Arts & Entertainment, TNT and Sony, as well as hundreds of commercials for dozens of ad agencies.

**Pacific Ocean Post**, Santa Monica, CA: Pacific Ocean Post provided digital sound services for *NYPD Blue*, now in its second season. The surround sound mix was digitally transmitted to Steven Bochco Productions via the EDnet fiber optic network. Commercial spots included Nike (Wieden & Kennedy), Lexus (Team One), GTE (Tracy-Locke) and Coca-Cola (Chiat-Day). Feature film work included *Trial By Jury* (Morgan Creek) and *Double Dragon* (Greenleaf Productions), as well as Oliver Stone's Director's Commentary for the laser disc release of *Platoon* (The Voyager Company).

**Skywalker Sound North**, San Rafael, CA: During the eligibility period Skywalker Sound North provided sound design and final mix services for *Jurassic Park*, *Mrs. Doubtfire*, *Meteor Man* and the special-edition laser disc of *Terminator 2*. The pre-mix and final mixes for *Rising Sun* and *The Journey Inside*, an Imax film, were also completed. Post-production sound for *The Young Indiana Jones Chronicles* was also provided. Commercial work included Intel ("Warp Power" and "Building Blocks"), Listerine ("Mission" and "Arrows"), Kodak ("Snow People"), Pepsi ("Intentional Bottles," "Gliding Bottle" and "Stop Action Chorus") and Perrier ("Lead Soldiers").

**Sync Sound**, New York, NY: During the eligibility period Sync Sound, one of the first facilities to specialize in audio post for television and film, worked on Stephen King's *The Stand* (ABC), *Beavis & Butt-head* (MTV), Barry Levinson's *Homicide* (NBC), the Cosby mystery movie *Guy Hanks* (NBC), *Billy Joel Shades of Gray* (PBS), *Where in the World is Carmen Sandiego?* (PBS), *Daltrey Sings Townshend at Carnegie Hall*, *City Kids* (ABC), *The Great Depression* (PBS), *Three-Peat NBA Championship* (NBA Entertainment), MTV's New Year's "Live and Loud," and *Sesame Street New Year's* (PBS).

**Todd-AO/Glen Glenn Sound Studios**, Hollywood, CA: Todd-AO/Glen Glenn Studios is a major post-production studio serving both the motion picture and television industries with a complete sound editorial department, nine film re-recording stages, four video multitrack stages, a state-of-the-art music scoring stage, five DAR/Foley recording studios and a visual effects branch. During the eligibility period studio film work included *Schindler's List*, *The Firm* and *In the Name of the Father*. Television projects included *And the Band Played On*, *Cool and Crazy* and *NYPD Blue*.

### E. Remote Recording Facility

Three-time consecutive winner Westwood One Companies is not eligible this year.

**Effanel Music Inc.**, New York, NY: During the eligibility period Effanel Music provided location recording and mixing services for: Lincoln Center Jazz, Verve Records 50th Anniversary, David Byrne's *Between the Teeth*, Metallica's *Live, Shit, Binge and Purge*, MTV's "Unplugged" series, MTV's *The Jon Stewart Show*, Pete Dinklage's *Psychoderelict*, *Live*, Elvis Costello's *Juliet Letters*, *Live*, Anita Baker's latest album, CBGB's Twentieth Anniversary Month, the Rock 'n' Roll Hall of Fame 1994 induction ceremonies and the 1994 Grammy telecast.

**Le Mobile**, Los Angeles, CA: Projects for Le Mobile during the eligibility period included Metallica "Live, Shit, Binge and Purge" dates in San Diego, long-form videos for Dead Can Dance, Sade and Tina Turner, Green Jelly's new album on Zoo Entertainment, Kenny Loggins' *Outside From the Redwoods*, and live dates for Prince, Al Jarreau and Rod Stewart's *Unplugged and Seated*.

**Record Plant Remote Inc.**, New York, NY: During the eligibility year Record Plant Remote worked with Aerosmith, Billy Joel, Bob Dylan, Elton John, Spin Doctors, Meatloaf, Alice in Chains, John Mellencamp, Trisha Yearwood, Foreigner, Billy Ray Cyrus, Wynton Marsalis, Chuck Berry, Ricky Skaggs, Travis Tritt, Willie Nelson, the Concert for Walden Woods, Marty Stuart, Paco De Lucia, Johnny Gill, Dolly Parton, Michael W. Smith, David Sanborn, Al Kooper, Laura Nyro, Paul Winter Consort and Asleep at the Wheel.

**Reelsound Recording Co.**, Austin, TX: During the eligibility period Reelsound provided audio for Farm Aid IV; George Jones' TNN special, *The Texas Connection*; the CBS special *A Day in the Life of Country Music*; and the New Year's Citrus Eve; mixed American Public Radio's series Riverwalk "Live from the Landing"; and recorded live albums for Little Sister, The Geezinslaws, Jerry Jeff Walker, Roberto Palido, Al Denson and Higher Dimension Church. *Selena Live* received a Grammy for Best Mexican/American Album Vocal, and Eric Johnson's *Ah Via Musicom* received an Ampex Golden Reel Award.

**Remote Recording Services**, Lahaska, PA: Eligibility year credits for Remote Recording Services include the network television special *A Day in the Life of Country Music*; an Allman Brothers album; a network special for Mariah Carey; a paper-view broadcast *Daltrey Sings Townshend*; a live single for Pink Floyd; the live worldwide television broadcast of the 1994 Grammy Awards; a PBS special for Billy Joel; a live album for Hugh Masekela; a network television special for Reba McEntire; and a live album and television special for Barbra Streisand.

### F. Recording Studio

Three-time consecutive winner Ocean Way Studios is not eligible this year.

**A&M Studios**, Los Angeles, CA: No credits were available.

**Conway Studios**, Los Angeles, CA: Conway is one of the world's premier recording studios. Lush gardens surround three studios housing customized Neve and Focusrite consoles. A wide selection of top-rate microphones, tape machines, and out-board gear complement Conway's quality services. Recent clients include Lyle Lovett, Bob Seger, The Black Crowes, Simple Minds, Neil Diamond, Michael Crawford, B.B. King, Linda Ronstadt, Guns N' Roses, Gladys Knight and Sammy Hagar. Film work includes *Sleepless in Seattle*, *Coneheads*, *The Program*, *Tim Burton's The Nightmare Before Christmas* and *Major League II*.

**The Hit Factory**, New York, NY: No credits were given.

**Record Plant**, Hollywood, CA: During the eligibility period Record Plant completed a \$4 million expansion, putting its fourth and fifth studios online and participating in a diverse group of recordings

such as Bonnie Raitt's *Longing in Their Hearts*, Barbra Streisand's *Back to Broadway*, Nine Inch Nails' *Downward Spiral*, Prince's "Most Beautiful Girl in the World" and The Pretenders' *The Last of the Independents*. They also mixed and/or recorded soundtracks for *The Flintstones*, *In the Name of the Father*, *The Fugitive*, *Backbeat*, *What's Love Got To Do With It?*, *Tim Burton's The Nightmare Before Christmas* and *Beverly Hills Cop III*.

**Sony Music Studios**, New York, NY: During the eligibility period Sony worked on projects by Mariah Carey, Michael Jackson, Harry Connick, Jr., Terence Trent D'Arby, Sade, Michael Bolton, David Sanchez, Celine Dion, Bob Dylan, Billy Joel, Terminator X, Tony Bennett, Kate Bush, Public Enemy, Liza Minnelli, Midnight Oil, Wynton Marsalis, Living Colour, James Taylor, Spin Doctors, Shabba Ranks, Sinead O'Connor, Bruce Cockburn, Shawn Colvin, Cypress Hill, Chris Whitley, Peter Himmelman, the original cast recording of *Beauty and the Beast*, as well as the Nirvana and 10,000 Maniacs MTV *Unplugged* albums.

## II. OUTSTANDING CREATIVE ACHIEVEMENT

Awarded to those individuals or teams who have achieved the highest levels of excellence in professional audio during the eligibility year

### A. Audio Post-Production Engineer

**Ken Hahn**: Ken Hahn mixes a wide variety of programs at Sync Sound, which he co-owns. Eligibility year credits included *Billy Joel Shades of Gray* (PBS), *Cosby* mystery movie *Guy Hanks* (NBC), *Daltrey Sings Townshend at Carnegie Hall*, *Sondheim: A Celebration at Carnegie Hall*, (PBS), *The Vernon Johns Story* (Syn), *Three-Peat NBA Championship* (NBA Entertainment), MTV's New Year's "Live and Loud," *Sesame Streets New Year's* (PBS), and the Sony NAB exhibit "Rainforest."

**Lee Murphy**: Lee Murphy is the owner of Brigg's Bakery in New York City. During the eligibility period he mixed PBS's *Reading Rainbow* (for which he won an Emmy), posted the premier programs of two new series and completed a D-Day documentary, also for PBS distribution.

**George Meyer**: During the eligibility year, George Meyer, who works at Howard Schwartz Recording, did audio post-production engineering and mixing for the 1994 *Winter Olympics*, with more than 100 athlete profile pieces, the *Tour de France*, *Olympic Winterfest*, and *Artistry on Ice*, CBS; *Lifestyles of the Rich and Famous*; *Home Videos of the Stars*; *Footlocker Slam Fest*, *Shell's Wonderful World of Golf* and *Peter Jennings's Basnia Special*, ABC; *Saltwater Sportsman*, ESPN; *World Professional Figure Skating Challenge* and *Quarterback Challenge*, NBC; *Houston Cat Show* and *The Ends of the Earth*, USA; and videos for the U.S. Open and Master's golf tournaments.

**Gary Rydstrom**: Gary Rydstrom is a sound designer and re-recording mixer at Skywalker Sound North. During the eligibility year his projects included *Meteor Man*, the *Terminator 2 Special Edition* for laser disc, *Mrs. Doubtfire* and *Jurassic Park* (for which he won Academy Awards for Sound Effects Editing and Best Sound).

**Wylie Stateman:** Wylie Stateman is a supervising sound editor/sound designer and co-partner of Soundelux. During the eligibility period he worked on Renny Harlin's *Cliffhanger* (which earned him his second Oscar nomination), Wolfgang Peterson's *In the Line of Fire* (which brought him a Golden Reel nomination), and Oliver Stone's *Heaven and Earth*.

## B. Remote/Broadcast Recording Engineer

**Guy Charbonneau:** Guy Charbonneau is owner and designer of Le Mobile. During the eligibility year Charbonneau worked with Metallica, recording all the live shows in Mexico, Seattle and San Diego that make up their current album, *Live, Shit, Binge and Purge*. He mixed long-form videos for Dead Can Dance (on 4AD), Tina Turner and Sade. Charbonneau also recorded Al Jarreau for an upcoming album, as well as live shows for Bad Company, Carole King at Universal Theater and 10,000 Maniacs for upcoming releases.

**Biff Dawes:** Biff Dawes is chief engineer, mobile recording, for Westwood One Radio Networks. During the eligibility period Dawes mixed the new Tom Waits album, *The Black Rider*; recorded Aerosmith live for *Wayne's World II*; mixed live radio broadcasts "Playboy Jazz Festival" (NPR), "Farm Aid IV" and "The Concert for Walden Woods" (Westwood One), and "Country Takes Manhattan" (Mutual Broadcasting); recorded and produced Martin Lawrence's comedy album, and live concert broadcasts of Sting and Rod Stewart for Westwood One; was the music mixer for MTV's *Spring Break*; and numerous Westwood One syndicated radio shows, including Lindsey Buckingham, Blind Melon, Suzanne Vega, Robert Cray, The Doobie Brothers, George Thorogood and John Hiatt.

**Randy Ezratty:** Randy Ezratty is Effanel Music's founder and system designer. During the eligibility period he recorded or mixed projects for David Byrne (*Between the Teeth*), the 1994 Grammy telecast, MTV's *The Jon Stewart Show*, John Harris (*I Deserve This*), and Harry Connick Jr. (*Overtime at the Paramount*).

**David Hewitt:** David Hewitt is president and chief engineer of Remote Recording Services. Eligibility-year credits include a network television special for Mariah Carey, a live worldwide television broadcast of the 1994 Grammy Awards, a film and live single for Nanci Griffith, PBS specials for Billy Joel and Carole King, a live album for Hugh Masekela, and MTV *Unplugged* episodes with Duran Duran, Nirvana and Stone Temple Pilots.

**Kooster McAllister:** Kooster McAllister is the owner and chief engineer of Record Plant Remote. During the eligibility year McAllister worked with Billy Joel, Elton John, Meatloaf, Alice in Chains, Trisha Yearwood, Billy Ray Cyrus, Chuck Berry, Ricky Skaggs, the Concert for Walden Woods, Paco De Lucia, Michael W. Smith, David Sanborn, Al Kooper, Laura Nyro, Paul Winter Consort, Michael McDermott and Al Jarreau.

## C. Sound Reinforcement Engineer

**Robert Colby:** During the eligibility year Robert "Cubby" Colby was the music mixer for the 1993 MTV Movie Awards and the 1993 MTV Video Awards. He also worked on the Janet Jackson World Tour (July 1, 1993-January 15, 1994) and is

currently working on the Phil Collins "Both Sides of the World" tour.

**Dave Kob:** During the eligibility period Dave Kob worked as front-of-house mixer with Robert Plant on his world tour and with the Steely Dan Reunion Tour in North America.

**Ricky Moeller:** During the eligibility period Ricky Moeller toured with Reba McEntire, accompanied her to the *Late Show With David Letterman* and Jay Leno's *Tonight Show*, and did the audio for McEntire's first one-hour television special.

**Greg Price:** During the eligibility period Greg Price was the sound designer/engineer for the Poison World Tour, the Foreigner World Tour, Chicago and the Doobie Brothers.

**Robert Scovill:** During the eligibility period Robert Scovill worked as front-of-house engineer on the world tour with Def Leppard, mixing more than 200 shows with stops in over 15 countries. Scovill also worked with Rush in support of their latest release, *Counterparts*. Along with his front-of-house responsibilities, Scovill also digitally recorded more than 50 shows for the band for a live album.

## D. Mastering Engineer

**Greg Calbi:** During the eligibility year Greg Calbi mastered Meatloaf, *Bat Out of Hell II*; Josh Redman; *Wish*; Meat Puppets; *Too High to Die*; *Return of the Brecker Brothers*; Tony Bennett, *Steppin' Out*; Bruce Cockburn; David Wilcox; Lenny Kravitz, *Are You Gonna Go My Way*; Iggy Pop; Sarah McLachlan; David Broza; Violent Femmes; Will Drowning; Glenn Jones and Aretha Franklin.

**Ted Jensen:** During the eligibility period Ted Jensen mastered projects for Crash Test Dummies, Billy Joel, Frank Sinatra, Pat Metheny, Bob James, Pantera, Prong, Marc Cohn, Patti Larkin, Spin Doctors, Michael McDonald, the Benedictine Monks of Santa Domingo De Silos and the *Reality Bites* soundtrack.

**Bob Ludwig:** During the eligibility period Bob Ludwig mastered projects for Nirvana, *In Utero*; Pearl Jam, Vs.; Mariah Carey, *Music Box*; Tori Amos, *Under the Pink*; Bryan Adams, *So Far So Good*; Phil Collins, *Both Sides*; Gloria Estefan, *Mi Tiera* (Grammy Award winner); John Mellencamp, *Human Wheels*; Rush, *Counterparts*; Melissa Etheridge, *Yes I Am*; ZZ Top, *Antenna*; Cowboy Junkies, *Pale Sun-Crescent Moon*; The Bee Gees, *Size Isn't Everything*; Velvet Underground, *Live*; Tears for Fears, *Elemental*; Bruce Hornsby, *Harbor Lights*; and *The Beavis and Butt-head Experience*.

**Glenn Meadows:** During the eligibility period Glenn Meadows mastered projects for Reba McEntire, Linda Davis, Rodney Crowell, Kim Hill, Steven Curtis Chapman, Marty Stuart, Michael Card, Dan Seals, George Strait, Patsy Moore, Dolly Parton (Cedar 9 to 5 and *Jolene*), Alabama (Cedar *In The Beginning*) and Willie Nelson (Cedar *The Complete Liberty Recordings*). He also mastered the Steely Dan box set, *Citizen Steely Dan*, and the soundtrack for *8 Seconds*.

**Doug Sax:** During the eligibility period Doug Sax mastered Pink Floyd, *The Division Bell*; James Taylor, *Live*; Michael English, *Hope*; Tina Turner, *What's Love Got to Do With It?*; Rod Stewart, *Unplugged*; Bonnie Raitt, *Longing in Their Hearts*; *Rhythm, Country and Blues*; Jackson Browne, *I'm Alive*; Peter Frampton,

*Diamond Eyes*; Brian Setzer, *The Brian Setzer Orchestra*; Aaron Neville, *The Grand Tour and A Soulful Christmas*; Paul McCartney, *Paul Is Alive*; Lemonheads, *Come On Feel The Lemonheads*; Peter Dinklage, *14 Songs*; Bad Religion, *Recipe for Hate*; Madonna, "I'll Remember"; Twila Paris, *Beyond A Dream*; Carmen, *The Standard*; Steve Green, *Where Mercy Begins*; *Songs From the Loft* (various artists); and Petra, *Wake-Up Call*.

## E. Record Producer

**Walter Becker:** During the eligibility period Walter Becker co-produced Donald Fagen's *Kamakiriad*, Lost Tribe's *Lost Tribe*, John Beasley's *Change of Heart* and Andy LaVerne's *Double Standard*. He also composed (with John Beasley) and produced *Mose the Fireman*, a Rabbit Ears Production.

**Tony Brown:** During the eligibility period Tony Brown produced Lyle Lovett, *Pontiac*; Vince Gill, *Let There Be Peace on Earth and I Still Believe In You*; Marty Stuart, *This One's Gonna*; George Strait, *Easy Come, Easy Go* and *Pure Country*; Reba McEntire, *Rumor Has It*, *It's Your Call*, and *Greatest Hits, Vol. 2*; and Wynonna, *Wynonna*.

**David Foster:** During the eligibility period David Foster worked with Sheena Easton, Miki Howard, Color Me Badd, Celine Dion, Take 6, Dolly Parton, James Ingram, Michael Bolton, Barbra Streisand and Frank Sinatra.

**Brendan O'Brien:** During the eligibility period Brendan O'Brien produced Pearl Jam's Vs., King's X's *Dogman*, Pete Drogé's *Necktie Second*, and Stone Temple Pilots' *Purple*. In addition, he mixed *Superunknown* for Soundgarden; served as executive producer on the debut album by Soul Hat; produced tracks for *The Crow* soundtrack and *The Beavis and Butt-head Experience*; and mixed tracks for Aerosmith, Matthew Sweet, Blind Melon, Rage Against the Machine and Soul Asylum, among others.

**Don Was:** During the eligibility period Don Was produced Bonnie Raitt's *Longing in Their Hearts*; *Rhythm, Country and Blues*, a collection of duets between Patti LaBelle and Travis Tritt, Aaron Neville and Trisha Yearwood, Gladys Knight and Vince Gill, and Al Green and Lyle Lovett; one track from Elton John's *Duets*; Jackson Browne's *I'm Alive*; the score and soundtrack for the film *Backbeat*; Johnny Clegg's Grammy-nominated *These Days*; Paul Young's *The Crossing*; Patty Smyth's "You Hung the Moon" from the soundtrack to *8 Seconds*; Cheb Khaled's *Serbi Serbi*; Kelly Willis' *Kelly Willis* (co-produced with Tony Brown); David Crosby's *Thousand Roads*; Willie Nelson's *Across the Borderline*; and George Clinton's version of "Walk the Dinosaur" from the soundtrack of *Super Mario Brothers*.

## F. Recording Engineer

**Ed Cherney:** During the eligibility period Ed Cherney played a little golf and worked on a few records, including Bonnie Raitt's *Longing in Their Hearts*, Jackson Browne's *I'm Alive*, Elton John and Bonnie Raitt's "Love Straight to Your Heart" (from *Duets*) and Travis Tritt/Patti LaBelle and Chet Atkins/Alan Toussaint for *Rhythm, Country and Blues*. He was also producer/engineer for Kevin Montgomery's *Fear Nothing* and Jann Arden's *Time For Mercy* (1994 Juno Award for Best New Artist).

**Bob Clearmountain:** During the eligibility period Bob Clearmountain engineered Bruce Springsteen's "The Streets of Philadelphia," Bryan Adams' "Please Forgive Me," from his greatest hits LP, *So Far, So Good*, Crowded House's *Together Alone*, Squeeze's *Some Fantastic Place*, Willie Nelson's *Across The Borderline*, The Kinks' *Phobia*, and Bryan Ferry's *Taxi*.

**Steve Hodge/Dave Rideau:** During the eligibility period the team of Steve Hodge and Dave Rideau mixed Janet Jackson's *janet* (nominated for Grammy for Best Engineer), Sound of Blackness' *The Night Before Christmas* and *Sounds of Blackness* (Grammy for Best Album-Gospel), and Mint Condition's *Welcome to the Mint Factory* and *Meant to Be Mint*; recorded two tracks from Karyn White's *Ritual of Love* ("Do Unto Me" and "Hard to Say Goodbye") and the *Mo' Money* soundtrack; and recorded and mixed Johnny Gill's *Provocative*.

**George Massenburg:** During the eligibility period George Massenburg produced and engineered James Taylor *Live* (with Don Grolnick); Jimmy Webb's *Suspending Disbelief* (with Linda Ronstadt); and Linda Ronstadt's *Winter Light* (with Linda Ronstadt).

**Roger Nichols:** During the eligibility period Roger Nichols engineered records for Donald Fagen (*Kamakiriad*), Lost Tribe (one track from *Lost Tribe*), Kari White (*Lead Me Not*), Reba McEntire/Natalie Cole ("Since I Fell For You" from *Rhythm, Country and Blues*), Andy LaVerne (*Double Standard*) and Michael Keaton (*Mose the Fireman*).

### III. OUTSTANDING TECHNICAL ACHIEVEMENT

*Awarded to those products or innovations that have made the most significant contributions to the advancement of audio technology during the eligibility year. Note: The following product descriptions were supplied by the companies nominated.*

#### A. Ancillary Equipment

**Apogee Electronics UV1000 Super CD Encoding System:** The UV1000 Encoding System incorporates Apogee's UV22™ process for reducing high-resolution sources onto 16-bit formats such as CDs. The UV22 adds an inaudible, high-frequency "bias" to the digital bitstream, placing an algorithmically generated clump of energy around 22kHz. UV22 silently captures resolution beyond 20 bits on a standard 16-bit CD. Selected by many major mastering facilities, the UV1000 is gaining acceptance as the standard for bit condensation.

**Audio Precision ATS-I Test System:** The ATS-I, the newest member of Audio Precision's family of test instruments, complements the System One and Portable One product offerings. It features 13 audio measurement functions in one package. Available in either bench-top or rack packaging and featuring modular connector panels, the ATS-I meets the needs of users from studios to factories. The unit is IEEE-488 programmable, and graphics-based software drivers are furnished to simplify GPIB programming for the instrument.

**Brainstorm SR-15+ Time Code Stripalyzer:** The SR-15+ combines a distributor, stripper and analyzer. The analyzer verifies the format, frame

rate, video phase and color field alignment, detecting errors (i.e., dropouts or repeated frames) and indicating faulty addresses. A comprehensive report can be sent to a printer or computer. The distributor reshapes time code and distributes it through five buffered outputs with individual level controls. The stripper extracts synchronous pilot tone (sine and square) from time code, video or AC.

**Millennia Media HV-3 Preamp:** This high-voltage microphone preamplifier is a high-speed, high-headroom design employing unique octal-matched transistor hybrid gain stages. Designed through lab and real-world listening tests to maintain musical clarity (Millennia has recorded hundreds of orchestral and chamber works), the HV-3 avoids internal audio connectors, filters, pads, transformers, unbalanced audio paths and thermally sensitive circuitry. Distortion is typically less than 5 ppm. Bruel & Kjaer +130V mic inputs are optional.

**Roland SRC-2 Sample Rate Converter:** The Roland SRC-2 is a dual sample rate converter that allows for mixing and crossfade of any two digital sources to any destination at any common sample rate. The SRC-2 works entirely within the digital realm and is ideal for applications including CD mastering, post-production using digital VCRs, film sound recording and telecine, music recording and broadcast. Roland's custom VLSI chip set used in the SRC-2 ensures that conversion signal degradation is eliminated.

**Tech-21 SansAmp PSA-I:** This programmable, rack-mount tube amplifier emulator has a 100% analog signal path. Engineered for multiple applications, the PSA-I can record direct to tape, be used in mixdowns or be used as a preamp, "monster direct box" to PA, or as an outboard processor. PSA-I features 49 factory presets (from vintage to modern) for both guitar and bass, 49 user presets, rotary controls that adjust parameters in real time (positions are stored in memory), and MIDI or footswitch control.

#### B. Amplifier Technology

**Crest Audio 7301:** Developed for use in bi-amplified systems, including stage monitor, studio monitor and front-of-house applications, the two-rack-space 7301 is NexSys™-compatible. Channel A, designed to power lower frequencies, provides 940W (4 ohms), using Class H operation for increased efficiency. Channel B, for powering MF/HF signals, utilizes a Class AB, dual-rail output section with output power of 240W (4 ohms). Combined with a crossover, the 7301 becomes a compact, complete bi-amplification system.

**Crown Macro-Tech MA-36X12:** This combines two amplifiers in a single unit for bi-amped and touring applications. Dual power supplies treat each channel as a separate amp. For driving bass cabinets, Channel 1 offers the same specs as one channel of Crown's MA-3600VZ. Channel 2, for powering MF/HF transducers, offers the same specs as one channel of the MA-1200. Output Device Emulation Protection detects and compensates for overheating/overload conditions, while PIP-compatibility offers a flexible architecture for specialized applications.

**Demeter VT275HF:** A 150-watt stereo power amplifier specifically designed for recording professionals, this modern, all-tube reference amplifier is ultra-low in distortion and uses the highest-quality

audio components for ultra-linear output and fatigue-free listening. The VT275HF features 75 watts per channel into 2, 4 or 8 ohms; high-fidelity output transformers; fully regulated high-voltage (350V) supplied to the preamp tubes; independent volume controls; and toroidal transformer for low-noise operation.

**Hafler Trans-Nova 9505:** The Trans-Nova 9505 is the balanced professional version of Hafler's acclaimed Trans-Nova amplifier. The Trans-Nova's simple three-stage design combines unparalleled speed and accuracy with power, soundstage and an exceptional image focus previously found only in amplifiers costing three to five times more. The 9505 utilizes chief engineer Jim Strickland's U.S.-patented J-FET input/MOSFET output circuit in a unique, balanced design. Output (at 8 ohms) is 250W/channel or 750W bridged-mono.

**Hot House M500HV:** The M500HV, like the standard M500 and stereo S400 amplifiers, are characterized by a rich, tube-like sound, a high-degree of natural detail and transparency, and the ability to convey an instrument's distinct timbre and the acoustic signature of any soundfield. A direct descendant of the standard M500, the HV high-voltage model shares the same front end, chassis and straight-wire design philosophy, but offers 2.5-times the output for powering larger primary monitors and subwoofers.

**Stewart PA-1400:** Combining an HF switch-mode power supply and Class H amplification stage, the PA-1400 is efficient, compact and lightweight. The amp also features Harmonic Shift Correction, to correct the time shift occurring in all amplifiers. The result is a more accurate, sweeter, natural sound, with full, deep, low-end response. Output is 300 W/ch (8 ohms), 550 W/ch (4 ohms) and 700 W/ch into 2 ohms. It occupies two rackspaces and weighs just 16 pounds.

#### C. Computer Software & Peripherals

**Digidesign SampleCell II™:** Digidesign's sample playback system for music, post and multimedia production, SampleCell II combines 32 dynamically allocated voices, 8 polyphonic outputs, and up to 32MB of standard RAM on a single NuBus (Macintosh) or ISA (IBM-compatible) expansion card. Features include intuitive graphical sample editing/mapping and complete integration with third-party sequencers and Digidesign's disk recording systems. It also provides eight discrete digital outputs directly to Digidesign's Pro Tools™ system via the Digidesign TDM™ bus.

**Emagic Logic Audio™ Version 1.7:** Logic Audio features include full sequencing and scoring with per channel automated volume, pan and parametric EQ, digital sends/returns for Lexicon's NuVerb™ card, SMPTE Slave Driver™ support, unlimited virtual tracks, unique DSP editing functions and integrated Stereo Sample Editor. Other features include integration for Digidesign audio cards Audiomedia II™ and Sound Tools II™ (4-channel recording/playback), Session-8/882 and Pro Tools™ for eight to 16 channels of digital audio.

**Innovative Quality Software—Software Audio Workshop:** SAW is an award-winning, professional 8-track, disk-based sound editor that runs lightning-quick in Windows with virtually any low-cost sound card, yet is easy enough to learn for

simple multimedia tasks. A nondestructive, nonlinear editor, SAW uses just 400K of disk space and retails for only \$599, with free future updates. Relatively new, SAW is the only serious hardware-independent product of its kind—at any price.

**Opcode Vision 2.0:** Vision 2.0 is a complete professional Macintosh software system for the recording, editing and playback of MIDI-based music. Vision includes a sophisticated visual editing system with Standard Music Notation, Track Overview, List Editing and Graphic (piano roll) Editing. Professionals use Vision 2.0 for composition, records, TV, film and commercial soundtracks, and multimedia sound. Vision 2.0 comes with OMS (Open Music System) software and Galaxy universal librarian software for complete system integration.

**OSC DECK II:** DECK II is professional digital audio workstation software, offering CD-quality multitrack hard disk recording, timeline-style waveform editing, synchronous QuickTime movie playback, unlimited virtual tracks, bounce and mix direct-to-disk with full mixer automation and sync to all SMPTE rates. DECK II runs native on any Macintosh 660av or 840av—no audio card required. It also works with any Mac containing a Digidesign® Audiomedia™, Audiomedia II™, Audiomedia LC™, Sound Tools II™ or ProTools™ card.

**Passport Producer Pro™:** Passport Producer Pro is the ideal authoring software for creating public-access kiosks, computer-based training, special event presentations, and video and CD-ROM productions. Producer Pro's real-time development environment gives producers instant feedback during the production process. This time-based production tool combines and synchronizes animation, video, audio, music and presentation graphics. It offers multimedia producers interactivity, path-based object animation, external device control, video support, and graphics and text capabilities.

## D. Microphone Technology

**AKG C414B/TLII:** The transformerless C414B/TLII combines the sonic characteristics of AKG's 1950's C12 condenser capsule with advanced electronics that exceed all digital recording requirements. The result is a dual, large-diaphragm multipattern mic of unparalleled quality.

**Beyer MC 834:** The MC 834 is a precision condenser microphone designed for vocal and instrumental reproduction with accuracy and high output. The cardioid pickup pattern is maintained throughout the frequency range, allowing high gain levels without feedback and producing a uniform off-axis response. The MC 834 exhibits flat frequency response from 40-20,000 Hz, for a natural uncolored sound. Features include three-position LF roll-off, switchable 10/20dB attenuation and integral blast filter.

**Manley Reference Gold Series:** Innovations on these large-diaphragm tube condenser mics include: stable, "fast," ultra-thin gold diaphragms with the most precisely toleranced back-plate assemblies to date; high-voltage polarization; "full-gain block" vacuum tube amplification with ultra-wide bandwidth output transformer; acoustically transparent grille; dual isolation capsule suspension; mono and stereo versions, as well as a custom version containing a line-level preamp; a 24-karat, gold-plated body providing high conductivity and a long life.

**Neumann TLM193:** The TLM193 is a large-diaphragm, double-membrane cardioid condenser microphone designed for critical recording, broadcast and live sound applications. The TLM193's capsule is the same legendary large-diaphragm unit used in the U89/TLM170 family and is mated to the transformerless FET100 circuitry of the KM100 Series. The TLM193 package includes the microphone, swivel stand adapter and a foam-lined jewel case. An elastic suspension is optional.

**Sennheiser MKH 80:** This versatile studio condenser mic offers five polar patterns (omnidirectional, wide-angle cardioid, cardioid, supercardioid and figure-eight) along with level attenuation (-6/-12 dB) and low- (three-position cut) and high-frequency (three-position boost) response tailoring. Sennheiser's unique RF design and symmetrical capsule (charged electrodes in front and back of the gold diaphragm) achieve high-sensitivity and low-noise (10dBA) and handle high sound pressure levels (136dB SPL), providing a dynamic range of 126 dB.

**Shure Beta87®:** The Beta87 represents a major achievement in electret condenser microphone technology for handheld vocals. It combines smooth, tailored response with a true supercardioid pattern for greater gain before feedback. Features include high sound pressure level capability, low-noise electronics, full electromagnetic shielding and a three-stage pop filter that minimizes breath noise. The Beta87 has a premium hardened, dent-resistant grille, with improved shock-mounting and a wide dynamic range of 50 to 18,000 Hz.

## E. Sound Reinforcement Loudspeaker Technology

**Apogee Sound AE-9:** The AE-9 is a bi-amplified, three-way, electronically coupled loudspeaker providing exceptional directional control down to 300 Hz and extended response from 38 Hz to 16 kHz, +/-3dB, in a moderate-sized enclosure. The AE-9 has a 15-inch vented woofer, a 10-inch sealed midrange cone driver loaded by an advanced horn constructed of solid Finland birch, and a 1-inch throat, fluid-cooled tweeter loaded by a controlled directionality horn.

**Clair Brothers R-2DP:** The R-2DP is Clair Brothers' first two-way passive loudspeaker system. Designed as a full-range, high-output system for speech and music reproduction, the R-2DP is equally at home indoors or outdoors. The R-2DP features a 150-watt, 2-inch compression driver coupled to a rotatable 40x60-degree constant-directivity horn, while a 300-watt, 12-inch cone driver provides mid-bass and low-frequency reproduction.

**Eastern Acoustic Works KF852/BH852:** The KF852/BH852 Mid/High Virtual Array® System incorporates EAW's new 2-inch HF compression driver and two horn-loaded 10-inch mid/bass cones with displacement plugs. The BH852 Low Frequency VA® System includes two horn-loaded 15-inch woofers. Enclosures match the world-standard KF850. Scorpio Sound, Spectrum Sound, Concert Sound and Rock 'n Road Audio have assembled Stadium Array Systems using EAW's KF852 and BH852 with full-range KF850 and SB850 subwoofer systems.

**JBL SR Series II:** The SR Series II consists of updated versions of the SR loudspeakers and five new models. Some offer the Optimized Aperture large-format compression driver/horn combination

originally developed for JBL's Array Series, providing increased high-frequency output and significantly reduced distortion at high SPLs; new small-format compression and midrange drivers have been developed as well. New features include Neutrik Speakon and 1/4-inch inputs and passive crossover networks.

**Meyer Sound Labs MSL-5:** The MSL-5 is a high-power, high-definition loudspeaker for large-scale music reinforcement and public address applications. It combines exceptionally consistent directivity with seamless arraying for precise coverage control. The system comprises an integral 30-degree arrayable enclosure, with two proprietary horn-loaded 12-inch-cone low-frequency drivers, and three 2-inch-throat high-frequency horn drivers. The cabinet features 2,000-pound maximum load rigging hardware bolted directly to an internal steel frame.

**Turbosound Floodlight:** Floodlight has been used on worldwide tours by Peter Gabriel, Depeche Mode and Pink Floyd (the largest-grossing tour to use a premanufactured speaker system). The Floodlight TFL-760H combines the high-efficiency and transients of Turbosound's Flashlight stadium system, with 50x25-degree coverage. Cone transducers operating up to 8 kHz, in combination with Axehead horn-loading technology, result in high sonic accuracy, low distortion and exceptional intelligibility.

## F. Studio Monitor Technology

**Alesis Monitor One:** This studio reference monitor uses a proprietary 6.5-inch low-frequency driver with a mineral-filled polypropylene cone, linear rubber surround, and 1.5-inch voice coil on a high-temperature Karton former. The 1-inch silk-dome HF driver is ferrofluid-cooled. Exclusive SuperPort technology delivers high performance in its lowest octave. Frequency range is 45-18k Hz, +/-3 dB. Power handling is rated at 120W continuous program, 200W peak.

**Apogee Sound MPTS-1:** Apogee's Motion Picture Theater System One®, designed by Lucasfilm THX, is a tri-amplified system for left, center and right screen-associated loudspeakers, with a subwoofer for lower octaves. Each main channel has two enclosures—one housing the system's woofer and one housing both midrange drivers and a high-frequency horn/compression driver. This simplifies installation, as the mid/high enclosures are placed first for best stereo imaging, and the low-frequency enclosures are then placed freely.

**Bag End ELF System:** ELF represents a significant advancement in low-frequency reproduction. Processed by the ELF dual integrator prior to the amplifier, the woofer's flat response is extended below the audible range. Virtually all the problems of conventional above-resonance bass systems are solved by the ELF approach. Removing the resonance from the operating range and reducing the delay induced by conventional lowpass filters provides a Time Aligned®, flat response system; additionally, the required enclosures are quite small.

**KRK 7000B:** The KRK 7000B is a close-field, two-way studio reference monitor designed to provide extremely smooth frequency response, low distortion and high power handling capability. Featuring a 7-inch Kevlar woofer and a 1-inch Kevlar high-frequency device, the KRK 7000B also utilizes a

phase-aligned enclosure to provide optimum sonic quality. The speaker is also available with optional video shielding that eliminates magnetic interference caused by the close proximity of loudspeakers to video monitors.

**Quested H208:** The H208s are popular in digital suites, recording studios, post-production houses and higher-quality project studios. Although quite small, the H208s provide exceptional low-end, flat response and high power handling from two 8-inch LF drivers, 3-inch soft dome midrange and 1.125-inch soft dome tweeter. Questeds are installed at Abbey Road-London, Gloria Estefan's Crescent Moon Studios, Crew Cuts Post in New York and Hans Zimmer's Media Ventures, among other places.

**Tannoy PBM 6.5 Mark II:** The second generation of Tannoy's successful PBM 6.5, the Mark II incorporates advanced technologies, such as injection-molded 6.5-inch polyolefin mica-impregnated woofer cones, high-grade minimalist crossovers, and speaker elements suspended by a single roll of nitril rubber. These enhancements provide an additional half-octave of LF performance, with smoother, more articulate midrange and high frequencies.

## G. Musical Instrument Technology

**Akai CD3000:** The Akai Professional CD3000 is the first digital sampler equipped with a built-in CD-ROM drive. Besides offering greater convenience than the use of external drives, the internal CD-ROM drive of the CD3000 also allows it to digitally capture samples from standard audio CDs. The sampler also features 32-voice polyphony, dynamic resonant filters, 20-bit D/A converters, time compression/expansion, ten analog outputs, SCSI and full editing of programs and samples.

**Alesis QuadraSynth:** This 64-voice, 76-key master keyboard has 16MB of sample ROM, expandable to 24MB. QuadraSynth offers 64-voice polyphony and 128 preset and 128 user programs, each with up to four sounds, three envelope generators, three LFOs, tracking generator and dynamic lowpass filter. QuadraSynth provides 100 preset and 100 user "mixes" for multitimbral MIDI applications, and eight onboard multieffects are assignable to four effects buses. QuadraSynth's digital interface allows recording to ADAT in the digital domain.

**E-mu Morpheus:** The Morpheus Z-Plane synthesizer module uses E-mu's proprietary Z-plane synthesis technology for creating new classes of sounds with increased expressivity for traditional acoustic sounds. Rather than the 2/4-pole filters of traditional synthesis, Morpheus features 32 14-pole digital Z-Plane filters capable of modeling virtually any acoustic resonant characteristic. Morpheus features 32-voice polyphony, 16-channel multitimbral operation, polyphonic portamento, an 8MB sound complement (expandable to 16MB) and two stereo effects processors.

**Kurzweil MicroPiano®:** The MicroPiano is a half-rack module containing 32 Kurzweil-quality preset sounds, including Kurzweil's new grand piano samples, plus strings, layered piano/strings, Hammond® organ and two electronic pianos. Sounds are the same high-quality and full bandwidth as Kurzweil's top-of-the-line keyboards. Other features: 16 preset combinations of reverb and chorus (editable via a MIDI controller), four user-selectable response curves that adjust for velocity sensitivity, and simple front panel functions.

**Roland S-760 Sampler:** The S-760 is a full-featured professional sampler in a single rackspace. Features include internal RAM expandable to 32 MB, Quick Sample and Quick Edit modes for streamlined operation, digital EQ programmable per output and input while sampling, Listen Delete to optimize memory by intelligently deleting unused samples, optional board for CRT-interface and mouse for computer-style control/editing, the Library Preview CD-ROM disk and the ability to read Akai S1000/S1100 samples.

**Yamaha VLI:** The VLI represents the world's first application of computer-based physical modeling for real-time sound synthesis. The VLI Virtual Acoustic Synthesizer allows a musician to play a computer-based physical model of an instrument and generate realistic and expressive sounds. The VLI (Virtual Lead) is a melodic instrument, capable of interpreting the subtle nuances of artistic performance unlike any previous sound synthesis technology, with continuous note-to-note transitions, as in acoustic instruments.

## H. Signal Processing Technology

**Analog Devices AD1890/AD1891 ASRC Chips:** The AD1890 and AD1891 SamplePort™ Asynchronous Sample Rate Converters (ASRCs) are low-cost ICs that solve interconnect and synchronization problems in digital audio systems by altering the sample frequency of a digital audio stream with very high accuracy. SamplePort's breakthrough price/performance has allowed dozens of manufacturers to eliminate incompatible sample rate problems. Manufacturers using the AD1890/AD1891 include Dolby Labs, Philips, TOA, Studer, Fostex, AKG, Siemens AMS/Neve, Zaxcom, Harmonia Mundi, nVision and Z-Systems.

**Digitech TSR-24 Digital Multieffects:** DigiTech's first programmable reverb/multieffects unit based on an expandable hardware/software system, the TSR-24 offers true stereo inputs and four discrete outputs. Features include 20kHz bandwidth, 24-bit signal path, and all effects and parameters can be continuously controlled via MIDI and effects can be placed at any point in the chain, including redundant effects, such as EQ + Flange + EQ + Pitch Shift + Pitch Shift.

**Eventide DSP4000 UltraHarmonizer®:** The DSP4000 Ultra-Harmonizer effects processor features AES/EBU digital I/O for all-digital signal manipulation and unique modular software architecture. Users can build effects algorithms by linking modular effects "building blocks." The unit will generate up to eight simultaneous voices of pitch shifting or four voices of pitch shifting plus simultaneous stereo reverb. A unique Effects Seque feature lets tails of reverb "hang over" a newly loaded 4-voice pitch shifter.

**Lexicon Alex Digital Effects Processor:** Alex brings Lexicon's legendary digital effects processing into a full rack device featuring 16 presets, including reverbs, multivoice chorus, delays, echo and flanging. There are three variable parameters per effect and 16 registers for storing user sounds. Remote control capabilities for live performance include bypassing or stepping through presets or registers using standard footswitches. Alex also allows for creating groups of registers that can be looped for even greater control.

**Roland SRV-330 Dimensional Space Reverb:** The SRV-330 is a dedicated digital reverb unit featuring a new generation of effects. Utilizing Roland's three-dimensional sound localization technology, the SRV-330 generates up to 40 early reflections that can be positioned at a maximum of 20 locations in the 3-D sound field, an effect impossible to accomplish with single-rackspace units until now. Other features include discrete stereo algorithms for independent channel processing and 30-bit internal signal processing.

**Yamaha SPX990 Digital Multieffects:** The SPX990 Professional Stereo Multi Effect Processor offers high-quality effects and programming versatility for any pro application. Its 20-bit digital converters provide smooth and natural effects without a trace of digital noise or distortion. In addition to the 80 preset effects programs and 100 internal memory locations, the SPX990 offers RAM card memory expansion for storage of up to 100 user-modified effects, programs on a single data card.

## I. Recording Devices/Storage Technology

**Akai Digital DR4d:** The DR4d is a self-contained, rack-mountable multitrack hard disk recorder/editor that requires no host computer for operation. The 4-in, 4-out recorder features 18-bit A/D and D/A converters, digital I/O, jog/shuttle wheel, track merging, 108 location memory points, an undo function for all edits, and backup to DAT or SCSI devices. Options include SMPTE and MIDI interfaces, offering time code read/write and MIDI Clock/MIDI Time Code.

**Digidesign Pro Tools™ 2.0:** Pro Tools, an integrated multitrack digital recording and editing system, is expandable from a 4-channel base configuration to 16 individual audio channels (with up to 64 virtual tracks) in 4-channel increments. Pro Tools combines full-featured recording, mixing, signal processing, automation, MIDI recording and playback, and advanced waveform and event editing. Digidesign's TDM™ bus expands Pro Tools to include advanced mixing, routing, effects processing and integration with third-party hardware and software plug-ins.

**Fostex RD-8 Digital 8-Track:** The ADAT-compatible RD-8 can be used as a master or slave deck with up to 16 transports synched for up to 128-track recording. Features include onboard SMPTE synchronization, Sony 9-pin video control interface, pull-up/pull-down resync, MIDI Time Code synchronization, MIDI Machine Control, onboard 170ms track delay, multimachine offset, -10/+4dB analog I/O, ADAT fiber optic digital I/O and an LCD window to display operational data, autodiagnosics and locator info.

**Sonic Solutions Quattro Workstation™:** Quattro, the power platform for 4-track and larger Sonic configurations, is ideal for handling music editing, radio production and sound-for-picture work. Quattro supports four channels of I/O and is expandable to 24 tracks by adding incremental 4-track modules. Features include real-time playback of eight to 16 channels from a single hard disk, real-time audition of edits/crossfades, real-time EQ and mixing, and 16- to 24-track editing/mixing.



**Sony PCM-9000 Disk Recorder/Editor:** The PCM-9000 digital master recorder offers high-bit-resolution 2-track recording. With the many interfaces available, the PCM-9000 is ideal for high-quality music recording, audio mastering and post-production. The PCM-9000 records on the MSD-1200, a newly developed, single-sided magneto-optical disc that offers 60 minutes of 24-bit resolution recording and 100 minutes of 16-bit resolution recording.

**Tascam DA-88 Digital 8-Track:** The DA-88 next-generation modular digital multitrack track recorder features Hi-8mm tape technology and a high-quality production transport. It offers nearly two hours of 8-track recording on a single tape. Features include two autolocator points, auto-punch in/out and variable pitch control. Up to 16 DA-88s can be linked together for up to 128 tracks. Optional accessories include the SY88 synchronizing card, which includes SMPTE, Sony 9-pin and MIDI Machine Control.

## J. Sound Reinforcement Console Technology

**Allen & Heath GL2:** The GL2 is a 14x4x2x1 rack-mount mixer featuring 4-band EQ with two swept mids and six independent auxiliary sends per channel. It is switchable to a 14x6 stage monitor console that features insert points and balanced XLR outputs for each mix and an engineer's wedge mix.

**Crest Century LM Monitor Console:** The Century LM provides up to 20 discrete mono mixes from up to 52 inputs. The Century Series LM 8+4 monitor console provides eight stereo and four mono mixes and is ideal for in-ear monitoring. The dual-mono outputs used on the LM 20 can be combined with the stereo outputs of the LM 8+4 to offer any desired output configuration. Both consoles include a passive microphone splitter system.

**DDA Q II:** The Q II is a true LCR console, allowing any input or output to be assigned and panned across the Left, Center or Right outputs. It offers a choice of eight stereo subgroups (16 mono), eight mono subgroups and four complete LCR subgroups with a master LCR bus arrangement. Inputs feature sweep highpass filter, 4-band sweep EQ with switched Q on the mids, eight discrete auxiliary sends, eight mute groups and optional VCA/Mute grouping.

**Midas XL3-48:** The XL3-48 has 32 mono and eight stereo inputs and 16 mixes (auxiliaries) per channel. The stereo modules accept M/S microphone inputs or any other stereo signal. Its 16 mixes can be used as output mixes, subgroups or auxiliary master outputs. Eight VCA fader groups are standard, and any of the 16 mixes (or outputs) also can be controlled by one of two Grand Master VCAs. The console is suitable for FOH or monitoring applications.

**Soundcraft Vienna II:** The Vienna II offers added features to the standard Vienna front-of-house console, including more flexible auxiliary sends for theater configurations and stereo inputs for great input density. A new Grand Master module adds two programmable grand masters, which can control any of the eight VCA subgroups in any combination, and can be assigned at the touch of a single button. Each mono input module has eight aux sends that can be selected Pre/Post fader individually.

**Yamaha PM4000M Monitor Console:** A monitor version of the PM4000 mixer, the PM4000M is available with 36, 44 or 52 inputs, eight VCA groups, eight mute groups, and can perform 22 discrete mixes (18 group mixing buses plus two stereo mixing buses). The PM4000M mainframe is the same as the PM4000's 40- and 48-channel versions, as well as the input channel EQ—4-band, fully parametric (high- and low-frequency switchable to shelving) plus a variable highpass filter.

## K. Large Format Console Technology

**AMS Logic 3:** Designed for use with the AudioFile workstation, this digital mixer has an assignable control surface with four motorized faders, 12 Logicator controls and a high-res color screen for display of all mix functions. The board can be configured with 4-band fully parametric EQ, filters, dynamics controls and insert points in any signal path—all with dynamic automation. Maximum configuration is 32 mono (or 16 stereo) inputs, eight mono (or four stereo) subgroups and four stereo auxiliaries.

**AT&T DISQ™ System:** The DISQ Digital Mixer Core is a fully digital mixing system for audio post-production and mixing. The DISQ system is unique in two ways: It works in conjunction with Neve VR or SSL Series E or G consoles, and it's software-based to accommodate future advances in technology. The board's work surface controls the digital processing. Recording and analog mixing functions of the console are unaffected.

**Euphonix CS2000:** The Euphonix CS2000 provides the benefits of digital control with the superior quality and specifications of an all-analog signal path. The system is fully modular and highly cost-effective. Snapshot Recall restores all controls and switches in less than 1/30th of a second. Total automation allows precise automation of all controls and switches to time code. Unique features like these, combined with the system's tremendous flexibility, allow for total control of the mix environment.

**Otari Concept I:** Designed for music recording or post-production applications, this digitally controlled, 24-bus analog console offers interactive computer control of routing, switching functions, mutes and fader levels. Thus, the entire console can be instantly reconfigured on-the-fly or from user-defined presets. All inputs are dual input modules with identical 4-band equalizers and two 100mm faders. Ten aux sends, advanced solo and grouping functions, along with active status displays, enhance Concept I's functionality.

**Solid State Logic G Plus Series:** SSL has continued to make advances in both the sonic integrity and operational capabilities of its systems, culminating in the G Plus console series, accepted as setting a new high standard in professional audio production. Praise for its sound has come from George Martin, Hugh Padgham, Bob Clearmountain and Allen Sides.

**Sony DMX-S6000:** The DMX-S6000 digital console was developed for use with 24- and 48-track Sony DASH multitrack recorders and supports mixing to various digital formats. Four frame sizes with various options offer flexible configuration capability, allowing the DMX-S6000 to meet the exact specifications of each installation. The largest frame includes 64 input channels and 48-track send/return capability, while the smallest frame

includes 24 input channels and 24-track send/return capability.

## L. Small Format Console Technology

**D&R Vision:** Featuring high-definition electronics, ultra-linear mic preamps and a completely modular building block design, Vision excels in all areas D&R mixing consoles have become famous for. Vision has many advanced features such as true dual-input modules (in addition to its eight other types of modules), five frame sizes (rack-mount to 60-frame), and it can be automated and configured to suit recording studios, MIDI suites, or multimedia, sound reinforcement and theater applications.

**Mackie 8-Bus Series:** Mackie's 8-Bus Series consoles are designed to make "big board" performance and features affordable for project and home recording studios. The 32x8, 24x8 and 16x8 feature in-line monitoring, true parametric equalization and Mackie's acclaimed discrete microphone preamplifiers. The 24- and 32-channel models are expandable in increments of 24 channels. Madonna, Queensryche, Michael Bolton, Whitney Houston, Def Leppard and Boz Scaggs are among the artists tracking new albums on 8-Bus consoles.

**Soundcraft Spirit Studio LC:** Available in 16-, 24-, and 32-channel frame sizes and delivering up to 82 inputs at mixdown, Studio LC utilizes in-line design for maximum flexibility, with both channel and monitor paths on each input strip, and a Fader Flip facility to allow switching of channel and monitor signals without re-patching. Eight-bus grouping makes the Studio LC ideal for 8-track digital recorders, while tape send and return on each channel allows simultaneous recording on up to 32 channels.

**SoundTech Panoramic:** The rugged 4- or 8-bus Panoramic mixers were designed by John Oram and are manufactured in England to SoundTech's specifications under Oram's supervision. Each mixer features simultaneous line and tape mixing, five aux sends and 3-band mid sweep EQ that includes variable high-cut and low-cut filters. An active subwoofer crossover and fully independent two-way intercom system are features unique to Panoramic. Panoramic mixers are available with 16 to 32 channels.

**Soundtracs Topaz:** Topaz's dual-input, project studio console provides EQ, aux sends, solos, mutes, level and pan on both channel and monitor inputs; eight assignable audio groups plus four stereo effects returns providing 40 tape outputs and 72 inputs at mixdown (32 channel); phantom power on all channels; comprehensive control room and studio routing; the latest low-noise Analog Devices input preamp; optional is a full meter bridge for the finishing touch on this compact 48- or 64-input mixer.

**Studiomaster P7:** This 8-bus, in-line console is expandable from a basic 16x8x16x2 to 40x8x40x2. Features include MIDI muting with 100 onboard memory scenes, 4-band EQ with dual mid sweeps, EQ defeat, input swap switching, six auxiliary sends, PFL/APL and solo in place on all channels. Also included are line "B" tape inputs, solo safe, dual 2-track tape outputs, dual control room monitor outputs, four programmable mute groups and an electronic "lockout" security system.

# THE INS AND OUTS OF PATCH BAYS

**A**nyone who worked in the home studios of the 1970s and '80s probably experienced a production environment without patch bays. A simple setup occasionally required crawling behind the equipment to reconfigure effects gear. In a complex system, however, repeatedly climbing under the desk became a nuisance, a time-waster and a drain on creative energy.

Patch bays help solve these problems by providing a convenient way to reconfigure the system signal flow without disconnecting equipment. This means more efficient use of less equipment and faster access to devices to implement creative ideas. It means not having to figure out how things were left after the previous session. Patch bays also speed up troubleshooting.

In a multiroom facility, patch bays are a necessity (unless each room is treated as an isolated system). Most video facilities have a routing switcher to accomplish electronically what a

**BY ERIC WENOCUR**



patch bay does manually, but patch bays are cheaper and, as passive devices, are extremely reliable.

Patch bays come in various types and styles, usually dictated by the kind of signals they route. While we will concentrate on audio here, there also are specialized patch bays for video, optical, telephone, digital data and machine control. A complex facility may have many of each.

## **AUDIO PATCH BAY CONSTRUCTION**

Audio patch bays usually are found built into a recording console or as stand-alone units mounted in an equipment rack. The built-in types often are provided by the console manufacturer as an option or standard accessory. The advantage of patch bays that come with a console is that the wiring between console circuit points and patch jacks is already done. In addition, most use multipin connectors to link the patch bay with studio wiring, so wiring harnesses can be constructed prior to console arrival, then simply plugged in. The disadvantage is you may have to accept the manufacturer's view of where patch points should be in the signal path, and their layout preferences.

*Patch bays help solve problems by providing a convenient way to reconfigure the system signal flow without disconnecting equipment.*

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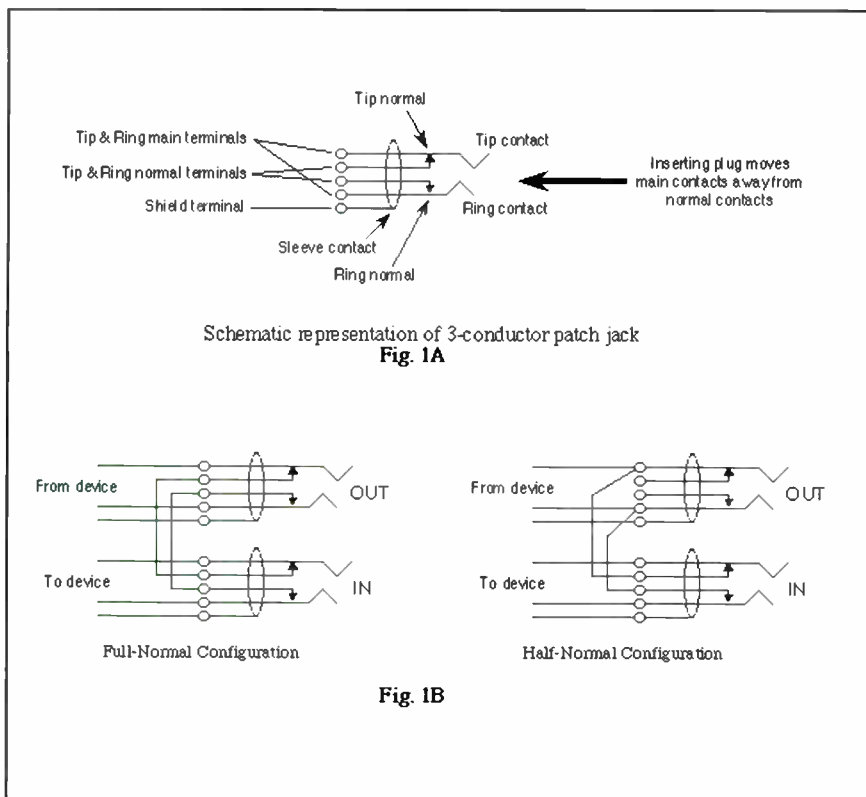
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mounted jacks tend to be less robust than long-frame, both in contact pressure and longevity (long-frame jacks are so unlikely to break, they usually carry lifetime warranties), and usually are not gold-plated.

Console manufacturers may use either jack type in an onboard patch bay, and may use anything from discrete shielded-pair cables to ribbon cable for connection to the console.

As a rule, broadcast jackfields, whether 1/4-inch or Bantam, use 3-conductor (tip/ring/sleeve) jacks. This allows patching of balanced audio circuits. Two-conductor (tip/sleeve) jacks and plugs are available from some manufacturers but are not popular in professional installations. Printed circuit-style patch bays may come in either form, although unbalanced (TS) is more common. In all cases, the shield of each jack is generally isolated from the other jacks and the frame, unless intentionally connected with a ground bus or other method.

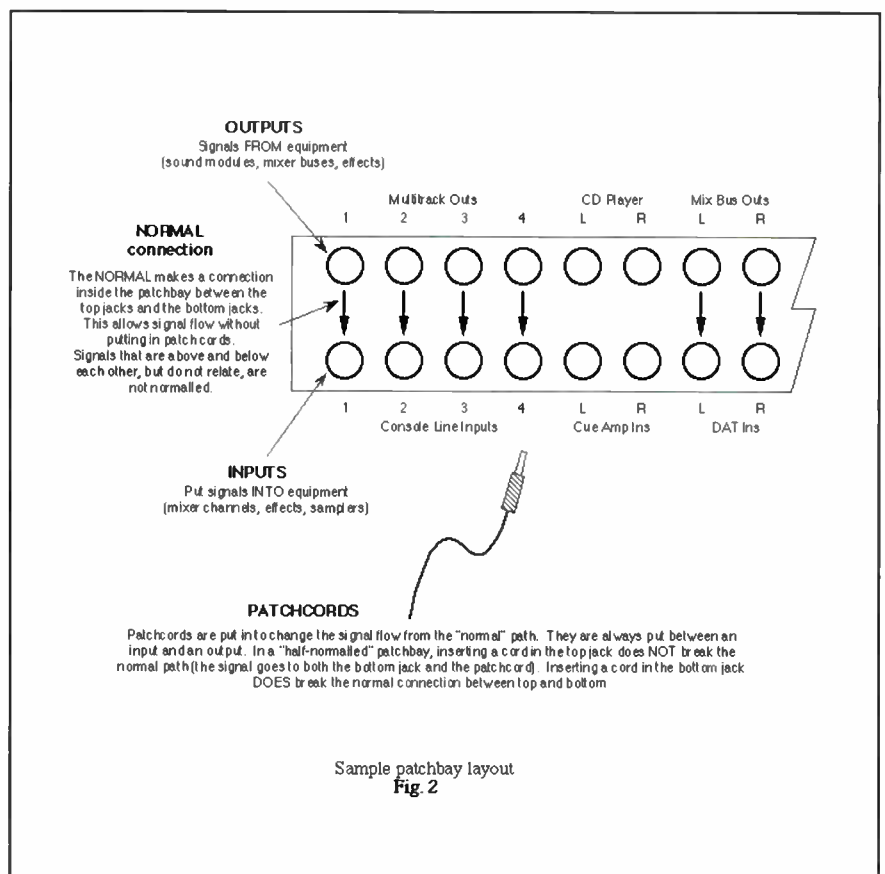
Now the fun part: normaling. If patch bays required a patch cord for every connection, they would be very costly and extremely tedious to use. The process of "normaling" jacks creates a path through each jack circuit that exists *without* the

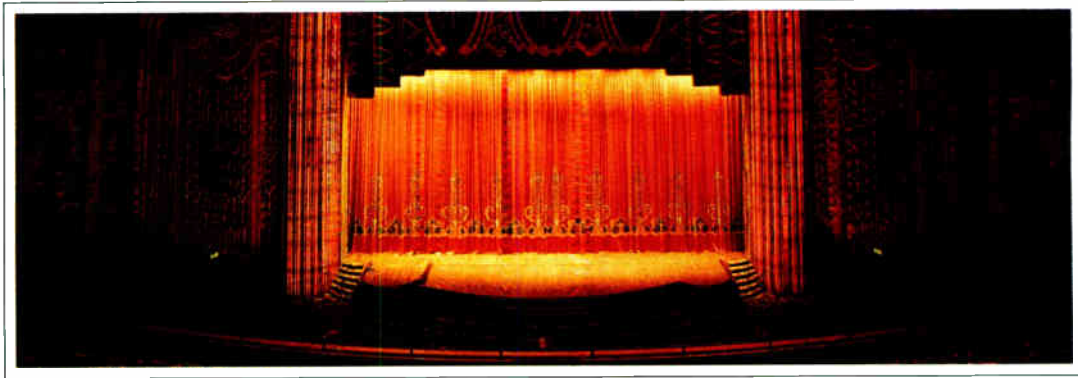


Stand-alone patch bays come in several forms. The most common "broadcast-quality" units consist of individual jacks, made from heavy metal frames and springs with gold-plated contacts, mounted together in a machined panel (the result is sometimes called a jackfield or patch mat). These "long-frame" jacks may be 1/4-inch diameter or the more compact Bantam ("tiny telephone" or TT) type. The 1/4-inch jacks measure about the same size as common 1/4-inch guitar cord plugs, but they have a more complex shape and contact arrangement. The shape and fit of 1/4-inch long-frame and Bantam jacks (sometimes known as military or telephone-style) are standardized. These jacks usually require a mating plug with matching shape for the best connection, although guitar-type plugs may work with the 1/4-inch size (but military-style plugs rarely work well in standard 1/4-inch phone jacks). Long-frame jacks are designed for solder connections and may be used in this form or wired to an assortment of termination devices (discussed later).

The other common construction method is to build a patch bay around jacks that mount on printed circuit cards. These patch bays usually are set up so both the front and rear have connectors (1/4-inch guitar-type or RCA), which lets you wire

up a system with premade cables between the patch bay and equipment. This type of patch bay is easy to install and costs much less than the long-frame type. The disadvantages lie mostly in construction; PC-





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need for a patch cord. This is the "normal" circuit path that is desired most of the time. Normalizing is accomplished by using additional contacts on the jack besides the tip, ring and sleeve. Jacks with normal or "switching" contacts have springs that touch the main contacts when no plug is inserted. These contacts can be used to create a path to another jack. When a plug is inserted, the main contacts are pushed away from the normal contacts, thus breaking the circuit (Fig. 1A).

By wiring together the normal contacts of a pair of jacks, a circuit path is created between the jacks when no patch cord is present, and thus between the equipment connected to those jacks. When a plug is inserted, the signal flow is rearranged to follow the new path. Even more functionality can be achieved by using the normal contacts on the "input" jack and the main contacts on the "output" jack, creating a bridging or "half-normal" configuration. Here, plugging into the output jack does not break the normal circuit, because it is wired to the main contacts, along with the equipment associated with that jack. The normal is broken only when a plug is inserted in the *input* jack, which creates an instant "Y" or mult of the equipment that feeds the output jack (Fig. 1B). With high-impedance inputs, the output signal can be split with no signal degradation.

One final variation on normalizing is that of "mult" jacks in a patch bay: jacks whose main contacts are wired in parallel to create a multiple splitter. These can be handy and are safe to use with high-input impedance equipment, but they should *not* be used to combine equipment outputs. Most device outputs are not designed to "see" another output; doing this can degrade the signals or even damage the equipment.

A large music console has hundreds of patch points, and a complex mix can require dozens of patch cords. As mentioned previously, military-style patch jacks require matching plugs. These are sold on patch cords of various lengths, in mono and stereo versions (two single plugs mated in one housing, which requires specific jack spacing!). Military patch cords have traditionally used brass plugs, which can be soldered or molded on. Even the type of wire varies from one manu-

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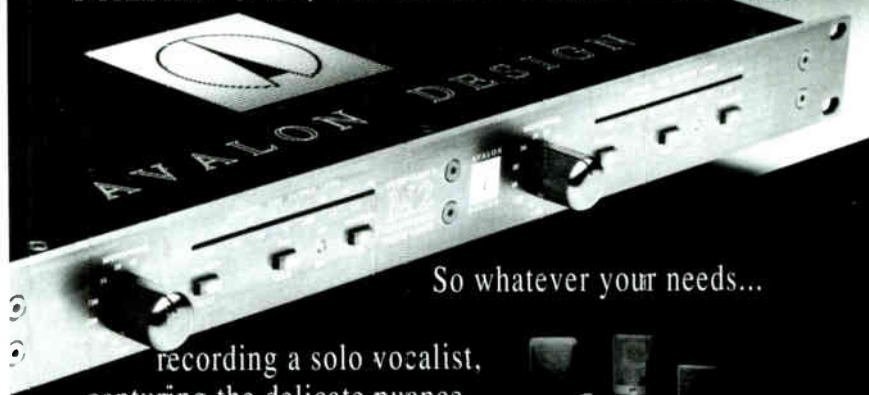
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facturer to another. For the most part, flexibility and resistance to breakage under hard use are important. Another critical issue is contact resistance. While the jack contact surfaces may be gold, which does not tarnish, tarnished brass plugs can degrade and even block the signal altogether. The new nickel-plated plugs, available from most manufacturers, do not tarnish.

### TERMINATION

Connections to long-frame jacks can be made several ways. The most obvious involves soldering directly to the terminals. This is reasonable for a small patch bay, but extremely labor-intensive in a large setup. It also is difficult to change the configuration of the patch bay once it is installed.

The next step in terminating technology is the "christmas tree" block—a chunk of plastic with solder terminals mounted through it. Wires from the patch jacks are connected permanently to one side of the block, and wires from equipment are soldered to the other side of the terminal corresponding to the desired jack contact. Wiring christmas trees is laborious, but they can be mounted at a distance from the patch bay so they at least make wire dress simpler. Patch bays can be purchased with christmas tree blocks prewired to the jacks.

The modern solution to professional patch bay termination is some type of "punch-down" block. These range from the common "66" type used by the phone company to exotic brands. One popular type is the QCP system from ADC Telecommunications (also available on other manufacturers' bays). This system requires no soldering or stripping of individual wires, and connections can be changed easily. All punch blocks require their own special tool: Reliable connections *cannot* be made by jamming in wires with a screwdriver! It also is possible to purchase bays that are custom-wired to various connectors, including Molex, ELCO/EDAC, Cinch-Jones or whatever your system uses.

Terminating a patch bay requires attention to details beyond which wire goes where. Lead and cable dress should be neat enough that contact points are accessible and there are no inadvertent shorts, but allow wires to be moved out of the

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way for inspection or changes. Cables should have some type of strain relief to protect against being pulled out or broken. Consideration must be given to grounding schemes and buses. One side effect of being able to patch equipment is that devices with potentially incompatible types of input or output circuitry may be interconnected, such as mixing transformer-balanced with unbalanced. Thought must be given to this issue to avoid signal degradation or equipment damage.

#### LAYOUT

For a patching system to be useful, patch points must be available where they are needed. A simple patch bay layout might allow for the most frequent changes, while a comprehensive patching arrangement should foresee and accommodate unusual situations. The typical studio setup provides patch points between the console line inputs and outputs and the tape machines (or other storage devices); zillions of patch points in the channel signal path for inserting effects devices; patch points for effect gear ins and outs; as well as patch points for ancillary equipment such as mixdown machines, power amp and cue system inputs, tone generator outputs, mulTs, metering points and perhaps microphone patching. When setting up a system-wide patch bay, consider potential patch use vs. cost: adding a whole panel to get one additional jack may not be cost-effective.

Stand-alone patch bays come in a few standardized sizes, although custom arrangements can be purchased from several manufacturers. Generally, 1/2-inch jacks come as two rows of 24 or 26 in a 1U or 2U rack-mount panel configuration. This amounts to 48 or 52 points in the panel. The vertical size difference affects rack space and labeling room. Bantam jacks measure half the diameter of 1/2-inch, so the same-size Bantam panels can hold 96 or 104 jacks. Some console manufacturers apply this basic scheme, and others use completely custom patch panels.

Some fairly well-accepted conventions exist for patch bay layout (Fig. 2). For example, in the case of two rows in a single patch panel, outputs are located above inputs. This means signal flow is "down" the patch bay, like a waterfall. Since patch bays tend to use up more out-

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puts than inputs, there might be some extra input jacks for miscellaneous nondirectional or nonaffiliated signals such as tielines, mults or tone generators.

Generally, 2-channel or stereo devices are laid out with the channels next to each other in pairs. Related signal paths or functions are logically grouped near each other, or in such a way as to imply the signal flow through the system.

While simply normaling all output jacks to input jacks provides useful signal flow, normals can be used in other ways. For instance, you might bring a desired "normal" signal to an

input jack without actually connecting that signal to an output jack. This saves output jacks in some situations. Sometimes normaling should be avoided, particularly if feedback will be the result.

It is wise to locate outboard patch bays at a height and distance that allows easy access for putting in patch cords, reading designation strips and doing routine maintenance, but remember that patch cords will hang down in front of other equipment. In addition, allow adequate space behind and beside the patch bay for the many cables that will terminate there. If you have space limitations,

bays can be purchased with punch-blocks wired to a cable harness, which allows the external wiring to be located away from the actual jackfield.

Manufacturers have various methods of attaching labels. Some provide precut strips, but it's often easier to format and print label strips on a computer.

#### CARE OF PATCH BAYS

Modern long-frame patch jacks are gold-plated at the contact points and have "wiping" contacts that are self-cleaning when plugs are inserted and removed. If the patch bay recently has been exposed to construction dust, or hasn't been used in ages, it may need to be blown clean with compressed air, then exercised. Some manufacturers recommend cleaning only by exercising noisy jacks with a patch cord. They claim that any sort of abrasive burnisher will remove the gold plating and that spraying contact cleaner on the jacks will attract dust.

This is logical advice. My experience with patch bays has shown that the most frequent culprit in problems with intermittent connections (e.g., crackling or "thin" sound) is a dirty patch cord. Brass patch plugs tarnish and become poorly conductive. They should be cleaned frequently with steel wool or the special cloths sold by patch bay manufacturers. This simple act (or drudgery, if you have hundreds of cords) works wonders. Nickel-plated plugs are a good solution if you're starting out fresh, but it's hard to justify replacing thousands of dollars' worth of brass plugs.

Printed circuit-type patch bays are more likely to suffer from broken parts than oxidation, and their patch cords usually use guitar-type nickel plugs. Treat these bays gently. Patch cords get damaged mostly at the point where the cable enters the plug, caused by failure to leave enough slack when making the patch, and by pulling cords out by the cable instead of the plug body.

If treated well, a professional-quality patch bay should last indefinitely. ■

*Eric Wenocur owns Lab Tech Systems, an audio and video consulting and design firm in the Washington, D.C., area. He is also a recording engineer, producer and musician.*

The image shows a rack of audio equipment, including a patch bay and several time code refreshers. A hand is holding a patch cord. Text overlays include "Please pass the Talkback", "Introducing the NEW SR-15+ DISTRIPALYZER", and "Analyzes, Cleans and Distributes Code—now with built-in status report!".

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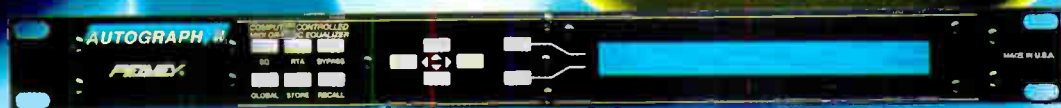
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by Mark Frink

# SABINE ADF-2400

## WORKSTATION

S ometime around Woodstock, a sound engineer thought it would be a great idea to point a speaker at the musicians onstage so they could hear. In doing so, the speaker also ended up pointing at the microphone. Since then, feedback has become as inevitable in live sound as donuts and chicken backstage. Even before that, a group of audio pioneers demonstrated that by evenly spacing equalization filters three to an octave across the audible sound spectrum, all necessary adjustments to frequency response could be achieved. Standard ISO frequency centers were established for those filters, and the ubiquitous  $\frac{1}{3}$ -octave equalizer became the tool for sound contouring and feedback control.

In 1990, Sabine introduced the TEC Award-winning FBX, a revolutionary product that automatically detected the onset of feedback and assigned a  $\frac{1}{3}$ -octave notch filter, matching the problem frequency and eliminating the offending squeal. The following year, Sabine unveiled the second-generation FBX-900, a digital product with nine narrower  $\frac{1}{6}$ -octave filters, and they followed this with a prototype called the FBX-1200 "Signature Series," a single-channel, DSP-based FBX device with an LCD screen displaying the frequency, depth and width of its 12 filters. Applying suggestions from users, Sabine refined this design, and the 2-channel ADF-2400 Workstation debuted at the Fall 1993 AES, along with the single-channel ADF-1200.

The precise digital parametric



equalization of the Adaptive Digital Filters can be used for much more than feedback control. I don't think many recording studios are prepared to deal with the extra problems associated with artists who suddenly decide they need wedges instead of headphones. This product would certainly be useful on those amusing occasions. It might also make a fine insert for those special podium mic situations where you have five minutes to ring them out before they open the doors for the awards presentation.

The ADF-2400 has a single bypass button, an LCD screen and a 20-button keypad for control and data entry, making it perhaps a bit intimidating at first. Fear not! This well-thought-out, fourth-generation product is easy-to-use, giving the greenest rookie some of the EQ chops of a veteran monitor engineer, while of-

fering sophisticated users a wide variety of options and features.

As with the FBX-900, the ADF-2400 is a processor-controlled digital filter set that can automatically sense feedback, determine its exact frequency and place a narrow digital notch filter to cancel the ring. This is done by employing  $\frac{1}{10}$ -octave filters instead of the much wider filters associated with typical  $\frac{1}{3}$ -octave equalizers. The result is less gain reduction of musical material and less muffling of the sound at frequencies adjacent to those feeding back. The unit's reaction time is typically under half a second, light-years faster than the average sound person could set up a parametric equalizer.

An in-line device with electronically balanced XLR connections (pin 2 hot) and plenty of headroom (+26 dBV), the ADF is intended to go just before the power amp or electronic crossover in the audio chain. Sabine has thoughtfully included audio ground lift switches on the back, and Jensen transformers are an option. Its two channels each include 12 digital equalization filters and adjustable highpass and lowpass filters. Its 18-bit sigma-delta A/D conversion has a sampling rate of 48 kHz. Like all digital devices, its "digital pipeline" has a small delay—about 56 samples long in this case (less than 2 ms—you do the math).

The front panel has two eight-segment LED meters and a "clip level adjust" knob, which is used to match the headroom of the ADF with the clip level of the amplifier (overdriving the ADF's input definitely sounds bad). Other features include a delay and noise gate on each channel, a real-time analyzer, password protection and eight user memories. It has a separate switch and LED for the hard-wire bypass, which automatically engages when turned off.

The user interacts with the ADF using a keypad and a 64x240 dot-matrix, backlit LCD screen. On power-up, a "main menu" appears, from which eight submenus are selected. The "filter control menu" shows the parameters of the ADF's equalization filters. This is the window into the operating room where all the brain surgery takes place. At a glance, you can see the parameters of the 12 filters plus the highpass and lowpass filters for one channel.

The type of filter is displayed in

the first column, and the three types are designated P, F or D, for Parametric, Fixed or Dynamic. The next three columns are Frequency, Depth and Width. An unassigned filter has a center frequency of zero, a width of  $\frac{1}{10}$  octave and a depth of 0 dB.

There are significant differences between conventional analog filters and digital filters. The ADF's digital filters do not drift with temperature, and the device is capable of radical EQ correction without imposing the phase shift that accompanies analog filter sets. When using any digital equalizer to make EQ adjustments, users who are not familiar with this aspect of digital EQ may find it more difficult to hear changes, because they will not have the accompanying phase shift. With the absence of the phase shift, it may take more radical adjustments to convince the uninitiated listener that digital filters are "working." I encourage curious engineers to sit down and compare digital and analog equalization if they haven't already.

The ADF's other two filter types are FBX automatic feedback control filters. Like Sabine's other FBX devices, the ADF uses a patented algorithm to monitor the input signal and detect feedback. Once detected, it sets a filter, usually  $\frac{1}{10}$ -octave wide, at the offending frequency. This filter is only set as deep as necessary to eliminate feedback, in 3dB increments. If feedback persists, the filter's depth is rapidly increased. Both the width and the maximum depth of all the ADF's FBX filters are global parameters, with the depth going up to -80 dB and the width adjustable from  $\frac{1}{10}$  to 1 octave wide. Most causes of feedback can be cured with only a few dB of adjustment, and the maximum depth usually only needs to be -20.

Controls for "threshold" and "persistence" allow the user to fine-tune the FBX algorithm. Threshold adjusts how the algorithm looks at the harmonic content of a suspected feedback signal before it can be classified as feedback. Higher threshold settings indicate higher sensitivity to feedback and require a lower harmonic content to be perceived as feedback, to help distinguish between musical tones, which have higher harmonic content. Persistence determines the length of time that a pure tone must be present before it is classified as feedback and auto-

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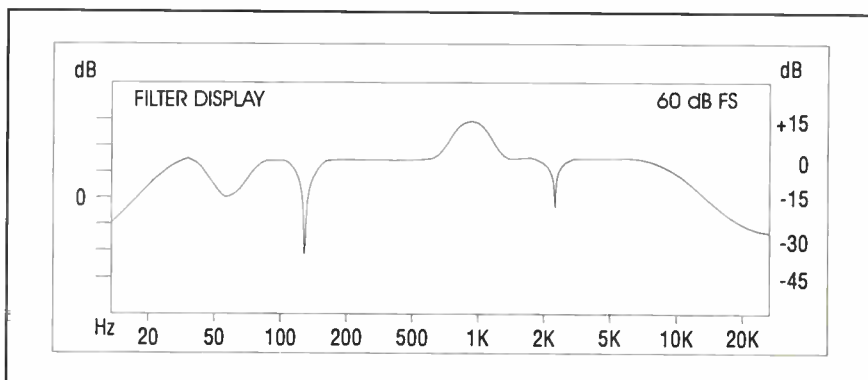
## FIELD TEST

matically suppressed. Higher values require the feedback to be present for a shorter time before acted upon. Conservative adjustment (lower threshold and persistence) increases the amount of time it takes the unit to react to feedback, with maximum reaction times of up to 5 seconds available. At the default settings, the unit reacted in under half a second.

"Fixed" filters are used to eliminate feedback from physical characteristics that are unlikely to change

ponents are moved or changed, FBX devices should be "re-taught" where to place the fixed filters that are used to eliminate response peaks. Before setting up the fixed FBX filters, there are several basic adjustments that should be made. First the speakers and microphones must be placed where they'll be used during the performance.

I used Sennheiser MD 431s, Audix OM-5s and Beyer M-88 mics for my tests, going into an Allen & Heath GL-2 mixer. The speaker system I used was four JBL-loaded bi-amped



**Filter display menu: combined response setting**

much, such as the combined response of the microphone and speakers. The ADF's ability to precisely set these filters provides the dramatic increase in gain before feedback. Once a fixed filter is set, its center frequency remains stationary, but it may be deepened automatically to control additional feedback at the same frequency. The fixed filters are programmed during the setup procedure, where the microphone levels are raised to the point of feedback so the unit can "learn" those frequencies and set the filter to the frequency and depth needed.

"Dynamic" filters are used to eliminate transient feedback that can come and go at different points of a live performance. If a new feedback frequency occurs during the show, an unused dynamic filter is automatically assigned. When all of the dynamic filters have been assigned, the filter that was set the earliest is reassigned, if needed, to handle subsequent feedback, and so on. If the feedback frequency detected is close to an existing filter, it is presumed that the new feedback is a result of a "drift" in the frequency of the original as a result of changes in air temperature or humidity. In this case, a nearby filter is moved to the new frequency.

Each time the sound system com-

floor monitors, in pairs, on two mixes. The wedges were loaded with JBL 2225 15s and 2425 compression drivers on 2370 horns and powered with Carver amps, with a BSS 310 crossover at about 1,500 Hz.

Before making feedback adjustments, all equalization corrections for tonal balance should be made. The FBX cannot change the laws of physics, and excessive highs or lows will make it work harder to eliminate feedback, sucking up more of its fixed filters and making it necessary for it to cycle through its dynamic filters more quickly. Although basic sound contouring can be done from a separate graphic or parametric equalizer, using a few of the ADF's filters in parametric mode will be adequate with good speakers and mics.

Once you are satisfied with the sound contour of the speakers, you next "teach" the unit where to set the fixed FBX filters. I began setting the ADF's fixed filters in the usual way, by slowly making the system feedback, raising the master volume on the console with the speakers and mics in place and everything turned on. As feedback occurs, there are a series of short howls or squeals that are quickly cut off. You can watch the filter's frequency and depth pa-

parameters being set on the filter control screen. Further feedback recurring at these fixed frequencies later on causes the appropriate filter to be deepened as necessary. Some well-behaved microphone and speaker combinations require only a few filters. I found six fixed filters to be more than enough, leaving the last three of the 12 filters to be used as dynamic FBX filters.

Without reading the manual, I just replaced my two  $\frac{1}{2}$ -octave EQs with the ADF, and, presto, it started working, grabbing a half-dozen offending frequencies right away. It kicked in and set each filter in less than half a second, but even that brief amount of feedback can be irritating.

The dynamic FBX filters are for feedback associated with changes in the orientation of the microphone to the speaker during the performance. This may happen by the microphone actually being moved or by a change in some acoustically reflective surface causing sound energy to be bounced onto the microphone differently. Some performers may take their microphone off the stand and travel around the stage quite a bit. The extra dynamic filters available in this case are helpful, particularly if the performer gets "lazy arm" and points the mic into the monitor.

An overlooked source of monitor feedback is the narrow-band cancellation effects resulting from path-length differences when using multiple wedges at individual microphone positions. The ADF's dynamic filters are useful when narrow dips in the combined response of multiple sound sources suddenly change. The ADF's unique ability to rapidly adapt to changing physical and environmental conditions make it an order of magnitude more powerful than a simple notch filter set.

The filter display screen shows the combined graphical representation of the filter settings. This display is shown in two forms. The first screen is a graphical representation of the location, width and depth of all the filters and their relative positions; a second mode shows the combined response of all filters with display scales of 60, 30 and 15 dB of vertical resolution available.

Like the filter display, the RTA screen has three scales with fast or slow decay. The manual has instructions for using a pink noise source, a mic preamp and a reference micro-

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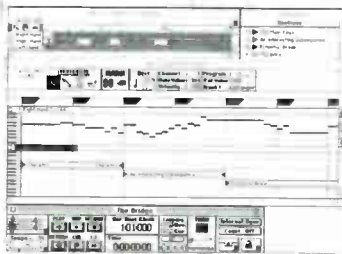
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phone to set up the equalization of a speaker system, but these items are not included with the ADF. Although this RTA feature is a nice extra, it will not take the place of a dedicated, full-featured RTA. The response of the RTA display is slow, as is the response of the filter display mentioned earlier, because the ADF's processor assigns the highest priority to monitoring and control of feedback. But it's useful for visual information about the frequency content of the signal.

Digital delay settings for either channel can be set in feet, meters or milliseconds, with up to 170 ms of delay available (3-40 ms on the single-channel ADF-1200). This can be a useful tool for delaying a monitor mix to the reference of the main house mix or the sidefills, which arrive at the stage at different times.

There are eight user presets that can be saved and named. Preset zero, the factory default configuration, provides a useful starting point and is where I jumped in headfirst. Each time the unit is turned on, it automatically returns to the same settings it had when the unit was last turned off.

All in all, I was very impressed with the ADF-2400 as both an equalizer and as a feedback exterminator. The added ability to program precise digital parametric filters and digital delay make it well worth its list price of \$2,628 for two channels. While it may not be the right tool for some, I would bet my next monitor gig that this will outperform traditional 1/3-octave equalizers in many applications.

I used the test-rig as a rehearsal system and then for a live show. It was comforting knowing that, in addition to the increase in gain before feedback I experienced in the monitor rig, there was always the invisible hand of the processor, ready to step in and avoid a train wreck. I was able to let the band rehearse for hours on end, while I went home for a carefree meal. At the show, I was able to get the monitors ripping in no time at all without having to run back and forth to the graphic, and I was then able to go mix the house without having to worry about feedback onstage. This one's a winner.

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MLX Magazine



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David Frangioni, EQ Magazine

Ah, decisions, decisions. You want to buy a new multitrack recorder, and you want to go digital so that you'll get the best possible sound quality. And you'd like to buy a hard disk recorder, rather than tape, so you can get random access editing power. And finally, it's got to be something you can really afford. But there's a problem.... don't all hard disk systems require expensive add-in hardware and software, to already expensive computers? Not anymore!



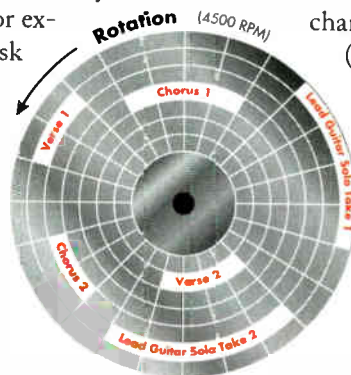
after the power is turned off and on again! Imagine it. Do it. It's that simple.

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The DR4d is the solution for those looking for an alternative to expensive, complex computer-based systems, or the limitations and mechanical uncertainty of tape recorders. It offers a perfect combination of hard disk recording benefits with an easy-to-use interface.

The DR4d can record up to four tracks simultaneously to standard SCSI hard disks, either internal or external drives. An optional 213MB internal disk offers 40 track minutes of recording (44.1k-Hz) right out of the box. To expand your recording time, simply connect external drives to the DR4d's supplied SCSI port.

With standard tape machine-style controls the DR4d is by far the easiest hard disk recorder to operate, which means that you can get to work immediately creating music rather than setting up and operating a computer system. Punch ins/outs can be performed manually or automatically from the front panel, or by footswitch, naturally.



On a spinning hard disk, the sections of music can be accessed almost instantaneously by the moving heads of the drive mechanism. This allows you to seamlessly output parts regardless of their location on the disk. Also, music can be easily rearranged in ways not possible with tape.

Of course, how the DR4d sounds is as important as how it works. Advanced 18-bit oversampling A/D and D/A converters insure crystal clear sound, and with a full 96dB dynamic range, the DR4d offers no-compromise specs. The four balanced 1/4" input and output jacks are switchable between -10 and +4 operation, and 2-channel digital I/O is included standard (AES-EBU and SPDIF) with two additional digital ports optional.

Need more than four tracks? Four DR4d's can be linked to create a 16-track system. And for synchronization to other gear, just add the optional MIDI or SMPTE interfaces.

And best of all, the DR4d is an **affordable** reality: suggested list is only \$2495.00 (or \$1995.00 w/o hard disk)! Multitrack disk recording is within your reach, so see your Akai dealer today for a complete demo!

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On tape, the sections of music are physically located far from each other, separated by many feet of the tape itself. Since you have to move all that tape past the heads to get where you want to go, it's impossible to jump instantly from one section to another. It wastes time, and limits creativity!

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by Bob Hodas

# GML SERIES 9100 HRT

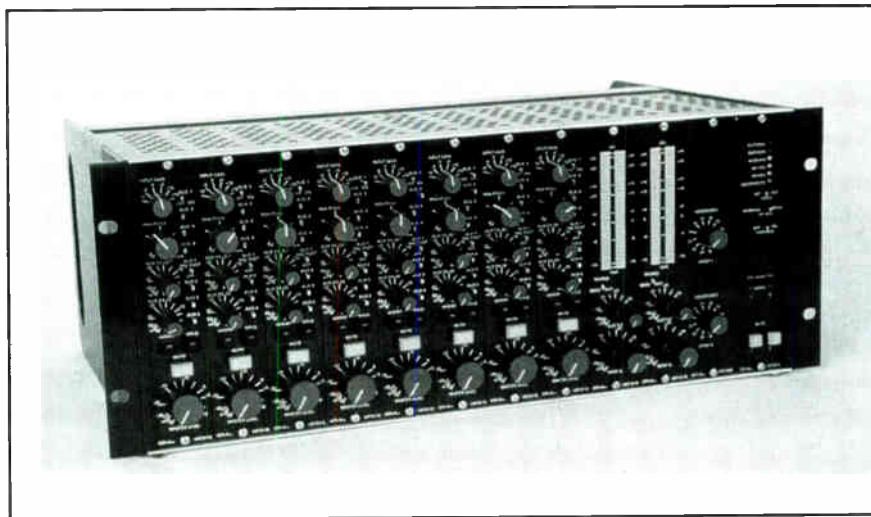
## MIXING SYSTEM

**G**eorge Massenburg Labs' portable mixing system is one of those products I've been waiting for all my life. Absolute sonic beauty, superb mechanical construction, an uncompromised discrete design—this is some line-level mixer.

The 9100 HRT Mixing System is modular and allows flexibility in user configuration. Available modules are the Line Level Input, Analog Output and Digital Output, which fit in the rack-mountable 4U frame; up to 12 modules will fit in a rack. The external power supply is 2U and of rack-mount design. Both supply and fully loaded console are weighty, so the frame has handles built in at the rear.

from the bus so as not to add noise. This is a true sine/cosine pot, and the sound actually moves across the panorama as you pan it. Bus assignments 1 through 4 have a simple on/off switch. Aux 1 through 4 levels are controlled by two dual-concentric pots, and each aux channel has an individual three-way switch assigning pre, post or off.

All switches on the mixer are self-wiping, so you will never hear crackling sounds. Three lighted buttons select in place solo mode, engage the rear panel insert points and operate channel mute. The module master level is easy to get a grip on, even with the largest of fingers. The



GML is considering front-mounted handles, which would be more convenient. The metal work is first-class and makes for a beautiful-looking product, but let's look at the modules.

Input modules have a detented input gain pot that accepts levels from -20 to +4 dB. The panpot must be engaged by pulling it out; otherwise, the pan is entirely removed

layout is simple and ergonomic. All rear-panel connections, including a line in, direct out, insert send and insert return, are actively balanced XLRs. Users may select pin 2 or 3 as hot with a jumper in the module.

The line-level-only concept is great for someone who, like myself, owns several different high-quality mic preamps and wants to be flexible

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with instrument personalities. Why pay for preamps you may not use?

If you are already whining that there are no faders, rest assured that there is a fader option available. Nearly two years were spent researching the proper pots for the mixer, as it was important to find the proper feel, taper and exacting calibration. GML finally found someone who would build a custom five-ink, dual-laser, trimmed, true log pot. When you set these pots at unity, they are really there, and the fades are smooth and natural.

The analog output module contains two 30-segment LED meters with a switch for selecting main or aux output level tracking. The meters display peaks with a dot while the RMS value displays decays in typical fashion. The aux master outs are on a dual-concentric pot as are the larger main outs. A maximum of two analog output modules may be loaded in the rack for a total of four main outs and four aux outs.

The digital out module is two slots wide. It is a 20-bit ultra-analog part with GML's discrete front end and an ultra-low-jitter Apogee clock regenerator. I'll look more closely at this in the next A/D test coming soon.

GML has given rack plans to other manufacturers, so we should see several third-party modules appearing soon. This is a smart move that will benefit users. The rack has 28-volt rails, which is attractive to those involved with high-end audio.

The rack has several connectors in the back. There is a power supply connector and two bus links that can link up to six mixer racks and use a common output module. A 9-pin connector brings out the audio plus solo and mute functions, so you can use a remote fader panel if desired.

The power supply is conservatively overbuilt in typical GML fashion. It was also built for fast field service. The regulators are easy to change, and there are test points on the front. This is a linear power supply, alleviating the high-frequency noise typical of a switching supply. Two fully loaded mixer racks may be powered off of one supply, and the supply can be configured for multiple voltages.

What appears simple on the outside is simply discrete on the inside.

Op amps are removed from the signal path when not in use. All coupling is DC, so there are no tantalum or electrolytic caps in the audio path.

I used the 9100 in the 10x4 configuration on two projects. The first was at the Stereophile Show in San Francisco, where I mixed Amanda McBroom live in concert and recorded her to multitrack simultaneously. The instrumentation was McBroom and a grand piano. As you may guess, the audio tweaksters were out in force, and almost all of the equipment I used was supplied by audiophile dealers. It was essential that the sound was as natural as life but loud enough so that everyone in the ballroom could hear well.

Using the main outs and master in pots for the concert and the aux section in pre for the multitrack send, I had no problem adjusting level with the rotary pots. Sure, faders are more convenient, but the GML pots are smooth and the taper feels just right. The console is so clean and quiet that it sounds invisible.

I also did a studio mix of a concert by the San Francisco Gay Men's Chorus, recorded live at Davies Symphony Hall. This was a 135-man chorus with soloists and orchestra, previously recorded to 8-track digital. The 9100 interfaced beautifully with all the equipment in the control room. It set up fast and easy. I bypassed the studio's console completely and used the inserts on the GML to patch in some E.A.R. tube EQs. This was a fairly static mix, and the level pots were mostly set and left alone except for the occasional boost on the soloist tracks. Jack Vad, the chief sound engineer at Davies and a veteran of many recordings at the hall, commented very favorably about how good the finished project sounded.

I would highly recommend the 9100 HRT Mixing System to anyone who demands the highest quality in their recorded sound. This kind of perfection does not come without a cost, though. Typically a 10x4 configuration runs \$21,000, and an 8x4 with the digital output option is priced at approximately \$22,000.

George Massenburg Labs, 7821 Burnet Ave., Van Nuys, CA 91405; (818) 781-1022. ■

*Bob Hodas is an independent engineer and producer based in the San Francisco Bay Area.*

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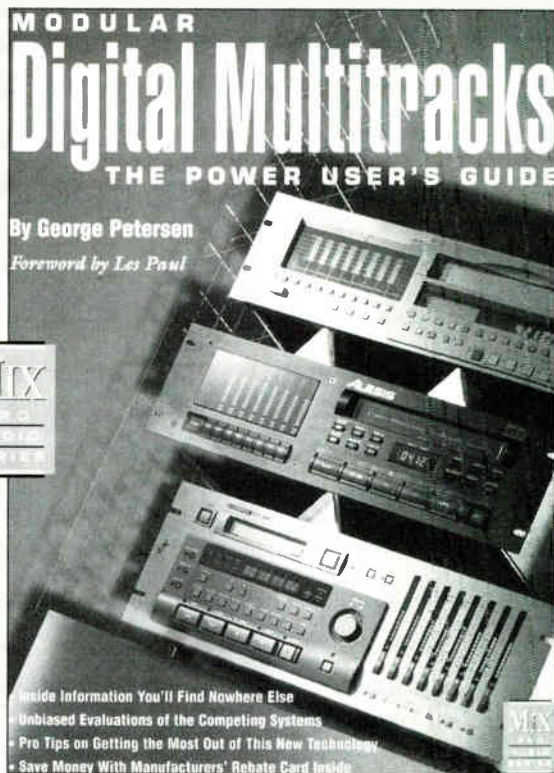
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In addition, **Modular Digital Multitracks: The Power User's Guide** explores features that aren't mentioned in the manufacturers' literature, reveals secret button pushes and explains undocumented error messages.

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by George Petersen

# TANNOY LIMPET

## POWERED MONITORS

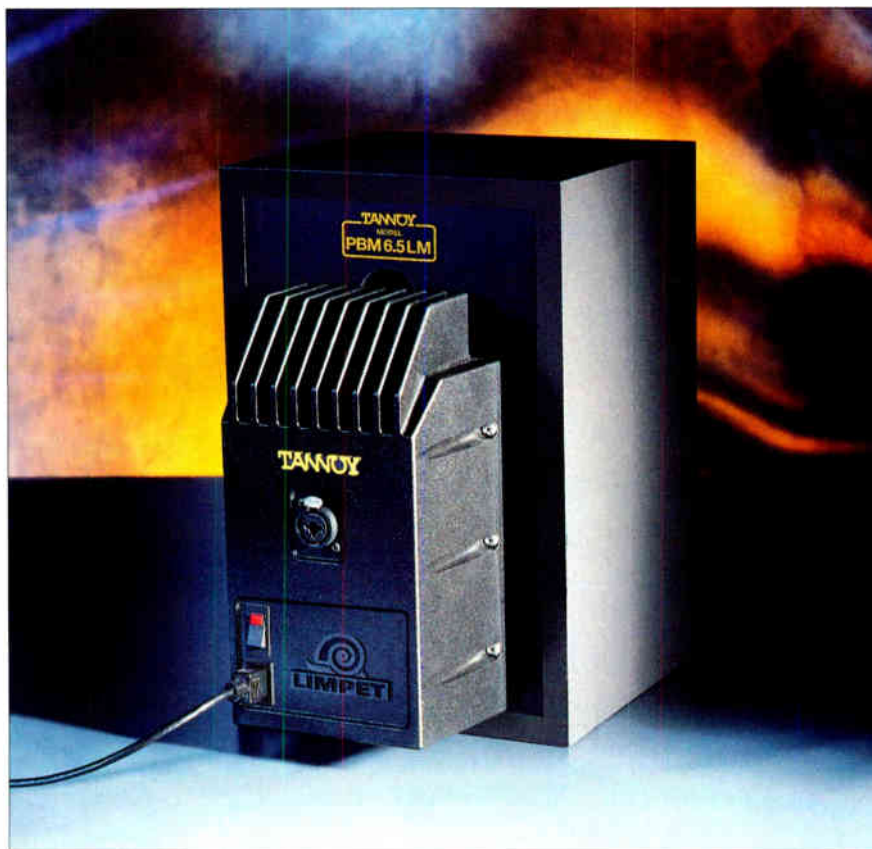
Over the past few months, you may have been wondering what Tannoy has been up to, with its series of "Limpet" advertisements. The dictionary defines a limpet as a "uni-valve mollusk with a conical shell, found adhering to rocks." So what does this have to do with audio? Well, now the truth can be told.

Under development for several years, the Tannoy Limpet™ is a bolt-on power amplifier module that attaches to the back of a speaker, thus transforming any ordinary monitor into a powered version. Powered monitors are curious animals in their own right, usually falling into one of two categories: The cost-is-no-object, bi- and tri-amped systems with amps carefully matched to the individual transducers; or the speakers where

the internal amplification is used mainly for convenience—rather than performance—reasons.

Yet Limpet doesn't fall into either category. The concept of a small, add-on power amp is not new. What's different about Limpet is that it offers high-end performance from a compact enclosure at a reasonable price. A pair of Tannoy PBM-6.5LMs (basically two PBM-6.5 MkII monitors, each driven by a Limpet amp module) retails at \$995, and the Limpets will be available later on other Tannoy models, and eventually be sold separately for use on monitors from other manufacturers. Doing a little arithmetic, I assume two Limpet amp modules will retail for approximately \$550 to \$600 per pair.

Physically, the Limpet amps are



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compact, built into an 8x5-inch chassis that is only 3.5 inches deep. The housing is die-cast aluminum alloy, finished in black powdercoat, with large, deep heat sinks molded into the exterior. Actually, the entire housing acts as a heat sink. Evidently this approach works quite well: Even after hours of high-SPL listening, the Limpets were barely warm to the touch. On the back panel is a lighted AC switch, detachable AC cable and a Neutrik Combo connector with a 1/2-inch TRS jack built into the center of a female XLR connector, for

**What's different  
about Limpet is  
that it offers high-  
end performance  
from a compact  
enclosure at a  
reasonable price.**

balanced (pin 2 hot) or unbalanced inputs. A (screwdriver-accessible) switch allows the amp to be set for 0.775/1.0/1.5-volt input sensitivities. And for the convenience of traveling engineers, another hidden switch selects 115 or 230 VAC operation.

The amplifier section is a Class AB type, with a linear power supply based on a toroidal power transformer. Limpet incorporates V/I (voltage/current) energy limiters and low negative feedback levels (approximately 20 dB) to keep THD and IM distortion levels at minimal levels, typically in the 0.02% range. Frequency response is essentially flat from 10 Hz to 80k Hz ( $\pm 0.5$  dB). Features include automatic shut-down protection in the event of a DC condition and a 2-second turn-on delay. The samples I tested exhibited a noticeable "thump" during power-down, but a Tannoy representative I spoke with claims that this will not happen in the final production versions.

The backside of the "shell" is slightly concave, allowing Limpet to fit

over protruding connectors, such as the inset input cups on the back of the PBM speakers. Two color-coded wires from the Limpet attach to any speaker, and a 2-pin Molex connector attaches to an indicator LED mounted on the front of the speaker. The bi-color LED (which glows green when the amp is on and flashes red when clipping occurs) is standard on Tannoy's Limpet-equipped monitors and installs easily on most speakers with the retrofit Limpets.

Of course, if you're using the PBM-6.5LMs, you needn't worry about any of this installation stuff—merely plug and go. The first thing you'll notice about these speakers is their apparent lack of self-noise. Hiss is absolutely undetectable, despite the Limpets delivering a sizeable 110 watts into an 8-ohm load (or 150W into 4-ohms). The PBM-6.5 presents a 6-ohm load, and the Limpet provides a respectable 135 watts into each cabinet. At the 6.5's rated sensitivity of 90 dB (1 watt at 1 meter), this equates to a maximum SPL in the 112dB range.

I do most of my monitoring in the 80 to 90dB range, so the PBM-6.5LM speakers provided plenty of punch, while still offering lots of headroom. Over long listening periods, I found the PBM-6.5LMs to be quite smooth and non-fatiguing. If you start seeing the clip LEDs flashing red, then you're probably listening too loud, and maybe it's time to take an ear break.

The PBM-6.5LM speakers are not magnetically shielded and will create noticeable picture distortion when placed near video or computer displays. The problem disappears when the speakers are placed at least 12 to 18 inches away from video monitors, which could limit the use of the speakers in desktop video or multimedia applications. Fortunately, Tannoy offers optional shielding on all of its models, and for an extra \$75, the PBM-6.5LMs can keep your screens intact.

One advantage of the Limpet's mono block approach is that there are no shared electronics or common connections as in a two-channel system, so stereo separation is 100% and crosstalk is nonexistent. This really pays off in terms of stereo imaging, and these are the best-sounding 6.5s I've ever heard: punchy, clear and bright, with well-defined bass and just the right amount of midrange. More importantly, these PBM-6.5LMs provided a reliable reference. Mixes translated

—CONTINUED ON PAGE 217

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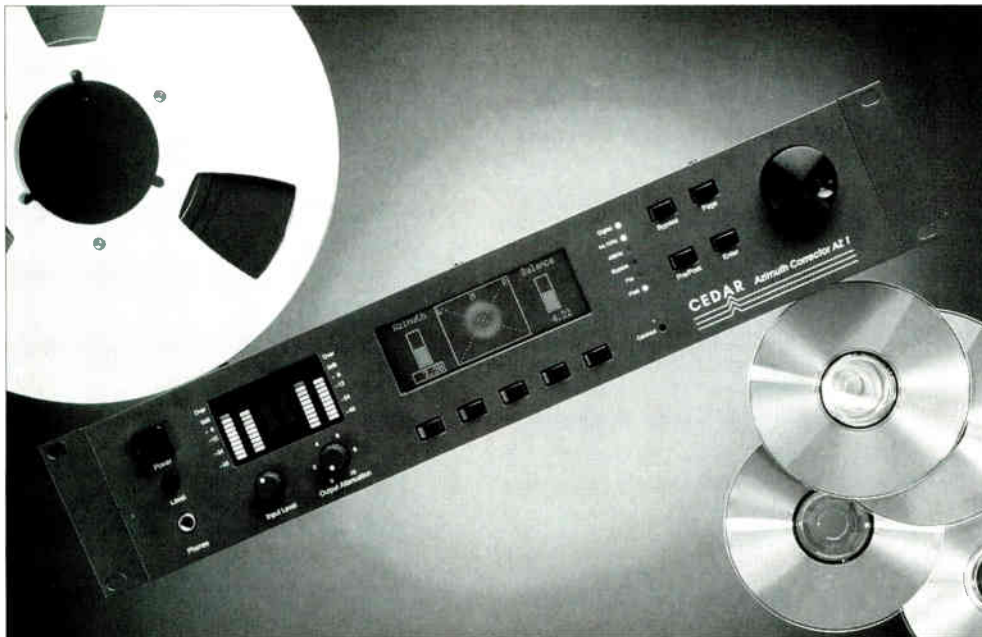
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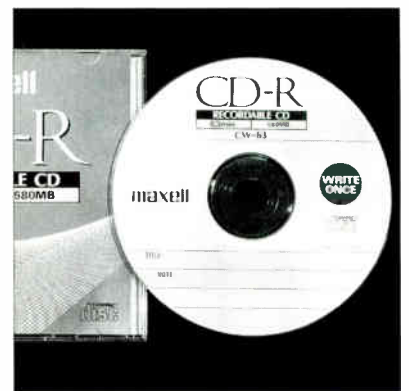
**CEDAR AZ-1 AZIMUTH CORRECTOR**

Distributed in the U.S. by Independent Audio (Portland, ME) is the Cedar AZ-1, a device that detects and corrects the phase problems and time delays between the left and right channels of a stereo signal. The real-time system is priced at \$14,875. Applications include mastering, tape duplication chains, broadcast, audio archiving and film/TV production.

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**MAXELL CD-R MEDIA**

Developed for audio, CD-ROM and CD-V applications are new write-once CD-R disks from Maxell (Fair Lawn, NJ). The disks are available



in 680MB (74-minute) and 580MB (63-minute) versions.

Circle #230 on Reader Service Card

**RANE PE17 EQUALIZER**

Rane (Mukilteo, WA) announces the PE17, a single-channel, 5-band parametric/notch equalizer with two additional sweepable high- and low-cut filters in a single-rackspace chassis. Each of the parametric bands has a 20-20k Hz range, with -15/+12 dB of gain control, bandwidth that is adjustable from 1/10 to two octaves wide, and individual bypass switch and active LED. Features include balanced XLR and 1/2-inch TRS jacks and a 1/2-inch TRS patch I/O, such as those found on console insert points.

Circle #226 on Reader Service Card

**POPLESS VAC SYSTEM**

Popless Voice Screens (New Paltz, NY) debuts the VAC (Variable Acoustic Compression™) system, which allows a user to vary the distance between two microphone screen filters to achieve the proper combination of pop protection and sonic transparency. The \$32 system includes two screens (3.5- or 6-inch diameter), adjustable screen holder and ball-socket swivel mount with standard thread for attaching to any mic stand. A system with 15-inch black gooseneck and mic clamp is \$54.

Circle #227 on Reader Service Card

**Z-SYSTEMS PLASTIC FIBER BRIDGE**

Z-Systems (Gainesville, FL) introduced the Z-PFB Plastic Fiber Bridge, an 8-channel AES/EBU XLR-to-Toslink optical converter. The rear panel of this single-rackspace box has four XLR digital inputs (each routed to a Toslink digital output) and four Toslink inputs routed to XLR outputs. A similar unit, model Z-GFB, is outfitted with ST-type glass optical connectors.

Circle #228 on Reader Service Card



**CLEARVIEW MONITOR LIFT SERIES E**

Vision Audio (Joppa, MD) debuts the Clearview Monitor Lift Series E, designed especially for control rooms with smaller-frame consoles. With the touch of an infrared control, the unit can automatically raise or lower 200 pounds of reference monitors or video monitors from 17 inches to a maximum height of 42 inches for an unobstructed view into the studio or to reduce reflections from the main monitors.

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**FURMAN PM-8**

The PM-8 Power Conditioner/Monitor from Furman Sound (Greenbrae, CA) provides all the pow-



**ATI NANOAMP -10/+4 INTERFACES**

Audio Technologies Inc. (Horsham, PA) has expanded its Nanoamp series with three IHF (-10dBu/ 10kohm/unbalanced RCA) to pro

**FOCUSRITE RED 5**

Unveiled at AES Amsterdam, the Red 5 stereo power amplifier from Focusrite (dist. by Group One Audio, Farmingdale, NY) delivers 250 watts per channel into 8 ohms,

**VALLEY MODEL 730 DYNAMAP**

Valley Audio (Merriam, KS) is now shipping its Model 730 Dynamap, a digital I/O processor offering stereo compression, keyable expansion/gating, look-ahead limiting/sibilance control with Dynamap multiple threshold/multiple segment ratio processing, and 100 factory settings and 400 user preset slots. The digital I/O version is \$1,999; a model with analog and digital I/O is \$2,750. All common sample rates are supported, with the ability to lock to externally varispeeeded digital sources.

Circle #235 on Reader Service Card

**MICROTECH GEFELL M300**

The Model 300 from Microtech Gefell (dist. by G Prime of NYC) is a miniature condenser cardioid microphone that combines a ceramic, chrome-plated, back electrode capsule and gold-sputtered diaphragm with transformerless hybrid electronics, for low-noise, high-transient response performance. Priced at \$495, the mic is suited for recording acoustic instruments or as a hanging overhead for choirs.

Circle #236 on Reader Service Card



er protection of the popular PL-Plus for applications where pull-out lights are not needed. The unit has a front-panel volt meter and ammeter, along with eight widely spaced rear outlets that accommodate bulky plug-mounted power supplies. A front-panel convenience outlet is also standard. Retail is \$199.

Circle #232 on Reader Service Card

(+4dBm/ 600 ohm/balanced XLR) interfaces. The BI100 (\$225) is a bidirectional stereo device; the BU400 (\$210) is 4-channel balanced to unbalanced converter; the UB400 is a 4-channel unbalanced to balanced converter. A wall-mount AC supply and DC battery pack are optional.

Circle #233 on Reader Service Card

with a transient output capability of 800 watts. The amp uses a high-frequency switching power supply for cool, efficient operation.

Circle #234 on Reader Service Card



**THX R2  
ACOUSTICAL  
MEASUREMENT  
SYSTEM**

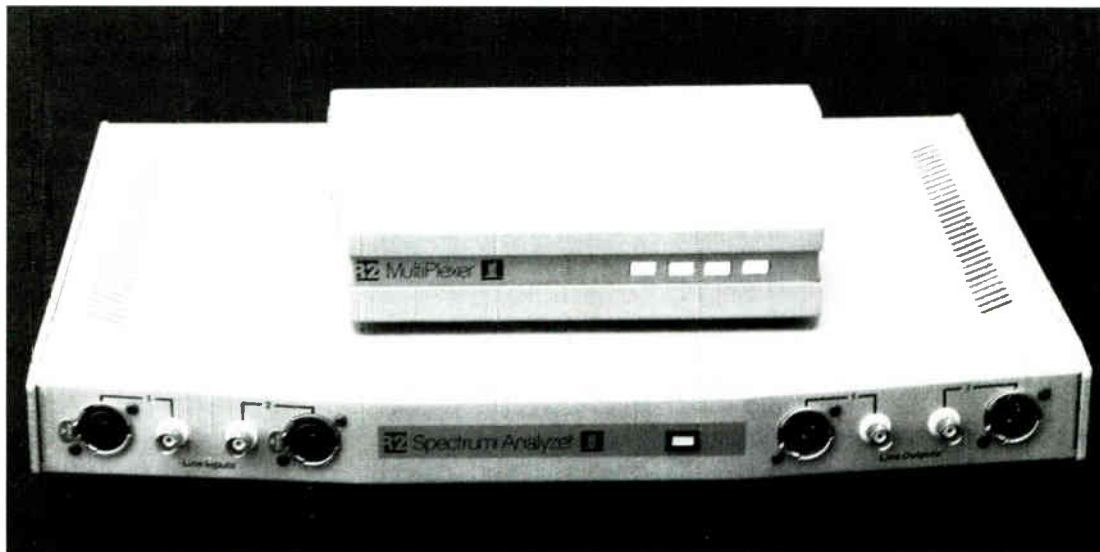
Manufactured and distributed by the Portland Instrument Corp. (Torrance, CA) is the THX R2™ from the THX Division of Lucasfilm Ltd. Designed by Tomlinson Holman and the THX staff, the R2 unit combines with an IBM-compatible (XT or higher) computer to provide high-quality spectrum analysis and measurements of a room's frequency response, background noise and reverberation time. The system is priced below \$5,000, including hardware interfaces, software and four electret condenser microphones.

Circle #237 on Reader Service Card

**ARX MULTI-Q UPDATE**

Australian manufacturer ARX (U.S. offices in Silverado, CA) has updated its Multi Q 6-channel parametric equalizer. Using unique ARX "AutoPatch" circuitry, each of the unit's six equalizers can be directly accessed in any combination of channels, without the need for interconnecting patch cables.

Circle #238 on Reader Service Card



**MYTEK AD2018**

Mytek (New York City) offers two stereo digital converters in half-rack enclosures. The AD2018 provides two balanced XLR analog inputs with oversampled 1-bit, noise shaping, linear-phase filters with 18-bit AES/EBU, Toslink optical or S/PDIF RCA digital outputs. Features include switchable (video/external AES/EBU or internal) sync, 44.1/48kHz operation, a "Gentle Limit" circuit to prevent digital overload, and a "High-Bit" function for retaining some of the benefits of 20-bit systems when storing audio on 16-bit media. Retail is \$1,995, and a matching D/A converter is also available.

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553-5151...Gepco has added to its line of Digital Audio Cables: The 552402 (two-pair) and 552408 (eight-pair) are specifically designed to maintain 110-ohm AES/EBU compatibility, and 4- and 12-pair versions are also offered. Call (312) 733-9555 or (800) 966-0069...River City Sound Productions has released a new CD of Corporate/Industrial themes, buyout-priced at \$59 plus shipping. Call (800) 755-8729 for info...The RTI Tapechek M110 is a belt-driven tape degausser in a tabletop package, offering -90dB erasure on standard tapes and -75dB on metal-particle tapes. Time code, audio, video and digital information are removed with confidence. Call (708) 677-3000. ■



## Femme Fatale

**Engineers:**

Steve Sykes  
John Agnello  
Mark Kovach

**Producers:**

Kenny Gamble  
Leon Huff  
Lemel Humes

**Artist:**

Miki Howard

**Studios:**

Studio 56

The Soundtrack Facility  
Messina Music  
New York Music Deli, Ltd.

## Music For The People

**Engineer:**

Tom Soares

**Producer:**

Donnie Wahlberg

**Artist:**

Marky Mark &  
The Funky Bunch

**Studio:**

Normandy Sound, Inc.

## So Near So Far

**Engineers:**

Jim Anderson  
Allan Tucker

**Producers:**

Richard Seidel  
Don Sickler  
Joe Henderson

**Artist:**

Joe Henderson

**Studio:**

Power Station

## Like A River

**Engineer:**

Mick Guzauski

**Producer:**

Yellowjackets

**Artist:**

Yellowjackets

**Studio:**

Conway Recording Studios

## Sons of Soul

**Engineer:**

Gerry E. Brown

**Producer:**

Tony! Toni! Tone!

**Artist:**

Tony! Toni! Tone!

**Studio:**

Skip Saylor Recording

## Timeless— The Classics

**Engineers:**

Bill Schnee  
Dave Reitzas

**Producers:**

Al Schmitt  
Mick Guzauski  
Dana Jon Chappelle

**Producers:**

David Foster  
Michael Bolton  
Walter Afanasieff

**Artist:**

Michael Bolton

**Studios:**

Ocean Way Recording Studios  
Westlake Studios  
Record Plant  
The Enterprise  
The Hit Factory

## Guerillas In Tha Mist

**Engineer:**

Ed Korengo

**Producers:**

Ice Cube  
T-Bone  
Rashad  
Mr. Woody  
Chilly Chill

**Artist:**

Da Lench Mob

**Studio:**

A&M Studios

## Greatest Hits Volume One

**Engineer:**

Joe Bogan

**Producer:**

Kyle Lehning

**Artist:**

Dana Jon Chappelle

**Studio:**

Nightingale Studios

## Slow Dancing with the Moon

**Engineer:**

Gary Paczosa

**Producers:**

Steve Buckingham  
Dolly Parton

**Artist:**

Dolly Parton

**Studio:**

Recording Arts

## Breathless

**Engineers:**

Dana Jon Chappelle  
Manny Lacarrubba

**Producers:**

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David Foster

**Artist:**

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# P i n k



*Floyd sound crew:  
back row from left—  
Jerry Fradley, Paddy  
Addison, Robert Bain  
and Sarne Thorogood;  
front row from left—  
Andy Jackson, Colin  
Norfield and Dave Lohr.*

# Floyd

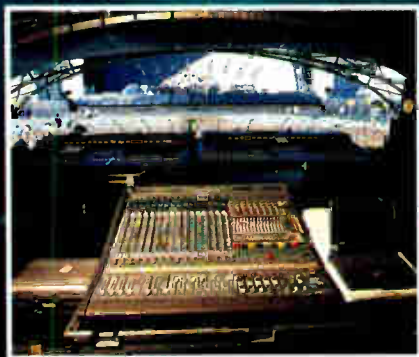
## Welcome to The Division Bell Tour

by Jeff Forlenza

**T**he good ship Floyd is docking at a stadium near you. Come hear the trance-inducing blend of music and nearly deranged poetry. Come see the lasers, multicolored lights and giant mirror ball. Come experience Pink Floyd's "Division Bell" tour.

During a time when most stadium tours are being canceled and downsized, the Floyd tour is the most-anticipated large-scale concert event of the summer. And it wasn't due to a string of Top 10 hits that Floyd sold out nearly every venue they played. Concertgoers have come to expect more than just music from a Pink Floyd concert; they expect to be immersed in the pleasant catatonia of "Comfortably Numb" and the edgy paranoia of "Brain Damage."

Floyd's music, with its evocative keyboard washes and introspective lyrics, their concept albums with distinctive visual imagery, and their strange and machine-like audio effects all serve as creative springboards for their massive concert productions. Today, concertgoers almost take the music for granted and expect a full-on audio-video ride. When the veteran psychedelic rockers tromped across North America in '94 to support their latest release, *The Division Bell*, an audio-visual extravaganza was both promised and expected. We caught the tour as it made its way into the Oakland Coliseum for three sell-out nights.



Photos by  
Steve Jennings

Background photo  
by Jana

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# Taking Names



Photo: Harrison Funk

**Chick Corea & the  
Elektric Band II  
with their PA 1800s**



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**Eric Marienthal – Musician**

*"The Stewart PA-1800 is the cleanest, smoothest and most full sounding amp I have ever played through. It makes playing a blast."*

**John Patitucci – Musician**

*"The Stewart PA-1800 has improved my sound, it's tight, punchy, warm and clean."*

**Tom Coster – Musician**

*"Finally, an amp that is not only lightweight, but ultra-clean with great low end. Great work, Stewart!"*

**Brian Wheat – Musician**

*(TESLA) "Reliable, lightweight, tons of horsepower, and tight as a mouse's..."*

**Glenn Letsch – Musician**

*(JONATHAN CAINE BAND, ROBIN TROVIER, NEW FRONTIER, MONTROSE) "The PA-1800 is tight, articulate, and powerful, and most of all, very tight in the low registers. I'm digging the setup, big time!"*

**Tom Size – Recording Engineer**

*(AEROSMITH, DAVID LEE ROTH, EDDIE MONEY, JOE SATRIANI, MR. BIG, STARSHIP, VITAL INFORMATION) "With the PA-1400 the imaging and clarity were absolutely amazing... wow, what a difference!"*

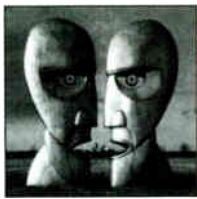
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The three original Floyds—guitarist/lead vocalist David Gilmour, drummer Nick Mason and keyboardist Rick Wright—were supported by eight musicians this time out. With two drummers, two guitarists, two keyboardists, a bassist, saxophonist and three background singers, the Pink Floyd sound was fully fleshed out with excellent players. The sound was clear and even CD-quality at times, but the 11-piece ensemble was nearly overshadowed by the overall visual onslaught of lasers, projected images, Varilites, pigs with glowing red eyes, and the giant mirror ball.

The 11-piece band had plenty of room to rock from the large stage, which was 180 feet long and 72 feet deep. Behind the stage was a 130-foot-long, 80-foot-high arch, with a retractable, circular projection screen (a trademark of Floyd shows). Onto this screen, films and visuals were projected in sync with the music. At the base of the stage were panels of lights, lasers and flashpots. The arch and circular screen were ringed by various Varilite and Telescan lighting systems, which provided a brilliant backdrop.

#### MIXERS AT THE GATES OF DAWN

Robbie Williams was enlisted by the band to realize the massive logistics

involved. The first date on the North American tour was Joe Robbie Stadium in Miami on March 30. Pre-production for the tour started in January. A prototype stage and rack were built, and the Britannia Row crew did audio tests on it in a field in Belgium. After the gear was agreed on, rehearsals were held for two weeks in London. Once in the States, rehearsals were held in a hangar in San Bernardino, Calif., in order to iron out any final problems.

"It was left up to Britannia Row as a company to design a sound system," explains audio assistant Paddy Addison, who worked with FOH engineer Colin Norfield and Britannia Row's Bryan Grant on system setup. "The contract actually specified just that it should be even coverage around the stadium. There was no one from the band giving specifics; it was just up to us to translate it."

Engineer Andrew Jackson, who helped David Gilmour and producer Bob Ezrin record *The Division Bell* on Gilmour's houseboat on the Thames (Astoria Studio), was enlisted to mix FOH on behalf of the band. Ironically, the last time Jackson mixed live sound was for estranged former Floyd leader Roger Waters' "Pro and Cons of Hitchhiking" tour, which was ten years ago in smaller venues. Norfield's live mixing experience complemented Jackson's perspective of the band and the work he and Gilmour had done in the studio.

"On something of this scale, ev-

*"The studio  
was so quiet,  
I could hear  
my pants drop."*

—ANDY LERNER,  
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## FLOYD'S STACKS AND RACKS

Tour logistics on the "Division Bell" tour approached gargantuan proportions: All told, 200 crew personnel toured with the band, including nine full-time audio engineers and assistants, along with a steel crew devoted to setting up and breaking down three steel-frame stages, which piggybacked across the country—one being broken down at the last venue, one in place at the current venue and one being set up in the next—all during baseball season when free days at stadiums are scarce.

P.A. was provided by a Flashlight front-of-house system, with 64 high and 64 low cabinets. Three quad positions—left, right and rear, placed in the stadium's upper deck—each had eight high, four wide-dispersion and 12 low boxes. A fourth front quad position (which wasn't used in Oakland due to the high stage height) had eight high and eight low cabinets. A central delay position directly behind the FOH mixing position had 12 high and 14 low cabinets. Stage monitoring was provided by Turbosound wedges.

Power was supplied by portable generators, which traveled to each venue via the Floyd caravan: 49 trucks were used to cart the gear, with 16 production trucks carting lighting, stage set, effects and audio. The sound system, including quad, fit into only two-and-half of these trucks, because of its remarkable power-to-size ratio. Thirty-three trucks hauled the 700 tons of steel used for the tour's stages.

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erybody's got to be prepared to delegate all the way down the line," Jackson says. "One person can't take everything on—it's too much. Colin and I talked about the whole thing before we started, and we both have a similar philosophy: The simpler we can keep it, the better chance we've got of getting the important stuff right, which is getting good balances and things. We were quite fortunate that we basically have a very similar way that we like things to sound."

The FOH mixing duo seldom has to communicate during the show because there's an intuitive understanding and shared taste in sounds they like. "It's just me listening to what he's doing and balancing my end of it," Norfield explains. "It works pretty well; there's a mutual respect."

Both mixers stress a simple approach to pulling off a live Floyd show, which seems to belie the grand scale of the band's concerts. As Jackson puts it, "In some ways, it's quite a simple setup. It's just a board, a few limiters, a couple of basic echoes. And that's it really. I've got a Lexicon to gloss up the vocals and things. But there's not a lot going on, actually."

"You've got an 11-piece band up there," he adds, "three of which are the principals, so you never say they have to be the most important people, but if there's any sacrifice to make, it's not at the expense of them."

To get the soft, almost restrained effect that is a signature of Pink Floyd's (and David Gilmour's vocal) sound, Jackson uses compressors. "There are quite a few compressors around," he says. "On the vocals, they're actually kicking in. But for keyboards and piano, they're there as safeties really, and they rarely kick in. I use quite a lot of 1.5- or 2-to-1 ratios on instruments just to try and generally reduce the dynamic range without ever hearing anything working; it's a lot of low ratios."

Norfield and Jackson mix the show from a pair of Yamaha PM4000 consoles. Norfield handles drums, bass and percussion from one console (which takes up all 48 channels), and Jackson handles the rest of the band. "My board's not as full as Colin's," Jackson says. "There's so much drums

up there, I've got quite a few spare channels actually because of the stereo channels in the Yamaha. Effects returns are all on a separate board [handled by Dave Lohr], which then sum into my board."

The mixing duo shares the FOH position with quad engineer Dave Lohr, who sends special effects all around the stadium from his Midas XL3. "All the desks are linked," Norfield says. "We've got two Yamaha PM4000s, a PM3000 and Midas XL3 picking up the quad. A lot of the reverb is linked through all the boards. I'll do some things on the samplers and put it into the reverb or into the quad panner—keyboard and bass things—and just send them around. Anyone [of us] can send things to the quad."

The FOH mix position resides in a multitiered, covered outpost, which was located at about second base in the Oakland Coliseum. Audio assistant Addison details the layout: "There's sound at the front, on level one. On level two [staggered above and behind the FOH mixing position] is where the band's guests go, and luckily they can't pour drinks over us because of the cover. On the third level is the lighting consoles, where there are representatives from about eight different lighting companies. And above that is the projectors. And the rear [of the structure] is actually the delays."

## CAREFUL WITH THAT FADER, EUGENE

Monitor engineer Seth Goldman is senior engineer on the tour, and he's mixed monitors for the band's live shows since 1972. Goldman operates two Midas XL3 consoles, linked at the side of the stage, with the aid of his assistant Alan Bradshaw; each board has 40 channels and 16 outputs.

"I'm using one console exclusively for drums, and I'm also mixing down some keyboards and guitars from the main Midas into the other Midas," Goldman explains. "The Midas is a very good console—I like the EQ'ing and the facilities inherent in the console. I'm using all the VCAs. I link the two consoles together so I don't have to run back and forth like a headless chicken."

"There's 11 musicians onstage, but some of them have vocal mixes, so I'm doing 26 mixes. None are stereo. It's 25 discrete mixes," Goldman explains. "My main focus is the band; taking care of Gilmour, Mason, Wright

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and the rest of the band. Dave likes to hear his own voice, keyboards, some of the vocals. Nick is on a PRS [in-ear] unit, and he likes to hear his own drums and Dave's guitar, with very little keyboards. Nick has in-ear monitors, plus we have a floor wedge for him should the ear monitors ever fail. Rick mainly likes to hear keyboards and vocals.

"There's a lot of signal processing," he continues. "The EQ'ing is Brooke-Siren 960 graphic equalizers; I have 20 channels of those. And I have eight channels of Brooke-Siren Varicurve with the 900 remote controller and the 926 Varicurve unit. For processing, we're using Brooke-Siren 402 and 502 gates, and Yamaha SPX990 digital reverbs."

Onstage monitor wedges are all Turbosound. "Turbo wedges are some of the finest wedges I've ever worked with," Goldman raves. "Everything is split on the stage. Half the split comes to me. We have 96 channels of BSS active splitters. The amplifiers I'm using are C-Audio, and I have a BSS 320 HA crossover."

The players can communicate with Goldman through their micro-

phones, with the help of a footswitch that alternates between P.A. and engineer communication. "It takes their microphone out of the P.A., and they can communicate with me directly," Goldman says.

Microphone choices on the Floyd tour included Sennheiser 409s and Shure SM57s on guitar stacks, Shure Beta 87s for background vocals, Shure 91As on kick drums, Shure 98As on floor toms, AKG 414s for drum overheads, 451s for the hi-hats, and Sennheiser 421s and a wireless Shure system on the saxophone.

#### A SAUCERFUL OF SOUNDS

A big part of Pink Floyd's sound are the sound effect segues between and during songs. Assistant engineer Dave Lohr is responsible for the sound effects and the quadraphonic system. Lohr works from a custom Midas XL3 console, which Bob Doyle of Midas in England, Chas Brookes and Britannia Row modified to make quad-ready.

"Basically, I'm in charge of all the segue information that's provided by either the keyboard samples onstage or taped information that's fed to the

quad system," Lohr explains. "Also, I do effects changes and different effects delays in the stereo mix. Roughly, it's following cues of the show and adding in these special effects into the quad system using music and timing cues. Also, I do intros that are synched to what's on the video screen—my [Otari ½-inch] 8-track machines have SMPTE code that feed a computer that drives the rear-projection for the video.

"I'm locked to the video," he adds. "Audio goes to the left and right, on one track of the 8-track, and then quad effects go on at the same time, and all of it has to be synched up. There's also a count track so the band can tell when to start the song after watching the film. The band plays different every night. The way they segue from one song to another is different, so I have to listen to them before I can actually perform. It's a matter of listening and then complementing what they're doing."

Lohr explains the quad setup, which varies with every stadium they play: "We actually have three [quad positions here in Oakland]—rear, left and right. We were unable to actual-

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ly put another quad position above the stage as a center quad position because of the height of the roof. So we're feeding front quad signal to the left and right main P.A. as the front position. And that gives us actually a 'quint' system—some of it's center channel, some of it's left-right in the front—so it gives a sweeping effect."

Lohr directs sound effects and stage feeds around the stadium with aid of a joystick on the Midas. "A lot of things are fed to me from the stage," he says. "I also take inputs discrete of everyone else and then feed those into the joystick and pan those around. Also, I'll take some information from [multitrack] tapes and do the same thing."

TC Electronic 2290 autopanners are essential for Lohr's quad duties. "I can feed information to those," he says. "Instead of running it through the joystick, I can autopan left-right

and front-rear. It makes things easier. I can feed some things to a joystick and other things to the autopanner. So that way I can manipulate two things at the same time. Then we use two [Lexicon] PCM70s for four channels worth of quad reverb. We feed some of Dave's guitar to that and then feed some of the keyboards to the quad panner, and we can also send specific samples to the joystick."

Lohr gets a layout of each stadium before arriving, and he uses that to determine the location of the quad positions. Once the positions are installed, Lohr walks the stadium to determine delay times. "I set the actual delays on the quad system itself by walking the field and checking it in relation to the front," he says. "The quad positions will vary from venue to venue, and they need to be aligned to the front at each venue."



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Aside from scheduling the setup and breakdown of a large steel stage around baseball season, the main problem for the sound crew came from uncontrollable natural elements: wind and rain. "Wind is a big problem," Andrew Jackson explains. "It just blows the P.A. around; there's not much you can do about that. It just gets rather vague." The sound crew had to deal with a major rainstorm in Houston that nearly brought the whole production to a halt. The skies were clear for the Oakland dates, but high winds whirled the sound around the stadium on the first night of the three-night stand.

Natural elements notwithstanding, the show must go on, and those concerns seem to fade when the band opens their first set with "Astronomy Domine," the only song in the band's repertoire from the the old Syd Barrett days. When all elements of this massive spectacle mesh, it's like a large interactive ride: ringing cash registers, jet planes and various audio effects come at you from all around the stadium; lasers slice the night sky, directing your attention skyward with the ascending guitar peals of David Gilmour; surreal videos project on the circular screen above the band, urging you to reflect on the lyrical content of the songs; and all while the band precisely plays their legendary angst-ridden anthems. ■

*Jeff Forlenza is a Mix assistant editor.*

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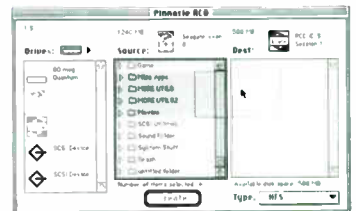
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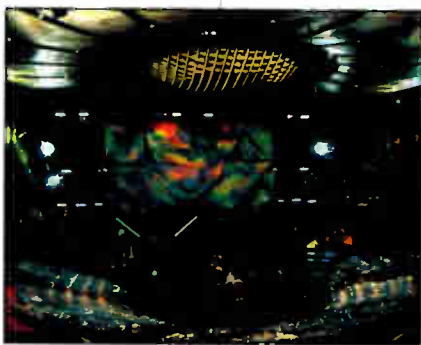
by Mark Frink

# SOUND CHECK



## CIRQUE DU SOLEIL

While in Las Vegas for April's NSCA convention, *Mix* product editor George Petersen and I took in the Cirque du Soleil show at the new Treasure Island hotel/casino. The Cirque is internationally renowned for innovative theatrical productions, and *Mystere* is the largest Cirque du Soleil production in North America. It features a cast of 78 outrageously costumed performing artists, including acrobats, clowns, actors, comedians, singers and a ten-piece orchestra



**Top: Acrobatic performers**  
**Right: Sound designer Jonathan Deans at console**  
**Left: Theater and seats, with speaker array in top corner.**

playing an original score. The show's highlights include a large trapeze act, a bungee-jumping ballet, precision line performance on vertical Chinese poles, a Korean plank jumping act, Taiko drummers being lowered from the ceiling—and much, much more.

Audience seating arcs around three sides of the theater, with a 36-foot-diameter ring thrusting out from the stage. The thrust has a revolving turntable that can be lowered 30 feet with an elevator, providing for unique artist entrances and set changes. Housed in a 1,525-seat theater that was custom-built for the production, the show is a prime example of the emerging entertainment culture in the new Las Vegas. The general effect of the



multiple elements in the production is to constantly give the audience just a little too much, with attention being drawn from one focal point to the next. Throughout the show we were amazed and amused, and by the end we felt that this show alone made the trip to Las Vegas worthwhile.

Sound designer Jonathan

—CONTINUED ON PAGE 135

# House of Blues: Los Angeles



ERIC C. HARBONNEAU

**by Maureen Droney**

Outside on the street, it's typical L.A.: a long line of sharply dressed hopefuls, milling blondes of both sexes wearing tight spandex, indignant industry-types complaining when their passes are not immediately available. Security, however, is tighter than usual, with an L.A. city police car stationed on the corner and the West Hollywood precinct placed on alert. Everyone involved is determined that there will be no trouble at the pre-opening-night opening party for the Los Angeles House of Blues. As employees hustle to finish final details, building and fire inspectors hover, checking things out, taking no chances.

The building that has arisen on this corner of Sunset Strip is quite amazing, a huge quonset

hut of corrugated metal, rusty in places with funky wooden walkways and porches attached. But the crowd outside is restless, tired of admiring the facade. It's a slow process past the one doorman, who, flashlight-less in the dark checks names against a long, long list. But once inside, the floor in front of the stage is uncrowded and comfortable.

The audience turns out to be a diverse mix—graying ex-hippies, industry big- and small-wigs, young fashion victims, musicians, famous and not. The atmosphere is loose and friendly, and the comment overheard most frequently is, "It's so *un-L.A.!*" And I agree. The vibe is different, a kind of timewarp back to when people went to clubs to really see the musicians and feel the music. And they will



MAUREEN DRONEY

see the musicians tonight, because House of Blues part-owners Aerosmith are performing, live and up close in the 1,500-capacity facility.

I stake out a position behind the sound board, where house sound man Jeff Dunn is stationed along with Kevin Elson, who is mixing for Aerosmith. No bouncers say "Move along!" and nobody jostles for my space, so I get to check out the P.A., a mainly Yamaha system custom-

—CONTINUED ON PAGE 135

*Left: An all-star jam with Traffic at House of Blues, including Steve Winwood, Jim Capaldi, Spencer Davis, Gary Busey, Kris Kristofferson, Sammy Hagar, Jeff Lynne and Airoto Moreira. Below: Engineers Jeff Dunn and Kevin Elson at the Yamaha PM4000-48 console.*



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—FROM PAGE 133, *HOUSE OF BLUES*

designed for the House of Blues with installation and tweaking by A-1 Audio. Gerry Tschetter, Division Marketing Manager for Yamaha, tells us that the components include a PM4000-48 console, a YDG2030 digital EQ, S1520 speakers and SM1525 monitors. A-1's Lyle Dick explained that the HOB installation included some new challenges for designer Ken Newman—particularly from the two moving refreshment bars that swing open or closed in the upstairs balcony area.

Closed to create a bar-only environment, they also dramatically swing open 90 degrees for viewing of the stage and dance floor. Therefore, design had to encompass three areas: the main P.A. on the floor, which had to be EQ'd for both live music and the DJ-oriented speakers ringing the dance floor; the upstairs system, which had to be compatible with the moving bars; and a third, "Gefen" system, which feeds the restaurant only. It includes a software system complete with 500-CD changer and accompanying video that dis-

plays on strategic monitors a picture and bio of the band "now playing." The solution was a 360 Systems 16-in & -out switcher controlled by remote from the mixing position. Routing to various amps and speakers is turned on and off as needed. Another convenience of the system favored by house mixer Dunn is the "One Power" sequential power-up and -off system; with one switch, all components from the board to the house electronics in the amp room are powered up or off in the proper order.

Dunn says the system is particularly versatile, designed to handle the many different kinds of bands House of Blues will showcase, from rock to African to blues to all-star guitar jams like the one with Les Paul, where guest players included Slash, Dave Edmunds, Steve Vai, Johnny Rivers, Graham Nash and Stephen Stills. "We're in Hollywood, where you never know who may want to sit in," Dunn says. "I'm always prepared to throw up another mic for some celebrity who happens to drop in."

By the way, it sounds great; very clean and tight. Elson, mixing for Aerosmith, seems to have

a bit of trouble adjusting to club-level sound, and things get hot as the set moves along, but it would be churlish to complain. Aerosmith is hot, too, and Joe Perry's blazing guitar tones are a treat for this engineer's ears. After announcing that they are not going to play their hits, the band proceeds to play a succession of lesser-known boogie and blues tunes off their albums. Lead singer Steven Tyler says, "These are the songs we only get to play one of per show! Tonight we're going to play them all!"

As they rock on, I peruse the crowd, and it calls to mind the clubs and shows of the early days of rock. As a friend of mine who saw a show at House of Blues a few nights later put it, "You know, in 1972 when I was just a kid, I went to hear a band at the Whiskey on Sunset. It was the most incredible evening, and I've never had that same excitement in a club again until last night at the House of Blues."

A House of Blues opened in New Orleans in January 1994, and future openings are scheduled for New York, Chicago and London. ■

—FROM PAGE 132, *CIRQUE DU SOLEIL*

Deans took on the challenge of providing an audio system capable of enhancing this visually stunning program. Deans, a veteran of Broadway and other high-level Las Vegas productions, has been working with the Cirque du Soleil organization for the past several years and provided sound design for the 1992 world tour. "I had contributed technical assistance on a Cirque production some years ago," he explains. "Subsequently, I viewed a touring production and was hooked. I had never seen anything quite like it. The emotion and satisfaction the show evokes is incredible—it's the type of production that prompted me to work with live performing arts in the first place."

Cirque du Soleil productions, Deans notes, are an extension of

musicals, pushing the concept much further. The challenge is to integrate musical art with stunning visual art. "When you see people flying through the air, you want to create a musical environment to go with it, to enhance it," he says. "You strive to create a kind of feel where nothing is rooted, so when the audience is sitting in the auditorium, they are totally involved rather than just sitting back and watching."

Probably best described as a combination of circus tent and showroom, the theater is acoustically live and brightly lit. The audience can see and hear themselves, and this creates an atmosphere of excitement, which feeds the performers. This philosophy stands in sharp contrast to traditional showrooms, which tend to be dimly lit and acoustically dead, so performers can't

generally hear the audience.

"This room is spatial, and rather than working against that, we work with it and make the sound spatial and create an atmosphere of ambient sound," Deans says. "We use the natural acoustics of the room, its curves and angles, rather than working against them. You might say we have a palette and can select colors to paint a picture of sound, using the technology available to us."

Silence and dynamics are used to great effect, and the fundamental idea of the design is distributed sound with high headroom. The system can jar the audience, grab its attention, and then suddenly become almost silent. "We've created a system where sound pressure levels can go way beyond the threshold of pain, but that's not at all the idea," Deans says. "We

generally run peaks of 100 to 105 dB, but the audience can become uneasy if you hold it at 105 dB for too long." A surround concept bathes the listening areas in sound, coming from front, top and behind. A "bad" seat receives signal from at least three speakers; a "good" seat benefits from five to six speakers.

The *Mystere* house system comprises an unusual distributed system of a variety of Electro-

Voice loudspeakers powered by Crown Macro-Tech amplifiers. Loudspeakers are located within the set, overhead and behind the audience. The closest loudspeaker to the audience is about 50 feet away—a key is keeping the focus down on the stage while creating a full surround effect. "Many times in auditoriums you don't get a true full surround effect," Deans notes. "Seats are often too close to the stage or out of proximity of surround speakers. This is why

we've placed an emphasis on a good deal of speakers in the middle of the theater, not just the back."

The stage area highlights an innovative approach to loudspeaker selection and placement. Four EV HP9040 horns with DH1A drivers are suspended at each corner of the main stage backdrop, called the "sky," which is basically a large awning or roof made of triangular truss sections and dressed with a colorful fabric design. The massive element rotates from vertical to horizontal, as well as up and down (via hydraulics) throughout the show. The horns are connected to the backdrop's framework by custom Duracraft brackets that allow them to also vertically rotate so that they are always perpendicular to the stage and are thus always firing at the audience. Cabling runs up the arm shafts of the sky into terminal blocks, which then feed signal to the horns with a light, flexible cable that is replaced each week due to heavy wear.

Two HP9040 horns are mounted beneath the top step on small stairways on each side of the stage, and an EV MTL-2 is positioned discretely to the side of the stage, acting as both stage monitor and low-frequency supplier for the horns. The low-frequency sound to accompany the six stage horns is all submixed through a Rane mixer located in the electronics room several hundred feet away, then routed to the MTL-2. "The idea of the sky and step speakers is to pull the focus toward the stage when it's desired," Deans explains. "With the design of the room, loudspeakers can't be placed close enough to match things like the actors' dialog. It could be disorienting to the audience."

Six EV MTL-2 (mid-high) loudspeakers and four MTL-2 loudspeakers are positioned in a circular grid above the center of the room. The loudspeakers are positioned in a "U" shape around the grid matching the shape of the audience, with

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none of them firing directly down at the stage. There is also an outer loudspeaker arc in the ceiling, where things are a bit more complicated. Several EV DML-1152A loudspeakers, on time delay, are angled to send sound toward the back of the theater, and six accompanying EV MTL-4 low-frequency loudspeakers fire straight down. Six more DML-1152As provide surround sound for the front half of the auditorium.

On the back wall, several more DML-1152As provide surround to the back half of the auditorium. Six additional subwoofers solidify the extreme low frequencies throughout the entire room. "Electro-Voice loudspeakers were the predominant choice in this project for several reasons," Deans says. "They generate the necessary output for a demanding application like this, and the company also offers the range of speakers that we needed."

A combination of Crown Macro-Tech MA-1200s and MA-2400s provide clean power with plenty of headroom. The MA-2400s power the lows and mids of the MT-2 and MT-4 concert systems, with MA-1200s used primarily for the high frequencies of the MTs and the Delta-Max speakers. In cases where fuller bass is desired from certain DML systems, MA-2400s are employed. With their greater output, the MA-2400s add a little more dynamic and dimension.

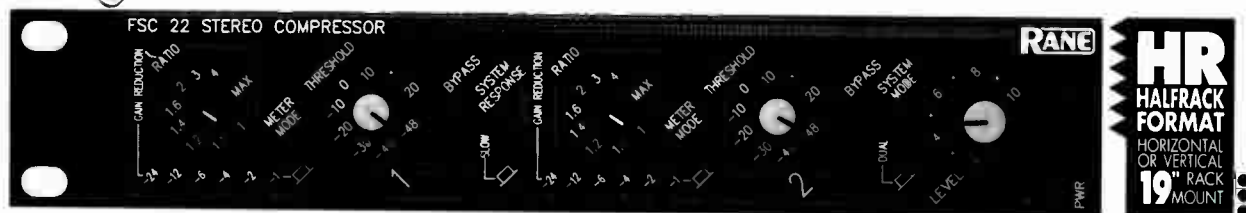
There are a variety of audio tricks throughout the show. One example is a clown's golf cart that drives around the stage and through the audience in the cross-aisle. The golf cart includes a battery-powered speaker and amplifier getting a wireless feed and creating interesting opportunities. "We can produce things like the realistic sound of a dog chasing the cart," Deans explains. "At one point in the show, we even cut off the main system and send the entire

orchestra mix to the cart speaker as it drives through the audience. It's a wild effect."

The ten-piece band/orchestra is split between two platforms located above each side of the stage. All instruments except violin and percussion (with 26 microphone channels) are electronic, with direct inputs. The musicians are able to tailor their own mix, which is fed directly to headphones.

In one part of the show, drummers in harnesses playing huge Taiko drums drop in from the ceiling over the audience. A delay problem is created in attempting to get them in sync with the orchestra. Special click tracks are fed through a delay to the drummers via Vega wireless IFB systems. "The click track greatly reduces the amount of time that the drummers could be off," Deans says. "Just listening to the orchestra in real time would cause delays of up to 150 milliseconds or more. With the click, we're able to take the delay

# COMPRESSED COMPRESSOR



Meet the little cousin to the widely acclaimed DC 24... but don't let the size fool you. The FSC 22 is very big on performance and features. Like switchable attack/release response, dual-mode metering to display either gain reduction or output level, and an Input Trim switch to match -10dBV or +4dBu systems for minimum noise and maximum headroom. It's even got those clever new Neutrik connectors that accept three-pin or 1/4" connectors!

Back these features with the superlative VCA performance that made the DC 24 famous, and you've got yourself a top-notch compressor/limiter that's ideal for studio or home recording, live sound, broadcast or post-production. Mount two horizontally for 4 channels in a 19" 1U space. Or rack-'em up vertically for 20 channels across for patching into console inserts.

No job is too big or too small for this pint-sized wonder.

## FSC 22

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FLOODLIGHT shares its high-performance pedigree with the world-renowned, award-winning\* long-throw, high-Q Flashlight system currently in use on tours by major hire companies in Japan, Singapore, Russia, Germany, Holland, France, Belgium, Italy and the U.K.

FLOODLIGHT is an optimum system for facilities with audience capacities ranging from 1,000 to 20,000. Developed for both touring as well as fixed installations, it offers engineers high power, high efficiency, proprietary wide bandwidth midrange as well as ingenious, compact packaging unique to Flashlight –



Floodlight delivers a 50° horizontal coverage pattern.

technology to provide a seamless coverage area with minimal overlap between adjacent cabinets. Axehead also increases system efficiency, power output and intelligibility – particularly in the ultra-critical mid-range frequencies.

Like Flashlight, FLOODLIGHT also features a three-way mid/hi enclosure (TFL-760H) with the industry's widest mid-bandwidth from paper cone drivers. Loaded onto our new generation Axehead device, a high-power 12" delivers impressive low-mid reproduction from 180 Hz to 1.3 kHz. A truly revolutionary 6.5" proprietary paper cone driver is loaded onto a specially-designed, hi-mid Axehead device and provides exceptionally clean response and projection through 8 kHz! Lastly, our proprietary waveguide horn coupled to a 1" titanium compression driver handles high frequencies through 20 kHz. Depending on user requirements, a choice of sub-woofers are available, including one utilising our 6" voice coil, 600 Watt RMS, 21" bass driver as used in Flashlight.

Since all transducers in a single TFL-760H are mechanically aligned and in-phase, external time correction is not required (see ETC diagram).

Worldwide, live sound engineers have lauded the smoothness of

\* Winner, "Live" Magazine 1993/1994 Live Sound Loudspeaker Award. Floodlight is manufactured under license from Funktion One.

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**"Nothing else can hold a candle to it."**

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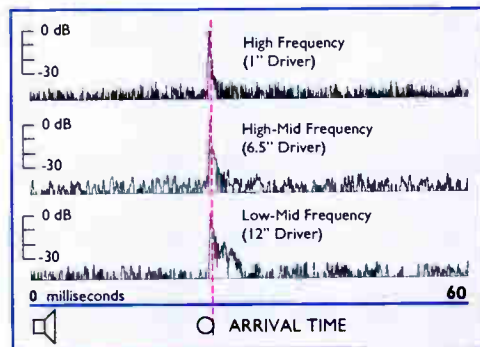
FLOODLIGHT's labour-saving and truck space-saving design additionally features U.K. government certified flying hardware and rugged, exterior grade birch plywood construction.

We have prepared an illuminating monograph which explains the technical merits of the FLOODLIGHT in detail, including

the **LMS-660** dedicated Loudspeaker Management System, a system-specific controller that includes crossover and limiting functions. To ensure consistent system performance, a select list of power amplifiers deemed compatible with FLOODLIGHT is available.

### Energy Time Curve Diagram

As can be seen in this plot, external time correction is not required because of the near perfect arrival times for the 12", 6.5" and 1" drivers in the TFL-760H.



Now that you have seen the light on our next-generation, high-performance FLOODLIGHT, please contact Dan Abelson at Audio Independence, Ltd. for complete technical information at (608) 767-3333.



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down to 50 milliseconds or less, which is perfectly acceptable."

House sound engineer Kim Sandholt adds a bit of the percussion to the click track using the submix capabilities of the Midas XL3 console. The 40-channel XL3, with a 16-channel extender, allows convenient mixing of 56 inputs to 16 outputs. "The EQ section of the console is quite responsive," Deans says. "The board is also quite versatile. It's like a cross between a house and monitor console, and that's the way we use it. We're able to dial in a matrix on each channel as to where we want sound to go as a group."

The Midas XL3 house console's capabilities are greatly enhanced by the Level Control System, an innovative package created by Deans that takes the outputs of the Midas and directs them. An integrated hardware and software package, it allows control and programming of levels and effects from a Macintosh

computer. Cues can be triggered manually or via SMPTE, with crossfades moving smoothly from scene to scene. One feature used in the show, called "SpaceNodes Spatialization," allows the engineer to precisely distribute or pan sound to create wild and complicated effects that are repeatable.

A set of control points—nodes corresponding to physical locations in the listening area—are mapped in the LCS software. Nodes are either speakers, groups of speakers or silent spots. With silent spots placed on the edges of the listening area, sounds automatically fade out as they move away from the audience. SpaceNodes can also provide proportional reverb, by dedicating one or more of the nodes as reverb sends and bringing the reverb back into the LCS through the console.

Using the mouse, sound can be drawn to pan in three dimensions—in a circular, swirling motion to do anything imagin-

able. These scenes can be written, stored and then automatically cued at the proper time within the show. Each output features a number of signal processing devices with presets activated by the LCS, including BSS parametric Varicurves and 804s, as well as Drawmer compressor/limiters. Lexicon 300 and PCM70 reverbs are also tied into the LCS, where their MIDI information is stored and called up scene by scene, or song by song.

Despite the collection of advanced audio tools, Deans still relies heavily upon an ancient standard for final system setting and tuning: his ears. "All of the effects, changes and delays still must be tailored especially for the show, and the best way to do that is to listen," he says. "There would be no point to any of this if it didn't sound good." ■

*Sound reinforcement editor Mark Frink can be reached at 4050 Admiral Way #305, West Seattle, WA 98116; BBS (206) 933-8478.*

# PARAMETRIC PERFECTION

THE ADF-1200/2400: THE FIRST COMPREHENSIVE DIGITAL FILTER WORKSTATION

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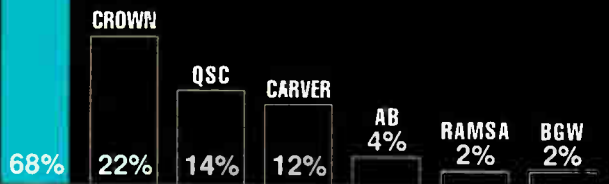


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Orris Henry, Front of House Engineer  
for KISS & Lita Ford

*"The MSL-5 is the smoothest and cleanest speaker I have used. No matter how loud or how quiet the music, the MSL-5 is the best sounding off-the-shelf box I've heard. I used to be an 850 fan until I used the MSL-5."*

Wes Wesson, Front of House Engineer &  
Production Manager for Marty Stuart

*"With the MSL-5s, I had an easy time in a place where I didn't think I was going to."*

Zero Nylin, Front of House  
Engineer for Chaka Khan,  
Patti Austin, Michelle Shocked

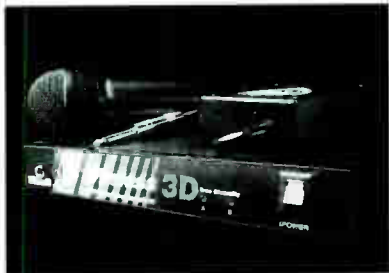
Photo: Montreux Jazz Festival main system (left).



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# SOUND REINFORCEMENT NEW PRODUCTS



## NADY WIRELESS 3D

New from Nady Systems (Emeryville, CA) is the Wireless 3D, a low-cost, true-diversity system with a range of up to 1,500 feet and a dynamic range that is said to be 120 dB. Systems are available in microphone or instrument versions, with prices beginning at \$275.

Circle #212 on Reader Service Card

## CHEVIN A-SERIES POWER AMPS

Now available in the U.S. is the UK line of Chevin Research (offices in Crystal City, MO) power amps. Designed for pro touring applications, the amps use high-current, high-voltage power supplies combining efficiency, low weight and cool running. All models are single- or two-rack-space designs and weigh 26 pounds or less. Internal systems include SoftClip circuitry and protection from DC faults and shorted loads. Two-channel models include the A500 (\$1,353), a nine-pound amp offering 200 watts per channel into 8 ohms or 350 watts/side into 4 ohms; the A750 (\$1,906), with 250 watts into 8 ohms or 425



## CELESTION KR1 LOUDSPEAKER

Celestion (Holliston, MA) announces the KR1, a compact (6.8x8.6x7-inch) general-purpose speaker for installations and live sound applications. Sold in pairs, the KR1 features a 135mm bass unit and coaxial tweeter in an injection-molded, ported enclosure, with recessed, spring-loaded input terminals and integral mounting points for optional mounting hardware. Power handling is rated at 75 watts; frequency response is said to be 90 to 20k Hz.

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## AUDIOCONTROL SA-3050A RTA

AudioControl Industrial (Mountlake Terrace, WA) offers the SA-3050A, an improved version of its real-time analyzer system that updates the unit's measurement resolution to 0.1dB increments. The price of the 1/3-octave spectrum analyzer remains \$995 and features microprocessor control with six memories, a built-in pink noise generator and calibrated microphone. Options include a rechargeable battery pack, parallel printer interface and carrying case. Most existing units can be upgraded for \$100.

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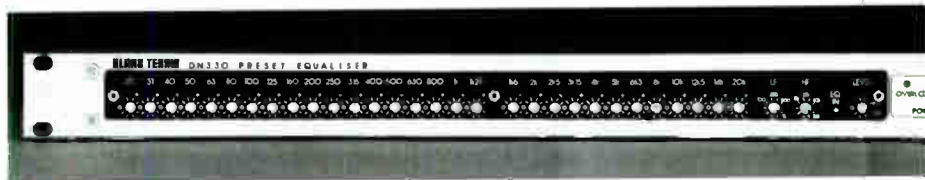
watts into 4 ohms; the A1000 (\$2,313), 350 W/ch into 8 ohms or 600W into 4 ohms; and the A2000 (\$2,945), with 375 W/ch into 8 ohms, 750 W/ch into 4 ohms or 1,200 W/ch into a 2-ohm load. Mono (1,500 watts into 4 ohms) and 4-channel (600 watts into 4 ohms) models are also available.

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## KLARK-TEKNIK DN320/DN330 EQUALIZERS

Distributed by the Mark IV Pro Audio Group (Buchanan, MD) are the DN320 (dual 16-band) and DN330 (single 30-band) equalizers. Designated as "preset equalizers," the units are designed for situations where equalizers are sealed after system setup. Built into compact, single-rack-space chassis, both models feature rotary pots (the same as those used in the Midas XL3 console) for -6/+12 dB of cut/boost, by-pass switches, clipping LEDs and electronically balanced inputs/outputs.

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# CAREER MANAGERS

THE  
15%  
SOLUTION?

BY MAUREEN DRONEY

Welcome to L.A., where everyone has their own fitness trainer, publicist, agent and manager...even the second engineers! Okay, so maybe we're exaggerating a little, but the phenomenon of engineers and producers having management is a relatively new one—and some people still don't see the need for it. Others, especially young up-and-comers, are desperate to get a manager, seeing it as the key to success. They complain that they find themselves in that old Catch-22, where, if you aren't hot enough to already have a manager, you can't get one, and if you can't get the gigs how can you prove yourself to those people. The truth is, as always, somewhere in between.

In the following article, *Mix* interviews three of the leading Los Angeles producer/engineer management

# M

## OF ENGINEERS AND PRODUCERS

companies, and tries to find out what it is they really do. One thing we discovered very quickly is that while the companies may have very different styles, there are definite similarities among this new breed of managers. Although they can be tough when they find it necessary to defend their clients' rights, overall

they are low-key, accommodating and affable—the antithesis of the old style, egomaniacal, tantrum-throwing manager.

Sandy Robertson of World's End (America) Inc. manages, with the help of his staff, over 30 producers, remixers and engineers of all genres, including Danny Kortchmar, Richard Perry, Keith Cohen, Michael Brauer and Susan Rogers. Originally from England, Robertson is elegant, articulate, thorough and passionate about music.

James Phelan, head of the James Phelan Company, was reluctant at first to talk with *Mix*, feeling that a manager should not be a focal point, and that the whole premise of management is in opposition with the idea of publicity for the manager. However, as Phelan is both thoughtful and extremely open-minded, his thoughts on the subject are worth-



**SANDY ROBERTON  
OF WORLD'S END INC.**

**"I encourage producers all the time to go and buy a new record and keep up to date, because it's so easy to slip, and just get out of touch."**



**JAMES PHELAN**

**"We like to get involved from A to Z in our clients' careers, from the initial connection with the project, through the negotiations of the deal, to helping them put studios and budgets together."**



**SHANKMAN, DEBLASIO, MELINA  
(SHANKMAN)**

**"We look at publicity and visibility opportunities for our clients, not on an ego basis so much as letting the music community know about their talents and their desires."**

while. Phelan's client roster is heavy with producers considered rock-oriented and alternative, from T-Bone Burnett to Matt Wallace, Glyn Johns, Brendan O'Brien, Malcolm Burn, Pat McCarthy, Sylvia Massy, John Paul Jones and Jack Joseph Puig.

Since this interview, James Phelan has accepted a position with A&M Records as vice president of A&R, East Coast. As of the end of June, the majority of the engineers and producers on Phelan's roster will become clients of the Steve Moir Company, which currently handles Chris and Tom Lord-Alge, Humberto Gatica and others. Phelan states that through his alliance with Steve Moir, he will continue to play an active role in the careers of his clients. Phelan-staffer Frank McDonough also moves to the Steve Moir Company.

Over at Shankman, DeBlasio, Melina, things are a bit different. There, the three managers oversee the careers of writers, bands, producers and engineers, all from their control central, one large room in which all three have their desks, surrounded by the satellite offices of a support staff of nine. The producer/engineer clientele at SDM includes, among others, Jon Gass, Soulshock & Karlin, Ken Kessie, Nick Martinelli and Bunetta & Chudakoff. Founding partner Ned Shankman fielded our questions and offered insights into the methods that he, Ron DeBlasio and Alan Melina have developed in their years of working together.

**MIX:** How did you come to manage producers and engineers?

**ROBERTON:** I think I'm the only person representing producers who actually was a producer. I probably did about 30 or 40 albums. Toward the end of that period I wasn't getting to work with the artists that I wanted, 'cause I had to find all my own work—there were no managers. It's very difficult for a producer to phone up and sell himself. Also, you have to do it when you are working! I'd say to some of the engineers I was working with, "What are you doing next?" and they'd say, "Nothing!" I started to help them, and it evolved into this. I've been doing it over 15 years now.

It was something that had obviously been needed, because it expanded very quickly. Producers need somebody. It's a lot more than just answering the phone and quot-

ing someone's fees. It's very rare that you get a phone call with someone trying to book a producer. Ninety percent of the time, I go see a band, I see A&R people at the gig who are thinking of signing them, and I keep on top of it. I put ideas forward. I spend my life talking with A&R people, and really, connecting producers up with projects.

**PHELAN:** I began in artist management, and worked with someone who went through the demo/showcase route. We got a record deal with Casablanca, which was very hot at the time, and we didn't know what we were doing. By the time the record was finished, Casablanca had been bought by PolyGram and the people who signed us were gone. The record was never released. It was like, "Okay, now what am I going to do?" I had met quite a few people in the process and was offered a job at Capitol, where I worked for a while, and to me it was really an opportunity to go behind enemy lines. It was an education—to be paid to learn how the business worked.

During the course of my time at Capitol, I kept meeting producers who were clearly in need of help. They would spend months on a given project and then they would emerge from the studio and try to get caught up on their dry cleaning, or their marriage, or whatever else they had neglected for the last three months, and start thinking about where their next check was going to come from. It just seemed that maybe somebody could help sort this out.

**SHANKMAN:** Originally Ron [DeBlasio] and I got together; I had been a music attorney and working in television production. Ron was a hard-core manager. We got together during the disco period, and we realized that the stars were really the records; there were no James Taylors, no singer-songwriters. The people making the records were the producers, and we decided that's who we should be managing. I had a background in publishing, and we started managing the publishing ventures that our producers were throwing off. So the bulk of our business was managing producers and administering their publishing catalogs. It was a natural evolution into engineers and remixers. A lot of our clients were getting burned out on going from one project to another.



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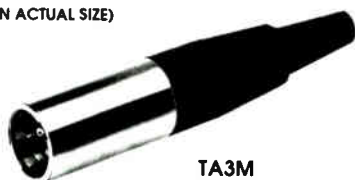
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er. Each album would take three to four months to do, and then it would be time to start the next one. They had very little breathing time.

So we started making deals, which were not typical at that time, and that was doing two or three cuts with various artists instead of taking on a whole album project. The record companies found that went down well—that you could make a record using various producers—and they started really turning their guns to various producers who could individually bring in their very best stuff. So you ended up with an album full of would-be hit singles. And engineers became more important. Engineers became producers, and then we had the remix phenomenon where you had an engineer who came in and turned the record around and re-produced it. Remixers are re-producers actually. Remixing was like a whole new career, with percentages and large fees, and doing projects in record time.

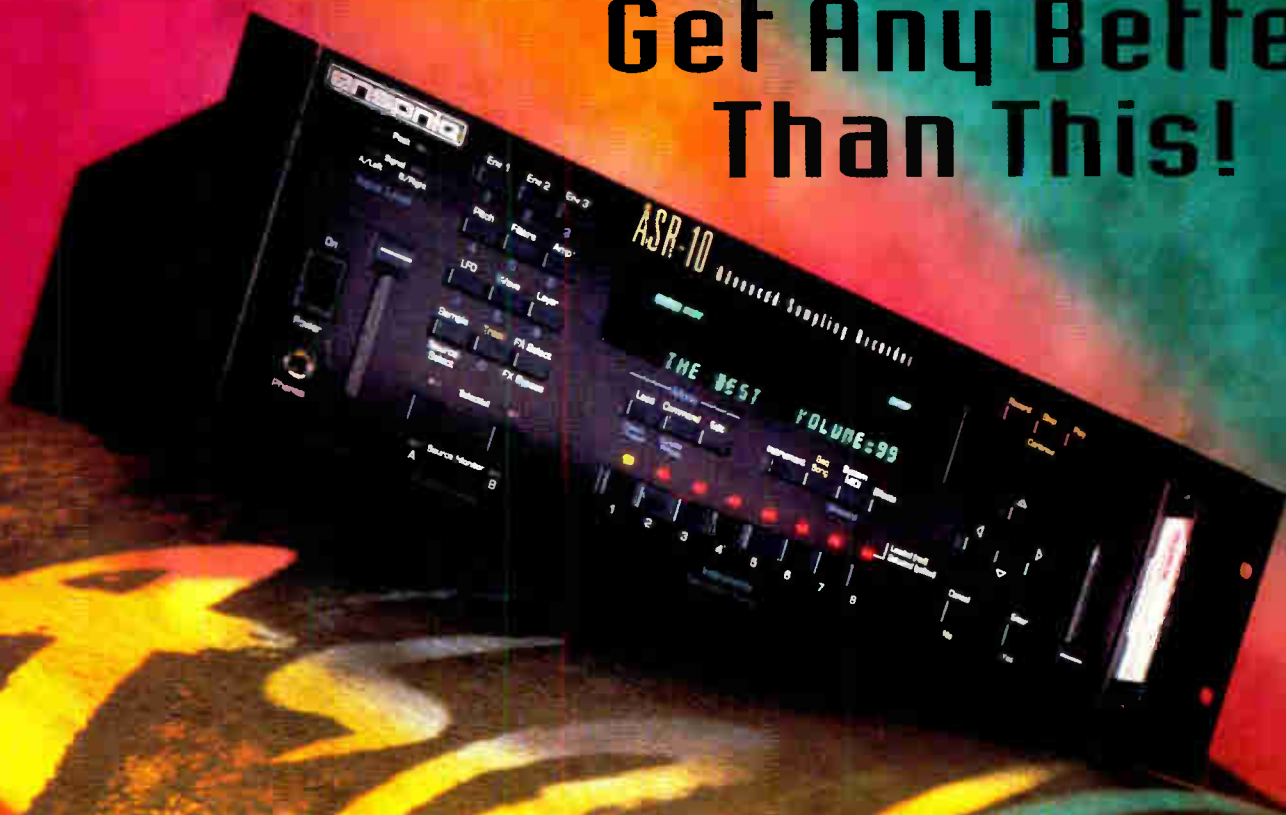
**MIX:** What services do you provide for your clients?

**PHELAN:** I'd like to feel that what we do is help develop people's careers: provide guidance, advice and development. Sometimes a producer will be given certain choices, and one choice may be more lucrative on the short term, but I think may harm their career, and may harm the perception of them in the business. Ultimately, it's not the right decision. These are the hurdles that we try to help our clients navigate.

We are also very involved in the nuts and bolts of what they do, in terms of putting together budgets, helping them find studios, sort out musicians and contracts and all the other stuff that needs to be done. There are a lot of intangibles, too, that we do for our clients. I've been in the business for almost 20 years now, and I know a lot of people. I seem to be fairly well-regarded, and I have a good reputation. No one thinks that we, or our clients, are in it for the quick buck. The integrity of the music is very important to us and the people we work with, and that's something that I look for in clients.

Counting Crows are a great example. T-Bone Burnett, who produced, and Pat McCarthy who engineered and mixed the record, are our clients. We went after that project in a big way. I heard the demos,

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and I thought, "this band is wonderful." I can't tell you I predicted millions of records, but I knew there was something substantial there. When I gave him the tape, T-Bone also felt strongly that this was something worth going after. It took some doing, but we got it. A lot of work is being generated for T-Bone out of it.

Above and beyond the guidance aspect, follow-up is crucial—making sure that the royalties are paid. We have a very together system here as far as staying on top of all our clients' projects and royalty statements. This business is about royalties and about getting involved with projects that are going to generate significant income down the line. If you are living on advances you are really treading water. So we consider that very important. Frank McDonough, who works for me, was at Arista in A&R administration, looking over the royalty statements, for a long time. I stole him away, and it was one of the best moves that I made.

We like to get involved from A to Z in our clients' careers, from the initial connection with the project,

through the negotiations of the deal, to helping them put studios and budgets together and then following up on the business and ultimately making sure at the end of the day that they are being paid properly.

**ROBERTON:** I try to direct producers who sometimes don't have much of a handle on current music because they are always busy, and they don't go to clubs very much. I encourage them all the time to go and buy a new record and keep up to date, because it's so easy to slip, and just get out of touch.

The main service that we provide here is finding the clients their work. I find the majority of the work that they get. And then we have two project coordinators. They become like a personal assistant to the client during the making of the record. They do all the union forms, book the studios, arrange for musicians to come in, fly the band from wherever they are coming from, track the budget, do everything, tell the producer how much money is left so they don't go over.

I also have a lawyer who does all

the contracts. When I first came to L.A., I went to visit all the lawyers and asked would anybody do contracts on a set fee, and nobody would. And [finally] I found somebody who would. He probably regrets it now because it's so much work! And apart from one person whose been with his own lawyer for so long he felt it would be like leaving his family, every producer is dealt with by my lawyer. So I have a couple of long phone calls each week and go over where we are.

I continually update the A&R people on someone's availability: just trying to pair people. It's just not possible for a producer to do that. You can't be sitting in there thinking, "Well I've got to make 25 phone calls now." You can't do it, because you need to be focused. People like Bill Bottrell won't take a phone call during a session; they are totally focused.

**SHANKMAN:** We like to be involved with people whose talents are multifaceted. An engineer who wants to move into remixing or producing. A producer who maybe wants to get involved with films. Clients get

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burned out when they do one project after another. They need a change to stay creative and interested. Time passes by quickly, and we see ourselves as really managing careers on a long-term basis. When part of their career starts to slump down, because either they are tired or there's someone coming up in back of them, we like to move them sideways, but always on an upward trend. So as managers, we are always looking for collaborations and opportunities.

Also, we make the deals. We do an awful lot of the groundwork negotiations, so by the time an attorney is called in to review the deal we pretty much have it hammered out. It saves a lot of time, which is even more important than money. Time is often not our friend in doing these things, and to be able to find a deal and turn it around quickly is important. We look at publicity and visibility opportunities for our clients, not on an ego basis so much as letting the music community know about their talents and their desires. We are in and out of everybody's home studio, and we like to hook them up with endorsement deals to update their equipment and stay fresh and on top of their game. And we have a great support staff for our clients, like Randy Cohen who handles a lot of the day-to-day business and booking for our engineers and producers.

**MIX:** Is there ever rivalry between your clients for the same projects?

**PHELAN:** I think that each and every client is distinct and unique in their own way. Part of it may just be luck, but we haven't had too many problems along those lines. Generally people are really specific about what they are looking for, or who they are looking for. Occasionally there will be more than one client who's being asked to consider a project. What I do then is my best for each without favoring either one, which is a little bit difficult, but I think it can be done.

Ultimately, it's never my decision who gets hired, and maybe that's why it's not a conflict. The artist is going to want to meet with producer X and producer Y. It's going to be the chemistry between the producer and the artist, and how the artist, and maybe the A&R guy, feels about the producer that they are hiring. So I make sure that I give as much in-

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formation as possible about both clients to the record company and to the artist, let them meet, and then nature takes its course.

**ROBERTON:** There's quite a cross section of people here. I try not to double up on representing people who do the same thing, because it becomes very difficult. I only have two people who just mix: Keith [Cohen] and Michael [Brauer]. And Keith has been moving into producing.

**SHANKMAN:** It is a sensitive area. We have a very democratic intake committee here. The five of us sit down and talk about potential new clients, how they fit in, and how they are going to be handled within the office. We try to get to know our clients very well, and when everybody knows what's going on, there is less potential for conflict. If we know of a project that would be right for the same two or three people, the best we can do is send out, in a democratic way, peoples' bios, and try to get a sense from the artist or A&R person what kind of person they are really looking for. Knock on wood, it hasn't been a problem so far.

**MIX:** Sometimes with success comes burnout. And sometimes, after success comes failure. How do you deal with the ups and downs of a long-term career?

**ROBERTON:** It's different with every client. With Keith Cohen, for instance, if he doesn't work for two days he gets sort of antsy, so burnout isn't a problem with him. But a lot of people should definitely take time. Brad Wood, who did the Liz Phair records, is getting so many offers at the moment, and I keep saying, "Brad, take time off, don't just keep going, because you'll burn out." I have to force him. It's important to take time off, otherwise you do burn out, and you start doing the same thing. You get the same effect you used on the last record. That's what you've got to avoid. And I think now with people being able to sample drum sounds they can get their drum sounds back up almost immediately because they just used it—they've got their favorite snare.

So I think you have got to keep pushing yourself and to try and be different and keep listening to new

music. Another thing producers have to be very careful about is getting typecast in an area where it's very difficult to move out. Producers have to be very, very aware that they don't go up a side road and not be able to get back down again, and not get too labeled. Some people can keep doing the same thing, but very few. Looking through old producer handbooks and lists of producers, you wonder what happened to some of these people, because they just disappeared. And I don't think your talent goes, but what does go is your ability to stay hip and current. I don't think you forget how to mix, you just lose touch, because pop music moves on. That's the secret to producers—to keep current.

**PHELAN:** I think the only way you burn out is if you get greedy. I think if you start grabbing everything that comes along, your work and your reputation will suffer. I don't think that a producer can be all things to all people. Lots of times people will want a piece of perceived success. They won't really know what it is

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that they are after, but they see a producer who has a big record and they think, "That's the guy for me!" Not even knowing what they do or what their contribution may have been to a record that was successful.

I managed Daniel Lanois for about eight years, and after the Peter Gabriel and U2 records really took off I would get phone calls from people who had no idea if he was a musician, an engineer or what. They wouldn't know how to pronounce his name, but they knew they had to have "Daniel La Noyz."

One of our clients now having a great deal of success is Brendan O'Brien. Brendan and I feel that the best way to handle all the offers thrown at him right now is to ask him, "What do you feel strongly about—who do you really want to work with?" Those are the records you should be doing. And if it's potentially a really lucrative situation, if there's a big payoff, and you know that the band has a big base sales-wise, but it's not something that you feel particularly strong about, don't do it. Decide on something else. Brendan loves the band King's X. He pursued that project at a point in time when multi-Platinum bands were being offered to him. We went to Atlantic and said, "Brendan would like to work with King's X." It may not have been the obvious move, but it was one that was creatively rewarding to Brendan, and hopefully financially.

It's not really all just about cashing in. I think that applies to all the other people we work with as well. If you remember why you got in this [business] in the first place, and you remember what your motivation and your goals are, then you are going to do pretty well. Sometimes it takes longer than you'd like, but believe in yourself and stay at it. Basically, trust your gut. Follow your instincts. Do you feel strongly about this? Are you going to be proud of this record? Are you doing this for the right reasons? Because that is how you are going to do your best work. And if you are doing it for the wrong reasons, it's going to show up somehow. It will be obvious either in the results, or in the studio, with the relationship that you have with the people you are working with.

**MIX:** What do you think of Steve Albini's opinion that producers don't

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deserve to participate in a percentage of the financial rewards generated by a successful record?

**PHELAN:** I don't know Steve Albini; all I know are records that he's made. I like the Nirvana record; I like the P.J. Harvey record. All I can say is that everyone is entitled to his own view. I think that producers do, in fact, aid and abet the creative process, and that they are, in fact, entitled to share in the profits and the proceeds of the work that they helped create. [Albini] seems to be somebody who makes outrageous statements. He may like the reaction he provokes, or he may entirely believe what he says.

**ROBERTON:** I totally disagree [with Albini]. I've seen bands set up in the studio and not know what to do—just sort of look around. You need somebody in there. When you see a real professional producer at work in a session, it's as good as watching Ridley Scott directing a scene in a movie. It's exactly that. They are guiding a person along, they are making suggestions, they are telling them "that vocal harmony isn't right, let's have this, let's try that." Most engineers who develop into producers start by making suggestions, and that's how they get into it. But there's a big difference between just being an engineer or somebody in the control room and being a really good producer. You know when you watch a real producer take charge of a session. And also being a great arranger and musician, someone who can really, really help. I think producers really make or break the whole thing.

**SHANKMAN:** To me that's a very odd belief for a number of reasons. And I think in a few years, he may regret his position, if he's doing what a first-class producer should do. In my view, the producers I've been involved with have almost become a fifth or sixth member of the band while they are making the album. We have producers who are top-notch. Musicians, arrangers, they pull in all the creative elements. I believe producers are entitled to points. Certainly not to the fruits of a tour, where the group is performing, but in the studio, getting a sound, a direction. I think that both the producer and the engineer are very much a part of the success of the album. ■

*Maureen Droney is Mix's L.A. editor.*



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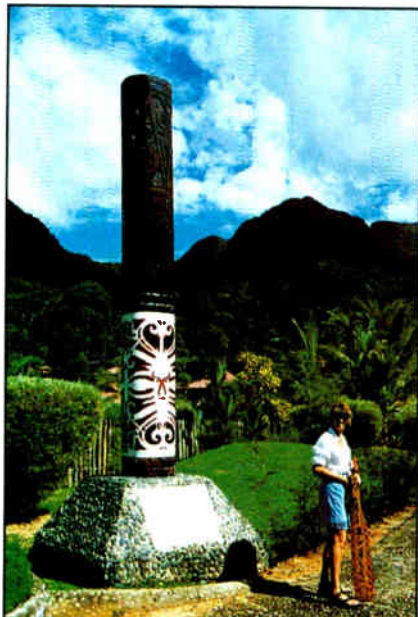
Synchrosound was nearing the end of its design development phase at the time of this writing; specific acoustic treatments come next. All of the architectural, acoustic and interior designs are being prepared by the Walters-Storyk Design Group's (Highland, N.Y.) John Storyk (architecture/acoustics) and Beth Walters (interiors), who says that "the Malaysians have an amazing blend of several different cultures. Capturing this is one of our main design challenges. We're excited about the challenge of integrating elements of the local cultures with Western technology."

Synchrosound will occupy the top floor of a recently constructed, five-story office/warehouse, creating the



BETH WALTERS

**John Storyk and facility founder Richard Stewart at the Synchrosound site**



JOHN S. STORYK

**Interior designer Beth Walters used elements of Malaysian art and music and the tropical landscape to develop the decor of Synchrosound.**



## X-ART FROM THE GROUND UP

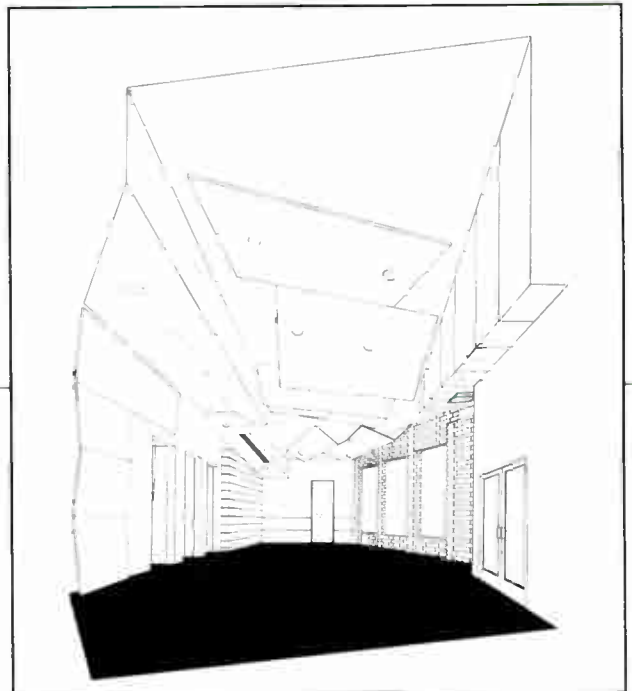
X-ART Studios (Pinkafeld, Austria), completed last fall, is a ground-up studio/media center designed by L.A.'s studio bau:ton. The project's acoustical architect, Peter Gruen-eisen, says that this facility presented an "ideal situation," because the design came first; the co-founders of X-ART allowed studio bau:ton free reign (within the budget) and then found a piece of property, in a pleasant, wooded setting, to accommodate the design.

The studio features large windows for views to the surrounding landscape and movable panels for changing reverb; materials implemented include concrete block, and birch and fabric paneling. The control room has custom studio bau:ton-designed diffusor walls. In addition to audio recording, the complex offers video-production facilities, training classes for Digi-design and Avid products, and extensive leisure facilities. Gruen-eisen visited X-ART four times during construction to monitor the project. Daily construction observation was provided by a local Austrian architect. ■



ANDY BRUCKNER

**X-Art as it is today, and the architects' original mockup**



potential for great views of the surrounding tropical landscape and downtown Kuala Lumpur. Arranging the suites to capture these views, while providing the required acoustic isolation, was one of Storyk's primary tasks.

Synchrosound's floor plan illustrates the way Storyk and Walters maximized the available views and arranged the rooms in what Storyk refers to as a "multi-user configuration"—necessary for all of its required recording uses. Each of the two principal pairs of recording suites has several use arrangements," Storyk explains, "depending on exact client needs during the particular session. For example, in Malaysia there is a large demand for mix-to-picture audio post-production, which will take place in the Logic 2 suite. During these mix-

ing sessions or during off-hours, it is possible that an expanded use of the Sigma suite could take place, since the Sigma and Logic 2 studios have excellent visual connection as well as being wired for concurrent tracking purposes. This is only one of the several multiple-usage arrangements that the total complex is designed for."

### PRODUCTION SUITES

Presently, the suites are named after their primary consoles. The Capricorn suite (featuring a Neve Capricorn console) will be the premier digital

mixing suite for music post-production and will have its own 800-square-foot recording space. The studio shares a window with the larger Legend suite, Synchrosound's primary tracking studio. Recording will be on Studer 48-track DASH equipment. Tape machines will be located in the Central Machine Room.

The Legend suite will be dedicated to high-end analog music tracking.

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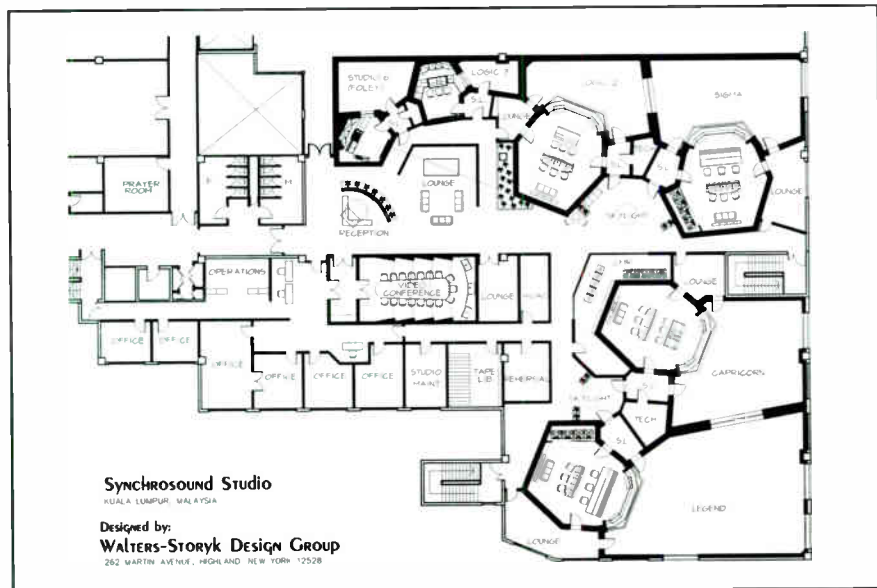
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With 20-foot ceilings and a floor area of more than 1,600 square feet, this room will be capable of housing up to 50 musicians for orchestral work. Recording will be on a Neve Legend VR72 console. Synchronsound's medium-budget analog tracking studio will be the Sigma suite. This studio will share floor area with the Logic 2 suite for expanded tracking needs. It is anticipated that Sigma will be dedicated almost exclusively to local Malaysian recording work.

The Logic 2 suite, which will have a 48-fader Logic 2 LCRS digital console with 24-output AudioFile Spec-

although their functions and tape machine configurations will be somewhat different. Storyk says that the acoustical specifications for all four suites include a minimum 20Hz frequency response, broadband console position accuracy in frequency and time domain, well-defined Initial Time Delay Gap characteristics and a maximum 15% difference for adjoining-octave RT60 values. In addition, Walters-Storyk designed the control rooms so that they each will have a full-vision, front-window wall into their respective studio areas.

Synchronsound will also have what Storyk describes as a "state-of-the-art video conferencing center" with



### The layout of Synchronsound

tra, is being configured to accommodate audio-for-video and film production and will house a five-speaker surround sound monitor system. Storyk envisions this suite as having an "international, corporate feel" and sees it as "the core of Synchronsound's international film post-production work." There also will be a Logic 3 suite to accommodate nonlinear audio and radio production. It will be adjacent to a dedicated eight-person recording room, Studio 6, and will be built around an AMS Logic 3 console. The sixth suite will contain a Sonic Solutions workstation and will be dedicated primarily to offline audio and video. It will have a separate, smaller insert studio for small-ensemble sampling and recording.

Another decision made early in the design process was that all four of Synchronsound's principal control rooms will be acoustically identical.

room for up to 25 people. This center, and the control rooms, will be fiber-optically linked to EDNET for audio and video ties to other facilities around the world. In keeping with his clients' high standards, Storyk says the conference center will have "control room-quality acoustics for accurate acoustic reproduction of all production materials."

### CENTRAL MACHINE ROOMS

The location of the primary storage devices (i.e., large-format tape machines) was also important. Storyk says that this is a significant issue in the design of any large complex where there is a requirement for multiple production formats. "Most of the suites will, in fact, use tape machines," Storyk explains. "The total facility complement of machines is quite complex. It was finally determined to locate tape machines with-

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in the control rooms for the suites used predominantly for tracking, while remotely locating the machines in the remaining production areas. The remote location will be the Central Machine Room."

Subsequent to this decision, Storyk went about determining whether it would be possible to make the CMR truly central to all of the rooms, a daunting prospect given the fact that Synchrosound's area is in excess of 16,000 square feet. "In a complex such as this, a great deal of support equipment needs to be relatively close to respective control rooms," Storyk asserts. "The design solution [we used] was one that was implemented in the past at several studios, such as Howard Schwartz Recording in New York City: multiple CMRs."

The complex will house one large CMR and several satellite equipment rooms, called Technical Rooms; these will be assigned to pairs of the primary recording areas and will house the console towers and monitor system equipment racks. These systems require short wire runs, which makes them well-suited for the Technical Rooms. Storyk says the Technical Rooms will also have good access from the studio sound locks.

#### LOCAL COLOR

Beth Walters' approach to the interior aesthetics of Synchrosound is meant to capture the spirit of contemporary and traditional Malaysian art, blended with elements of the facility's tropical surroundings. Walters plans to use the region's ethnic batiks and locally dyed, woven yarn pieces, in the earth tones common to Malaysian folk art, stretched across panels on the walls of the lounges and other common areas. Antique tribal musical instruments and wood carvings typical of the region will also be used. Walters also plans to specify hallway floors made of Malaysia's Langkawi marble, cut and arranged in patterns reflecting those exhibited in art of the region. The lounge areas will also mimic the facility's natural surroundings with large indoor trees and skylights to give an airy, tropical feel.

Interiors of the studios will be designed in keeping with their prescribed uses. Rooms with corporate, international schemes will be available to those interested in a more

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Western atmosphere. There will also be parts of the facility devoted to the Malaysian heritage that will emphasize Eastern philosophies of design, taking into consideration the colors, textures and materials of the local surroundings.

Storyk says that "supervising an installation such as Synchronsound is difficult, even in the U.S., so one can imagine the complexity of this effort in Malaysia." Consequently, Walters-Storyk Design Group will coordinate the supervision of the installation of Synchronsound with the help of O'Connor Trading Co., one of Malaysia's largest broadcast media engineering firms. The drawings for the project will be CAD-generated and transferred to Malaysia via modem—"truly paperless design," according to Storyk. This certainly seems to be the way to go given the fact that, as Walters reminds us, "It's the other side of the planet." ■




Mix editorial assistant Barbara Schultz thanks everyone at the WSDG for their assistance with this article.

## BITS AND PIECES

### ASIA

The Post Production Shop in Hong Kong ordered two AMS Neve Logic 3 mixers and three 16-output AudioFile Spectras...Music Factory, an independent Hong Kong recording facility, built a new studio called Tang Lou on Hong Kong Island. The facility was designed by British acoustics and studio designer Keith Slaughter and will be equipped with an SSL 4000 G Plus 56-channel console with Total Recall and Ultimatum...Taipei will host Taiwan's first professional broadcasting show, September 27-30, 1994, in the city's World Trade Center. The conference—Taipei Broadcast '94—will be held in conjunction with Taipei Telecom '94, an international telecommunications show. Two other broadcast shows this fall will be Broadcast India '94 in Bombay (October 21-23) and Broadcast Sri Lanka '94 in Colombo (October 29-31). Both shows are being organized by Saicom Trade Fairs and Exhibitions PVT. Ltd. of Bombay; phone: (91-22) 215-1396...Osaka's NHK, Japan's national broadcasting company, purchased a Digital Audio Research Sigma workstation. India's first DAR workstation was acquired by West-

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### EUROPE

SSL made a number of deliveries to European broadcasters. NOB, formerly part of the Dutch National Broadcasting Company, installed an SSL Scenaria in its audio and video post facilities in Hilversum. NOB is the site of production for TV shows broadcast in Holland and Germany. Spain's national TV network, TVE, is adding SL 4000 desks to five of its studios. Austria's state broadcasting company, ORF (Osterreichischer Rundfunk), added a Scenaria to the post-production facilities at its headquarters in Vienna. Romania's public television station, Romanian Television, replaced its existing audio post-production equipment with a Screen-Sound. And Deutsche Welle of Germany purchased an SL 5000 M Series console for installation in a remote-broadcast van...Scandinavia's first Capricorn console for live on-air broadcast was ordered by NRK, the Norwegian broadcasting company. The console will be installed in the broadcaster's Studio One, which is mainly dedicated to producing NRK's weekend magazine programs. Capricorns are also being built for ORF, for radio broadcast from Bayerische Rundfunk in Munich and for Danmarks Radio in Copenhagen...John Bake Studios in Amsterdam installed its second Logic 3. Recent work at this facility includes radio commercials for DHL and Ford, and TV commercials for Renault and Seiko...Synchro 7 (Paris) was the post-production company for the French-language versions of *The Firm*, *Age of Innocence*, *Much Ado About Nothing* and *Cliffhanger*. The work was done on a Soundtracs Sequel that was customized for the facility by Tech Audio...A Soundtracs FMB broadcast console was installed at Moscow's Radio Roks, Russia's only satellite FM radio station. Launched four years ago, Radio Roks reaches St. Petersburg, Riga, Kiev, Minsk, Volgograd, Petrozavodsk, Krasnodar and Novorossiysk...At Plus XXX Studios in Paris (spotlighted in Feb. '93 *Mix*) Arjola artist Lisa Stansfield was tracking

—CONTINUED ON PAGE 217



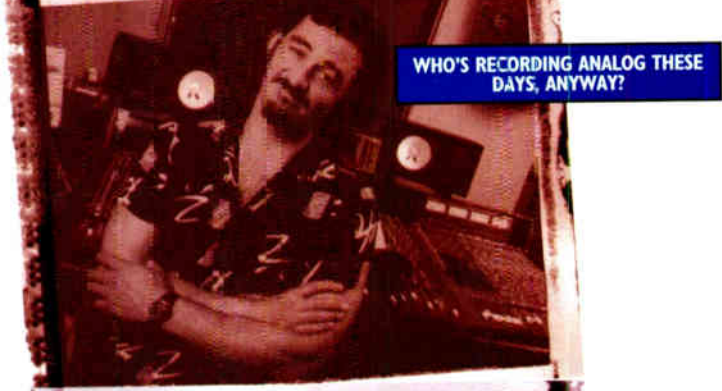
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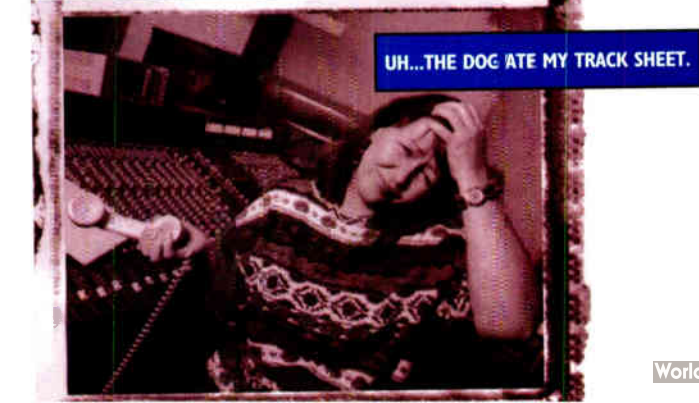
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## Ivo Watts-Russell And the Saga of 4AD Records

by Camran Afsari

It was during the mid-'80s, inside a squalid dorm at San Francisco State University, that a musician friend tossed on a new record called *Treasure*, by the Cocteau Twins on London's 4AD label. For its time, *Treasure* had an intoxicating sound: An aloof but urgent female vocal ranged between choir-girl innocence and banshee rage; a clumsy drum machine battered huge, reverb-laden, distorted guitars. I figured the unintelligible voice to be in Latin. Years later it became clear to me that Liz Frazer prefers screaming English words, but only after she transposes a syllable or two. These days, the Scottish trio have smoothed out some of their rough edges, but the influence of their early records can be heard in an entire generation of British bands (Lush, Sundays, Cranberries). In the dorm, we savored each new release from the Cocteau Twins and learned to wallow blissfully in the woeful sounds of talented 4AD labelmates like Modern English, Dead Can Dance, The Pixies, Throwing Muses, The Breeders and Lush.

The first song on *Treasure* is called "Ivo." A music publisher named Ivo Watts-Russell had signed the Cocteaus to his 4AD label a couple of years earlier, when he co-produced another LP the band actually prefers, their first record—

*Garlands*. "I'm glad that I was there with the Cocteau Twins on their first album," Ivo says over a beer in San Francisco eleven years after making that album. "I affected that record. But it was Robin [Guthrie, guitarist] and Liz learning very quickly from the experience, and after the second EP, Robin just said, 'Screw

they worked as managers during the '70s. One of the first 4AD releases was "In a Flat Field," an early single from the inventors of gloom-rock, Bauhaus. 4AD was created as a stepping-stone for its parent company, but it was Bauhaus skipping over to Beggars that partially caused 4AD to get its (amiable) inde-

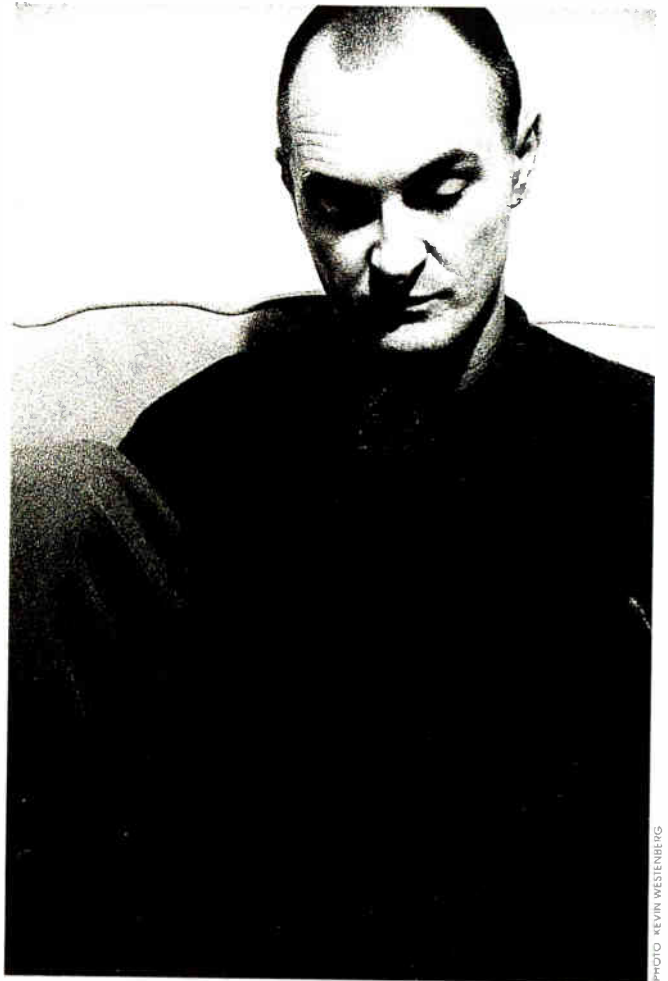


PHOTO: KEVIN WESTENBERG

it. I'm going to do this,' and no one has ever produced them since."

Ivo formed 4AD in 1980, with former partner Peter Kent, as a "sub-label" of Beggars Banquet, which was both a seminal independent record company and a chain of London-based record shops where

pendence.

"I started becoming really passionate and possessive about the music 4AD was releasing," Ivo says. "I thought we had started something that really had a direction and a future. My musical tastes were splitting with Peter—he was

—CONTINUED ON PAGE 167



## TML Studios

**TROY LUCCKETTA'S  
HIDDEN HIGH-TECH**

by David John Farinella

The story goes something like this: A long-haired Tesla fan is wandering around a roofing yard in Hayward, Calif. (south of Oakland), looking for the band's drummer's recording studio. The yard manager comes out and ushers the fan off the yard with these words: "Who would put a recording studio in a roofing yard?" Of course, there were a few more expletives, but we won't print them here.

What the fan failed to notice was the small brown



PHOTOS: PHIL BRAY



stucco building next door that used to house a coin laundromat. The former laundromat now houses one of the best-hidden recording facilities in the Bay Area, TML Studios, owned by Troy Luccketta, drummer for the mega-sell-

**Troy Luccketta (left) of the hard-rock band Tesla and (right) his TML Studios, located in Hayward, Calif.**

ing hard-rock band Tesla.

Although it's developing into a thriving business, the idea behind start-

ing TML was more a favor to his wife than anything else. "I had been doing production work in my house for about five years with an 8-track; then more people started to call and more people were coming

—CONTINUED ON PAGE 169

## Jay O'Rourke And Monsterdisc

**A CHICAGO SUCCESS  
STORY**

by Bruce Pilato

Although Chicago is the third largest market in the United States and one of the foremost major metropolitan centers in the world, it has a surprisingly close-knit music and recording community. And among the few positioned at its core is Jay O'Rourke.

O'Rourke, 38, is a true rock 'n' roll renaissance man: He co-owns a mastering lab, a studio and an independent record label; he's an acclaimed producer and a guitarist with the Midwest roots-rock phenomenon, The Insiders, and he's the house engineer for the legendary Park West concert theater.

"People don't under-

stand how I do it and how I wear so many hats, because I am constantly working," O'Rourke explains. "I am constantly running from my studio to the mastering facility and record label to the Park West and to an Insiders gig to play guitar. It's just the way my life is, and for

me, it's all the same: It's all making music and records."

Though he'd probably be the last to admit it, the unassuming O'Rourke is actually a shrewd businessman, who got tired of dealing with fickle record company executives and decided to do something

about it. Last year, he and his wife, Ginny, formed Monsterdisc, a mastering facility and independent record label situated in the heart of the Windy City. It is a tandem business to Jay's Garage, a small but effective studio that the O'Rourkes have run since the late 1980s.

"I had supported myself with The Insiders for years, but it got to the point where that really wasn't practical anymore," he says. "I was looking for something that I could do in conjunction with the other things I was doing—namely the band and producing—yet still make some regular money."

The answer came with Monsterdisc, a business established as a mastering lab and expanded to be a full-service indie label. After his group had a bad experience being signed

—CONTINUED ON PAGE 172



PHOTO: PETER HEL

Jay and Ginny O'Rourke

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—FROM PAGE 164, IVO WATIS-RUSSELL

much more involved with Bauhaus, and they were the first band to make the transition to Beggars. So we split off, and I started a new company."

It was through Peter Murphy, vocalist for the short-lived Bauhaus, that Ivo first heard and ultimately reissued a group of haunting Balkan female singers: *Le Mystere des Voix Bulgares* became internationally popular and helped put 4AD on the map, critically and commercially. "Peter knows a lot of people in the dance world, and an Australian had given him this tape of Bulgarian music without really knowing what it was," Ivo recalls. "The first and last time I ever produced a band outside of 4AD was Peter's first solo LP [*Should the World Fail to Fall Apart*]. So the first night in the studio he said, 'Okay, this is what we're going to listen to every night,' and he put this tape on. I remember standing up when it came on, and I just had to sit down—it was so completely emotional. I had to find out what it was, so I had Peter write his friend in Australia, and I got a title. Then I started calling some of the specialty shops in London, and they said this Swiss label used to distribute it. I was just trying to get my own copy of it, then all of a sudden I thought, 'Hang on, why don't I put it out?' I figured if my response to it was so strong, then let's give other people a chance as well."

Even though Ivo's been credited as producer on a number of early 4AD releases, he's quick to point out his reservations with respect to the title. During a mix, "I love the ability for my opinion to affect the way that music sounds; I did that by default at the beginning of 4AD. With Modern English, they had never been in the studio before and neither had I. We were working with an engineer, doing an A side and a B side for a single in a 16-hour session. When the band got a bit tired, I suggested putting a delay on this white noise stuff that was coming through and it sounded great! I thought, 'Ohhh, that's what happens!' So I got really excited and sort of took over a bit on the mixing.

"I am the producer of the three This Mortal Coil records," he continues. "I'm the only person that's living that stuff on a daily basis, and I'm the one who decides what's going to happen next, how it's going to be done and who's going to do it. But a producer of [other] bands or artists—

I recognized very early that I'm not that, so I stopped producing groups. I'm useless you see, because I'm so instinctive and non-musical. When you're in a situation with an artist or a group and they're challenging an approach that you're trying to take, I haven't really got the internal knowledge and background to respond, so I've allowed my need for affecting music to be restricted to TMC."

This Mortal Coil's trilogy of releases—*It'll End in Tears*, *Filigree & Shad-ow* and *Blood*—have for ten years satisfied Ivo's alter-egos as songwriter, arranger and producer.

This Mortal Coil is less a formal

band than a loose collective of musicians, many of them affiliated at one time or another with 4AD. Along with original compositions that Ivo co-wrote with various TMC bandmembers, the songs of Tim Buckley, Big Star, Van Morrison, David Byrne and Randy California, among others, are expressively covered. For example, on TMC's version of Big Star's "You and Your Sister," (on *Blood*), Ivo persuaded lead-breeder Kim Deal and lead-Belly Tanya Donnelly to sing vocal harmonies.

It was partially because of the appreciation of Big Star by TMC, The Replacements, Teenage Fanclub, The

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Posies, Primal Scream and others that Rykodisc decided to reissue *Third Sister Lovers* (recorded by Jim Dickinson and John Fry at Ardent Studios) 14 years after its original release. Also, during the recent years of Tim Buckley's rediscovery, spurred partly by TMC, Rhino Records has released *Dream Letter, Live in London 1968*, which serves as an excellent anthology of the folk hero.

The remarkably sad and melancholy TMC sound could seem emotionally oppressive to some—intensely energetic rockers probably won't be into the serene vocals and string arrangements. But for others, TMC could be cathartic: Songs like "The Horizon Bleeds and Sucks its Thumb," "Dreams Made Flesh" and "Bitter" make an appropriate soundtrack for the slow disintegration of a love affair.

Independent producer John Fryer has been Ivo's engineer and co-producer on This Mortal Coil and scores of other 4AD records since the label's early days. Back then, Blackwing Studios in London was still an 8-track facility (today it's 48-track analog), and Fryer was house engineer. "I can articulate an idea, and then the pair of us are completely excited by accidents," Ivo says of his longtime associate. "Going down one route, no matter what it might be, dropping something out, gating something on a rhythm track, using a reverb or a delay, and on the way there, you'll hear something that sounds great and you focus on that."

During the period when Ivo was writing songs for *Filigree & Shadow*, he found it too arduous to use an 8-track reel-to-reel recorder to capture his ideas. "It reminds me of being in school during chemistry classes; I had no interest. I would blank off," he says. "And I think that's a shame; a total shame." He hasn't seen the 8-track since he loaned it to 4AD's Wolfgang Press about ten years ago. These days, he modestly suggests that Fryer might formally teach him the necessary engineering skills, if for no other reason than to afford him a greater sense of independence in the studio.

After being exposed to such a large cross-section of artists—their expectations and personalities—through the years, Ivo admits that his relationship with each band is like a love affair, with all the attendant joys and tribulations. Among his

current favorites are San Francisco's Red House Painters. He says it was songwriter Mark Kozelek's "ability to precisely articulate emotional experiences that we've all had, in a musical setting that was also original and moving, with ten-minute songs. I enjoy experimentation and the breaking down of boundaries between musical genres, but my greatest pleasure is music that compels you to sit down quietly and immerse yourself in it. With Red House Painters, there is an atmosphere created, but specifically it's a lyrical connection."

Lisa Gerrard and Brenden Perry of Dead Can Dance are probably the best example of a rags-to-riches 4AD group. "They really starved for the first four years," Ivo relates. "They lived in a horrible council estate at the Isle of Dogs [low-income housing in a shabby area of East London]. But they knew exactly how they wanted to function, and they were bloody-minded with a vision and parameters, which still exist today. Every penny they made was put into a studio situation, so that in the last five or six years, they've not only been completely self-sufficient, but really successful as well. If you're not in debt to a record company and you're selling a quarter of a million records, just from royalties and mechanicals, you're making a really good living." Nowadays, Lisa Gerrard lives with her husband in Melbourne, Australia, and Brenden Perry's abode is the Dead Can Dance recording studio—a huge 150-year-old refurbished church in a small village 70 miles north of Dublin, Ireland.

The first generation of 4AD bands, such as Dead Can Dance and the Cocteau Twins, were signed with long-term, "career-oriented" record deals. But the '80s are over, and now Ivo's dipping his ears more carefully into the talent pool before diving in altogether. In 1992, 4AD created its own sub-label—Guernica—used specifically for licensing arrangements and one-off releases by promising acts who could eventually become fixtures on 4AD's roster. "In five years time, I like the idea of about 15 or 20 artists on Guernica that are quite broad and varied," he says. "I definitely wanted to get away from the single-album-video-tour career thing. It's really just the need for new music and new ideas to come through." So far, six artists have put out releases via Guernica: Bettie

Serveert, Unrest, the Underground Lovers, That Dog, Spoonfed Hybrid and Insides.

In the past, 4AD might have been rightly known as the "label of lamentation," but after a few years, those notions were blasted away by records like The Pixies' *Surfer Rosa*, and the once-pervasive melancholia has become less conspicuous as the roster has become more eclectic. Still, 4AD's character as a label remains important to Ivo, and at least part of its success in that regard is the company's strong visual identity. Artwork for 4AD covers, sleeves and promotional material over the years has ranged from oblique, grainy, dreamy images to

vivid colorful collages, but they are always bold and distinctive. Vaughn Oliver, who was hired by Ivo 12 years ago, heads the newly expanded art department at 4AD and has been responsible (recently with colleague Chris Bigg) for the high level of creativity in graphic design. "Vaughn does his best work when he's given a completely free reign," Ivo comments. "It's a really important part of what we do. Vaughn has educated me so much in terms of aesthetic and awareness in design. It's hugely expensive, and it controls our release schedules, but I wouldn't have it any other way."

By now, 39-year-old Ivo Watts-Russell can casually say, "These days,

4AD is so much more than just me, and to remain inspired, I need to keep a certain distance from it. I'm spending a lot more time in America; I've been running the Los Angeles office. I've broken the routine of going to the London office every day." So, with no designs on an international presence, the boy who grew up the youngest of eight kids on a farm in Northamptonshire has instigated a fair amount of significant musical activity over the last 15 years. And it all started innocently enough: "When I was seventeen, I moved to London and got a job in a record shop. I wanted to be around music, so that's what I did." ■

—FROM PAGE 165, TMI STUDIOS

through the house," Luceketta says. "One day a friend of mine, Steve Bigham, suggested that I get it out of my house." That friend also had some rental space available: the old laundromat.

"The initial thought was just to set up my kit and continue with demo production," he explains. It wasn't

until he was standing in the space that the idea of a full-fledged recording studio struck him. "I wanted to make it practical to where I wouldn't spend millions of dollars but definitely put in enough money to make it a state-of-the-art studio."

So, while on break from Tesla's 1992 Psychotic Supper Tour, Luceketta stood in front of the building

with Duncan Rowe, who had designed the American River College Music Room in Sacramento and The Second Story in Nashville, and started to think about design. On the last leg of the tour, Luceketta and Rowe corresponded, phoned and faxed ideas about the layout and components of the studio. That was during the fall of 1992; the studio was up

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and running on January 1, 1993.

As Luccketta describes it, "We had toured *Psychotic Supper* for a year, and I got home in the middle of October. The next day at seven in the morning, I was down there with a hammer in my hand." For the next three months, he played designer, engineer, carpenter and electrician, all with help from friends and bands he was producing.

On the technical side, TML Studios has the first functioning Soundtracs JADE board in the U.S. The board is an automated 80-input console with computer-based automation for 50 channels. It also has automated gating and compression modules for the first 40 inputs. Since it is a drummer's studio, they have an enormous selection of drum modules, including an Akai S-1000, MPC 60, Roland S770, TD7, ddrum and a D4; as well as a 30-port MIDI-controller; a Disklavier piano with MIDI interface and sequencer, a Peavey DPM-C\* MIDI controller and Mac-based sequencing programs. The 40-track digital recorders are ADAT-based with a BRC controller. TML uses a 3M 1/4-inch, 15 ips analog

recorder and various DATs for mix-downs.

Also in the control room, because the dimensions are smaller than in average control rooms, they have used near-field monitors, including Genelecs 1031As and a pair of Yamaha NS-10s. In the main room, they use JBL control monitors for playback. TML's microphone cabinet contains various Neumann, Sony, AKG, Sennheiser, Shure and Audio-Technica models. The studio has an endorsement deal with Audio-Technica, a company that TML's Jerry Merrill notes has been taking some excellent development steps recently.

Although they once concentrated on demo production with the 8-track at home, Luccketta and TML Studios now tackle much bigger tasks, including album production. Luccketta is relatively new to the production side of the business, but he has found that it's a comfortable switch from pounding the skins. "There wasn't a conscious effort in the beginning," he says. "I think I got into it by accident because I have a lot of friends that wanted some help. But the more I've done it, the more I re-

alize that I've got a knack for producing."

Luccketta's first shot at producing is a Stockton, California-based artist named Eric Westphal. In fact, it was his belief in the Westphal project that prompted him to look seriously into building the studio. "Eric and I went into a couple of studios together and recorded some demos," Luccketta explains. "What I found out was that it got really expensive really fast, and I wasn't happy with results that we were getting." Now, with the studio functioning, he has produced 12 demos that are being auditioned with major labels, and they are in the process of recording another ten to get ready for an album.

In addition to the Westphal project, Luccketta produced the first album by rock 'n' roll guitarist Scott Van Zen, for an independent label, and most recently, the Bay Area alternative band Ted 302. "It's been nice because the studio has opened up all the doors," he says. "I'm not pressured for time. I don't have to worry about the clock, so I can take whatever time is necessary to make it right."

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Although TML Studios is still in its infancy, Luccketta has received a lot of phone calls from Bay Area musicians asking him to do production work. "A lot of the work I've turned down because I don't have the time or there's too much commitment," he says. "I have to be a little more realistic about what type of time is involved and what it takes to produce a record."

Tesla will continue to dominate his time, especially with their new Geffen Records album—*Bust a Nut*,

produced by Terry Thomas—coming out this month and the touring grind ready to begin again. "I'm gonna continue in the production area, but I don't want people to forget that I am a drummer," he says. He's also a former roofer, so the location of the studio is a little like going home. "If things fall apart, I can probably go up front and get a job," Luccketta jokes. The way things look now, though, there's a good chance the hammer will stay at home. ■

off. Monsterdisc is a very successful mastering lab, and the label now sports a roster of about a half-dozen Midwest acts that have seen substantial commercial success. "Most bands don't know what mastering is," O'Rourke says. "For young musicians, it's kind of this voodoo thing. They don't understand it. For \$500 or so, you can come in and master your LP at our place, and it may make all the difference in the world.

"When people were doing vinyl, it was as much physics as it was hearing," he adds. "With CDs, it's just not. A CD can pretty much take whatever you want to put on it. There are no limitations like there were with vinyl. What's too much low end? It's whatever you think too much low end is, but either way, a CD can take it."

The Monsterdisc mastering facility is equipped with a Sonic Solutions setup and features a Sony Startlab CD writer driven by an Apple Quadra 900 with a Hewlett Packard 1.6MB hard drive. They hope eventually to get a Neve NTC mastering console. "It was very hard for me when we first started, because I was

—FROM PAGE 165, JAY O'ROURKE

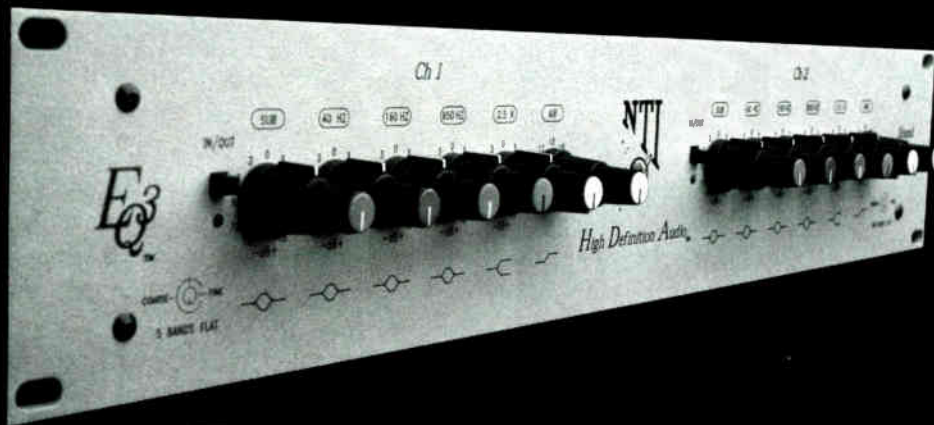
to a major label, he decided to establish Monsterdisc to finance and direct his band's (and other area artists') records.

At first, O'Rourke considered acquiring some investors and building a commercial studio. But he was actually happy with the masters he was cranking out of his small studio, and he couldn't see the logic of going head-to-head with the already healthy supply of professional studios in Chicago.

"There were already a lot of studios in Chicago," he explains, "but there wasn't a real mastering place in the traditional sense. With the advent of digital workstations, I felt a mastering setup was the way to go. This way, we could launch an independent label and have its own small studio and mastering facility. The mastering facility completed the equation. By putting that together, I didn't have to go to Warners or Sony to make great records anymore."

The O'Rourkes' hunch has paid

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practically computer-illiterate. I had to learn all the Macintosh technology first. I was a Mac dummy, but I learned quickly," O'Rourke says.

Most of the projects on Monsterdisc are recorded at Jay's Garage, now run by Lee Popa, a former member of the Slamming Watusis. Popa was a live engineer for Living Colour, Ministry and the initial Lollapalooza Tour. "We're in the process of upgrading it to 32-track," Popa says. "We are going to 16-track ADAT and 16-track analog." Presently, it is equipped with a Mackie 24x8, two Alesis ADATs, a Tascam MSR-16 and various outboard gear. "It's a two-car garage with a room-within-a-room design," laughs O'Rourke. "It's as economical as we can make it, but in theory, this is all the real shit. The control room is very small, but we make it work."

The Insiders are the ones who launched O'Rourke's career in the studio business. The band landed a huge (but ultimately ill-fated) label deal in the late 1980s, and O'Rourke, who had never produced a national record before, convinced the record company to let him produce the band's debut album. From there, a series of national production gigs developed. The band has used money from its live shows to underwrite the recording and promotion of its two most current records, *Live at Fitzgeralds* and *The Insiders Not For Sale*, both released on Monsterdisc. *Not For Sale* garnered considerable airplay in a number of different markets and has earned the band a number of lucrative bookings outside their home base.

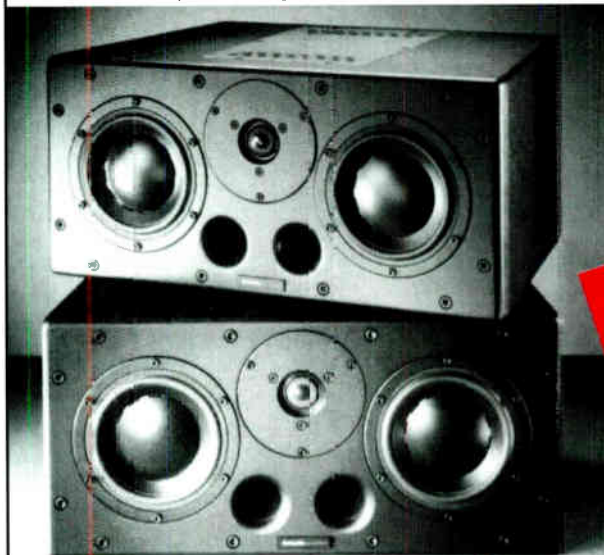
Apart from The Insiders, Monsterdisc has enjoyed regional success with a handful of other acts, such as Nicholas Tremelous, Spies Who Surf, Texas Rubies, and Crash Willie. "What we want to do is work with the young bands that are just getting started," Popa explains, "the ones that are ready to record an album, but not necessarily do one for a major label. We want to offer these bands a complete package. For something like \$5,000, we'll record ten songs, master it and press 1,000 CDs. We'll take it through the whole process and even help them with artwork."

"It's for bands that don't have a lot of money and want to do something quick," O'Rourke adds, "but the *right* way."

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SOUND FOR FILM

**Murray Spivack  
(1903-1994)**

by **Larry Blake**

When Murray Spivack drove out to Hollywood in April 1929 to take a job at RKO Studios, he viewed the trip as a vacation. For the past three years he had been working virtually non-stop as one of the top percussionists in the music scene in New York. If he

—CONTINUED ON PAGE 178

**Murray Spivack at  
the Westrex 6-track  
Todd-AO console**



FACILITY SPOTLIGHT

**West Productions  
FAMILY STYLE POSTING**

by **Tom Kenny**

Los Angeles is an industry town. And it being an industry town, you'll find a lot of second- and third-generation entertainment professionals. Many of the names scrolling up the final credits on a television show or feature film—or on record album jackets, for that matter—are the offspring of veterans

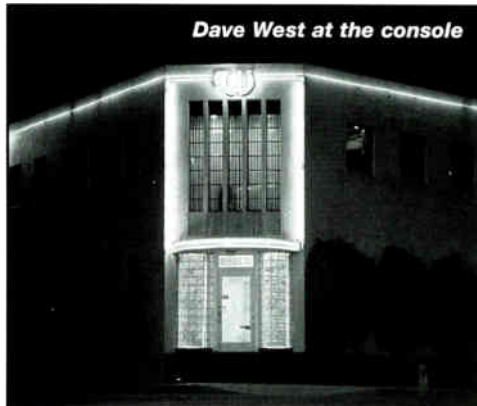
whose names appeared on the scrolls 20, 30, even 40 years ago. Mike Minkler, one of the top re-recording mixers in the world, grew up on the studio lots. So did TV and film music editor Laurie Higgins. And so did Dave West, son of Ray West, who won an Academy Award for re-recording on *Star Wars*.

Although the audio post industry may be nepotistic at times, nobody makes it to the top without talent and experi-

ence. Dave West was involved in the evolution and integration of 24-track into the post community at Todd-AO/Glen Glenn Sound in the late '70s and early '80s. He left there in '83 for Hortas Editorial, where he helped build rooms and systems to handle the overflow from *Hill Street Blues*.

Today Dave West is the owner of West Productions in Hollywood, and he has *The Wonder Years* to thank for that. After picking up

—CONTINUED ON PAGE 183



PHOTOS: RAY WEST

## Jellybean Benitez Makes The Leap to Movies



by Blair Jackson

In the late '70s and early '80s, the name John "Jellybean" Benitez was practically synonymous with dance music. The Bronx-born Benitez first became an underground sensation working as a DJ in New York's burgeoning dance club scene. But he soon became internationally known for his dance remixes, which became a staple of clubs and, after a time, urban radio as well.

Jellybean's list of remix credits is staggering, and surprisingly broad-based: It includes such disparate talents as Madonna, Hall & Oates, Paul McCartney, Donna Summer, Fleetwood Mac, Gang of Four, Huey Lewis & the News, David Bowie, Billy Joel, Elvis Costello, Barbra Streisand, Whitney Houston, the Pointer Sisters, Talking Heads and Earth Wind & Fire, to name just a few. Along the way, Benitez became increasingly involved in both production and songwriting.

"A lot of times record companies brought me in to broaden the base of the artist," Benitez recalls of those heady times. "The singles market was dying at the same time the dance market was opening, and I came in and tried to give these artists a more youthful or contemporary sound, to

—CONTINUED ON PAGE 184

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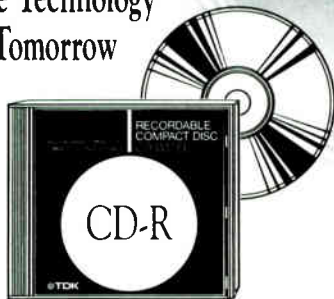
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—FROM PAGE 176, SOUND FOR FILM

wasn't busy at Sound Services working on scores for early sound films, he was either at WOR radio or in the orchestra pit at the Strand Theater. His original six-month contract to start the sound effects department at RKO was the beginning of what was to become film sound's longest and most illustrious career, spanning over 43 years.

Although he was initially hired to do sound effects, he was soon in charge of all of post-production at RKO, including the music business department and re-recording. In 1933, he received much acclaim for his work on *King Kong*. Using a combination of skillful varispeeded animal recordings and his own voice, he almost single-handedly created the concept of sound design.

Spivack left RKO in 1935 in the midst of a personnel dispute, and after being out of work for almost two years, he started at 20th Century Fox Studios in 1937, this time at the bottom of the ladder. He would eventually wear multiple hats again, this time as head of music recording at Fox, in addition to handling music re-recording on the main stage. (Roger Heman was the head dialog mixer during this time and was the only re-recording mixer credited for such Fox films of this period as *All About Eve*, *Gentleman's Agreement* and *Panic in the Streets*.)

The mid-'50s was the beginning of stereo film sound as we know it, and Spivack was present at the creation of the two best-known formats: 35mm 4-track CinemaScope and 70mm 6-track Todd-AO. (He was really keeping a streak going, having been loaned out to Disney to work on the first stereo film, *Fantasia*, in 1940.) He reported directly to Alfred Newman, Fox's music director; the major studio music departments wielded considerably more clout than the sound departments. Ironically, this trust would be most useful when he would be getting grief from composers who felt that their precious score was being mutilated in the final mix in favor of the 'noises,' or what is more commonly—and gracefully—referred to as sound effects.

Murray's experience both as a musician and as a sound effects editor put him in a position to know when sound effects could carry the emotion and narrative weight of the film better than the score. When he

was mixing *Beneath the Twelve-Mile Reef*, the composer Bernard Herrmann was furious at him for mixing in so many water sounds; he had thought that the nine harps in his score conveyed the sound of water better than a bunch of broken-down effects. Murray said that "however deftly they're played, nine harps do not sound like water noise." Herrmann got so mad that he went home and raised a stink with the music department. Alfred Newman said, "If Murray says there has to be some water noise there, there has to be water noise." (Many a spoiled composer today needs to learn a thing or two from Mr. Newman and those of his generation who knew how to weave a score in and out of dialog, and even, if necessary, those dreaded sound effects.)

In early 1955, Spivack "retired" from Fox to become a mixer-for-hire on *Oklahoma!*, the first Todd-AO film. He was almost certainly the first mixer to leave the protective wings of a studio as an independent. From that point until his retirement in 1972, he worked on many of the biggest and some of the best films that Hollywood had to offer: *Oklahoma!*, *Around the World in 80 Days*, *South Pacific*, *The Alamo*, *Spartacus*, *West Side Story*, *Cleopatra*, *My Fair Lady*, *The Sound of Music*, *The Bible*, *The Sand Pebbles*, *Hello, Dolly!*, *Tora! Tora! Tora!* and *Patton*, to name just a few.

On almost all of these films, he functioned both as the music scoring mixer and as the lead re-recording mixer. Whatever his specific titles were, in essence he was in charge of finishing these films once the picture was locked. Such was his clout that even though the fate of Fox rode on *Cleopatra*, the film was mixed at Todd-AO instead of Fox's own 6-track stage simply because that was where Murray was used to working, and he wouldn't sign off on the job if he had to mix at Fox. Eventually, Fox did rebuild its main dubbing stage (now called the Zanuck Theater) to Murray's satisfaction in the mid-'60s.

If the Academy Award for Best Sound had been awarded during his career as it is today—going to the three re-recording mixers and the production mixer—Murray would have won a dozen Oscar statuettes, second only to Walt Disney. Until 1969, the award was given to the

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studio's sound department head. Can you imagine what it was like to sit at home year after year seeing someone who never came near the dub stand go up and accept the award? The producer/director Robert Wise (for whom Spivack did *The Sound of Music* and *West Side Story*) wrote a letter to the Academy in the mid-'60s stating that this situation was unjust and needed to be fixed. It was, and, of course, Murray was onstage the first time mixers were allowed up there: for *Hello, Dolly!* in 1969.

The above would be an impressive enough resume for any one career, but Murray Spivack also had another, as a percussion teacher. He started a percussion school in New York in 1927 and continued when he came to Los Angeles primarily to keep his hands in shape. As it turned out, he would work in film sound for the next 40 years, effectively ending his playing days. Over the years, he taught many outstanding drummers including Louis Bellson, Remo Belli and Chad Wackerman, not to mention the last few generations of percussionists at the L.A. Philharmonic.

**Murray's experience both as a musician and as a sound effects editor put him in a position to know when sound effects could carry the emotion and narrative weight of the film better than the score.**

For the past two years, I had the honor of working with Murray on his autobiography, which I will be publishing this fall. As impressive as his accomplishments may seem to spring chickens like you and me, he had to be convinced that his story would be of interest to anyone! I always viewed this as coming from his

essential humility, and during the editing and revision of the book, it became clear to me that his work ethic, attention to detail and integrity were the real keys to his success.

Until early this year, he was teaching seven days a week, both to keep busy and out of dedication to his students. I called him on the day of the big Los Angeles earthquake only to find him laughing it up with a group of students who had come over to check up on him.

Murray went into the hospital in February for an operation and never fully recovered. His passing on May 8, 1994, marked the end of an era. While evidence of his considerable skills will live on for all of us on laserdiscs and 70mm prints, I am fortunate to say that I will remember the man first. As Shakespeare said in *King Lear*: "We that are young shall never see so much, nor live so long." ■

*Larry Blake is a sound editor/re-recording mixer who lives in New Orleans, where he hopes to one day build the last word in movie theaters, with the biggest house named in honor of Murray Spivack.*



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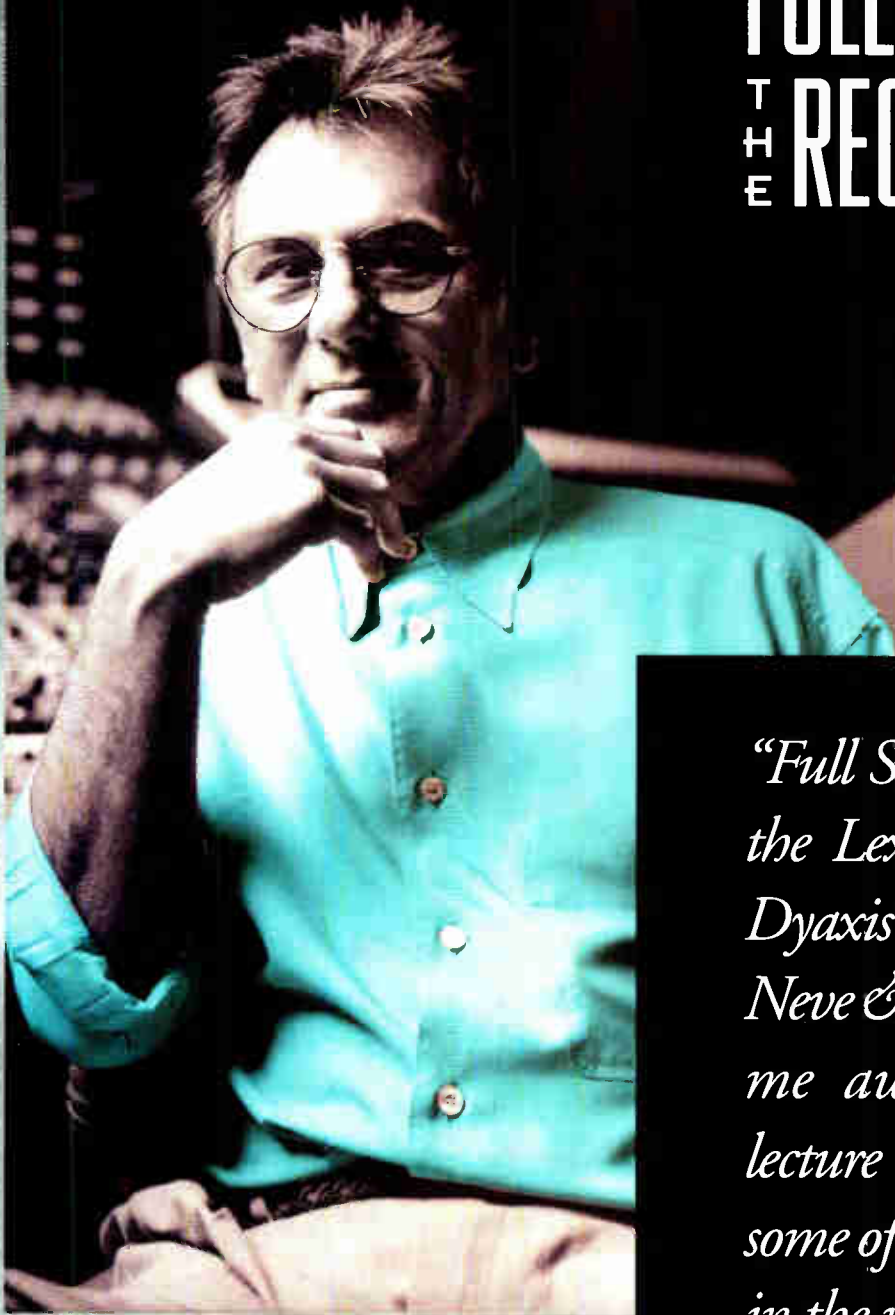
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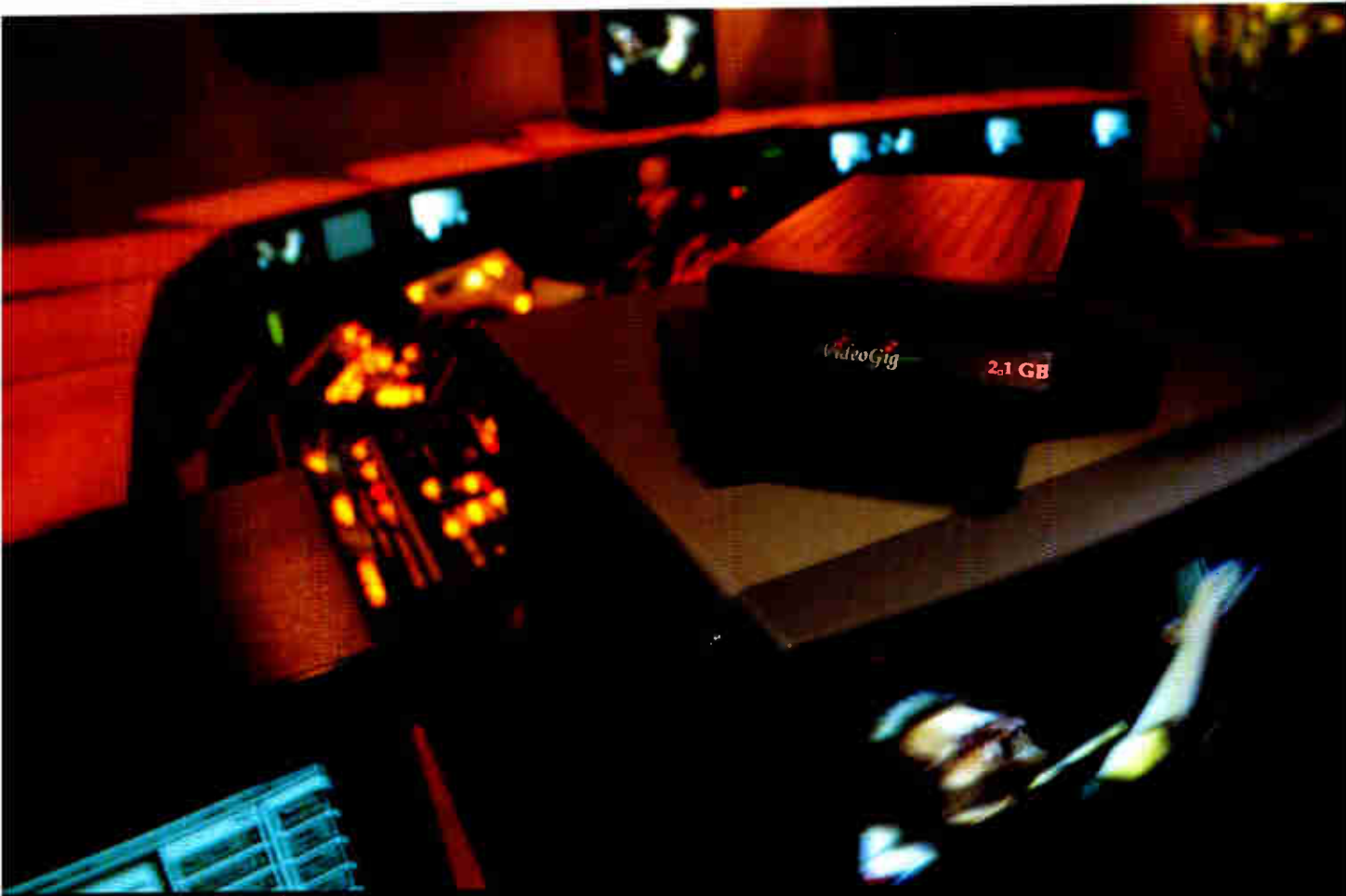
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—FROM PAGE 176, WEST PRODUCTIONS

the pilot for that enormously successful half-hour show in 1987, he decided to go into business for himself. (Although the show ran its course after six years, West is doing repair work this summer to ready it for syndication.) And when he needed help getting up and running, he called in his dad as a consultant.

"We saw that a small boutique of about eight guys could do theatrical product and TV product, reasonably priced and with very creative flexibility," West says. "We've been able to keep up with technology, and we have good people. We offer a very personal, very intimate approach, and we all do the work. There's nobody at this facility that hasn't sat behind an editing machine and cut sound effects or dialog. There are no business majors from Harvard here."

West initially hired young people from outside the industry to establish a fresh approach. His only criteria: dedication. The staff sort of grew up together, working on 12 to 15 Roger Corman features, commercials, animation work, movies-of-the-week

and, of course, TV shows.

*The Wonder Years* is retired now, but the bulk of the work remains episodic television, with weekly shows such as *X-Files*, *Picket Fences* and *L.A. Law*. "I like TV," West admits. "I like its pace. I like working at one or two o'clock in the morning and having the executive producer come up with the most insane thing he could ever come up with, then executing it and satelliting it. I really do like the challenge. The business end of post-production demands that you stay open, and episodic television work is a very stable environment. The theatrical end of working is a much more feast-or-famine operation. As much as I love being on a feature for six or eight weeks, there is the point where it's not a new picture anymore. It's the picture you've dubbed 14 different ways."

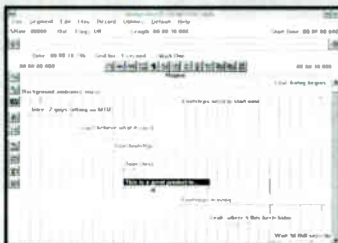
West Productions occupies 10,000 square feet along Olive Avenue in Burbank and employs 45 editors and support staff. There are two recording stages, the downstairs one housing a soon-to-be-replaced Amek Angela console and the upstairs room

equipped with a custom 120-input Neotek. "Neotek was the only company at the time [1988] that could manufacture a multilevel console that gave me what I needed—something that is flexible, can handle inputs and sounds good. Then I went out and bought the best EQ and the best compressors I've ever heard—Class A from Avalon," according to West.

West admits that the lack of automation sometimes conspires against him in TV work, but right now, he's not willing to give up look and feel for the sake of moving faders. Besides, he says, QSound automates what he needs at this point, and that's panning. "This is the best-sounding box I've ever bought, put in my stage and had it work," West says. "I've got four tracks of automated pans that are reliable and easy-to-use, and it gives me a spatially enhanced acoustic field. I'm shocked that more people haven't gotten on the bandwagon. It does have some mono-compatibility issues, just like anything else, but it works in television, and it adds something to what I do for what I

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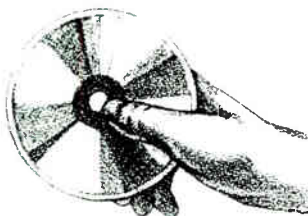
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think is a reasonable cost."

The major technological attractions at West Productions, however, are the 16 TimeLine/WaveFrame workstations, used for recording ADR and some Foley, along with playback of dialog and effects. "For example, upon turnover, a show is spotted for sound effects and ADR on a disk-based system creating working EDLs," says senior VP Dave Rawlinson. "These EDLs are used to cut sound effects, shoot and edit ADR and walk Foley. Both re-recording stages use WaveFrames and the latest magneto-optical players, which allows for maximum flexibility and client changes."

West has been a beta site for WaveFrame since the manufacturer's Boulder, Colo., days—before D/FX, before TimeLine—and he formed a relationship with Craig Hunter, who sold him the first boxes and now works at West. "The WaveFrames have always had the ability for expansion, and the DCS [Digital Compact Studio] is the proof in the pudding," West explains. "It's what Sony

and Warner Bros. are banking on, and the compatibility—the ability to do work for Warners, Fox, whoever, and send it on MO to their DCS system—is a big advantage. The days of trying to put your competition out of business are gone. Being compatible and upwardly mobile with them is very important. It's a small, small town.

"Now that we've acquired 13 more DCS systems in the past eight months, we're talking long and hard to TimeLine about interoffice networks," West adds. "Instead of buying 25 workstations, we want a mainframe downstairs. And we want all our sound effects and everything we need on MO, or whatever the new format will be. That kind of group effort makes a big difference. At times we're too big, and at times we're too small. But the interaction that the client gets from all employees here and the family management style of our company really sets us apart." ■

*Tom Kenny is a Mix associate editor.*

—FROM PAGE 177, JELLYBEAN BENITEZ

get them more airplay and get the clubs to play some of these artists they might not ordinarily play."

Some of Benitez's greatest successes in the '80s were songs he produced and/or mixed for smash film soundtracks such as *Flashdance*, *Back to the Future*, *Footloose*, *Top Gun*, *Dirty Dancing* and *Streets of Fire*. So it's not too surprising that in the '90s one of the areas Benitez is exploring most intently is film music. In fact, he's become an in-demand soundtrack supervisor, with a number of productions already behind him, including *The Real McCoy*, which had a Southern rock soundtrack; *Carlito's Way* ('70s dance music primarily), *La Vida Loca* (rap, urban and Latino), and the just-released action-adventure film *The Shadow*, which is set in the 1930s.

"Part of what I love about working on all these different kinds of films is that each has its own challenges," Benitez says. "I'm not an authority on '30s music or even '70s music, but I learn as I go. That's part of the lure of the job. I have an unquenchable thirst for knowledge, so I really get into the research. Like for *The Shadow*, I've been listening to hundreds and hundreds of records

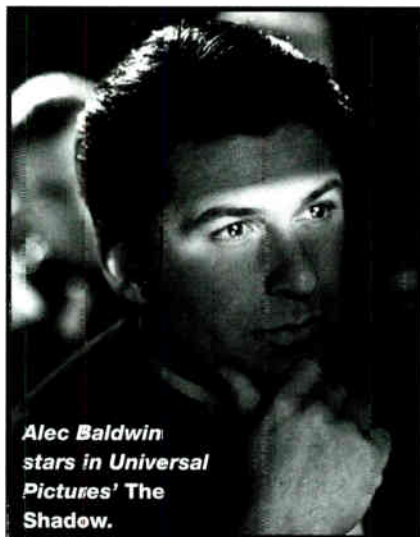
and finding out about different songs and dances that were done. We also have a new song for a dance scene that was written by Diane Warren, and I hired Johnny Mandel to do the arrangement, and then I took out all the harmonics and chord progressions that were more '90s than '30s, so it would fit better with the film."

Benitez says that although his work experience has taught him to think about the commercial prospects of a film's soundtrack album, working as the film's music supervisor "means that the album is secondary to the needs of the film. The music has to be right for the film, first and foremost. If you can have a soundtrack that works commercially, too, so much the better, but it's never the focus. On [*The Shadow*], the director [Russell Mulcahy] tells me what mood he's looking for. He's a music video guy originally, so he's very aware of how to use music visually. He knows if he wants a male vocal for this scene or something really passionate and sexy for this other scene, or something that's really dark or something that starts slow and gets faster. Then it's my job to find what fits the moods he's trying to create."

In the case of *Carlito's Way*, the Al Pacino vehicle directed by Brian DePalma, "I had to do a lot of the research even earlier because there were several dance sequences that obviously had to be choreographed before shooting. I had to immediately take the audience back to the '70s," he explains.

Besides using '70s source music on that project, Benitez also recut several classic tunes from the era. "I tried to get it as authentic as possible," he says, "using tube mics and doing as much as I could to make it sound like a '70s arrangement and production. What surprised me when I went back and really looked at the '70s dance music is that 99 percent of it was cut live, and there were a lot of subtle shifts in time and tempo. When the music editor was putting things up to picture, we noticed some things were not as locked as others. You'd put a metronome on them and find they actually sped up and slowed down, even though you think of that music as sounding real consistent rhythmically."

Benitez notes that it was also difficult obtaining the rights to some of



Alec Baldwin stars in Universal Pictures' *The Shadow*.

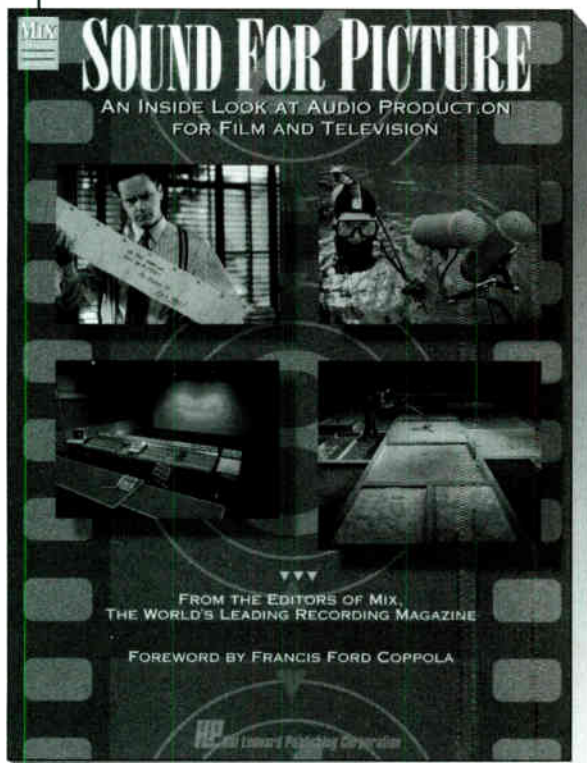


PHOTOS BY RALPH NELSON AND COURTESY OF UNIVERSAL PICTURES, INC.

the more obscure '70s dance tunes: "We'd track down the songwriters to some post office box somewhere and tell them, 'I'm working for Brian DePalma and Al Pacino,' and they'd say, 'Who?' It was also hard to find really quality versions of some of these things just because people had lost track of [the masters] through the years."

Having explored so many different eras and musical styles through

his work, Benitez is moving into a new realm for his next project, a film version of the popular *Double Dragon* videogame. "It takes place in the year 2007," Benitez says. "We're recording new songs and re-recording some current songs and remixing them to how they would sound in the year 2007. I'm experimenting with sounds right now, trying to put myself in the future. It should be interesting." ■



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# NEW PRODUCTS FOR FILM/VIDEO SOUND

## TASCAM DA-60 SMPTE CARD

Tascam (Montebello, CA) announced the SY-D6, a plug-in card that adds SMPTE/EBU time code chase-lock synchronization to the company's DA-60 DAT recorder. Time code is written independently into the tape's subcode area, so tapes recorded on any DAT deck can later be striped with time code. Features include an RS-422 port, MIDI Machine Control, time code reader/generator, SMPTE chase with offset capability, lock to video sync, pulldown shift for film-to-tape transfers, ABS time to time code conversion and a 9-pin serial port for direct editor control. The card retails at \$649. The DA-60 (with 4-head monitoring, instant start, gapless punch-in/out, AES/EBU and S/PDIF digital I/O) lists at \$5,999.

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## TRACK-IT

Digidesign (Menlo Park, CA) is now distributing Sprocket Development's Track-It™ program for managing and printing sound effects, music, Foley and dialog documentation. Designed by a veteran Hollywood sound editor, this Macintosh-based program formats and prints recording logs, Digidesign Pro Tools sessions and other industry-standard EDL formats. Retail is \$995.

Circle #191 on Reader Service Card



## DENON MD CART DECKS

Denon Electronics (Parsippany, NJ) is now shipping its pro MiniDisc machines in the U.S. The DN-990R MD Cart™ Recorder (\$3,200) and DN-980F MD Cart Player (\$2,400) feature 18-bit DACs, balanced analog and AES/EBU digital outputs, 24-segment LED meters, switch closure or RS-232C control capability, and an alphanumeric display of titles, time, track number and track name. The record version adds analog (via 16-bit, 64x oversampled ADCs) or digital inputs and advanced editing and instant start feature. Three of these 5.7-inch-wide units can be mounted in a 19-inch rack.

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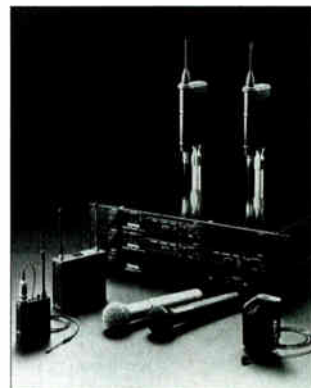
## TIMELINE MEDIASOUND

New from TimeLine (Vista, CA) is Mediasound, a full-featured audio editing program designed for use with Silicon Graphics Indigo and Indigo². Adapted from the design of TimeLine's StudioFrame DAW-80 workstation, Mediasound offers similar graphical track views and extensive sound editing control, and supports up to six tracks of audio playback, with multitrack editing and stereo output. Analog and digital I/O are supported, as is OMF, so files can be transferred to/from other DAW platforms.

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## RAMSA UHF WIRELESS

Designed for field recording and live teleproduction applications is the Wireless Microphone Sys-



tem from Ramsa/Panasonic Pro Audio (Cypress, CA). The system works in the UHF band and provides 49 preprogrammed channels to simplify multichannel operations, and a channel grouping function automatically places grouped transmitters on nonadjacent frequencies to prevent modulation interference. Available are the WX-RP110 and WX-RP158 handheld and WX-RP300 beltpack transmitters, several diversity receivers and an optional booster antenna.

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USE READER SERVICE CARD FOR MORE INFO

by Philip De Lancie

# TAPE & DISC NEWS

**N**EW VIDEO DUPE WARES FROM BASF  
 BASF has developed a new back-coated videotape for use with Sony's Sprinter high-speed duplication systems. The company says that back-coating will make its VT 19 SPR tape less sensitive to scratching, with improved yields and smoother winds. BASF is also introducing a longer-length version of its VT 16 TMD SGH tape. The 23,780-foot-length pancakes are said to result in significant savings when used for programs approaching T-120 length.

BASF's move into returnable/recyclable packaging is picking up steam as well. The company has announced that it will begin offering its video duplication tape lines in its EcoShuttle packaging. Fifty percent of the company's audio duplication tape is currently being shipped in EcoShuttle boxes, which may be returned to BASF for reuse up to 25 times rather than being thrown away. EcoShuttles will be available for videotape first in

the high-speed lines and later for real-time stock.

#### ITA TO HOST INFO HIGHWAY CONFERENCE

The ITA will host Information Superhighway '95 at the Santa Clara Convention Center January 24-27, 1995. The conference and exhibition will bring together content providers and technology suppliers. Robert Pfannkuch of Telefuture Partners will develop the conference program. Contact the ITA at (212) 643-0620 for further information.

#### CD RECORDER PRICES FALL

The price of CD recording continues to drop. JVC reduced prices on its Personal Archiver system to the \$3,000 range. The computer-hosted machines are available in both internal and external Macintosh and Windows versions. The company has also reduced pricing on the more sophisticated Personal ROM Maker line, with



*In New York City, Sterling Sound's new lineup (from left): Ted Jensen, mastering engineer; Jose Rodriguez, mastering engineer; Lee Hulko, president; Bob Tis, technical director; George Marino, mastering engineer; and Tom Coyne, mastering engineer.*



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L08 "Chorus 2"  
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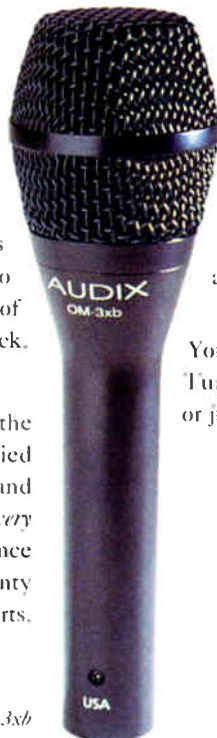


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a Mac version starting at \$6,595. Double and quadruple recording-speed options are available.

Not to be outdone, Pinnacle Micro announced price cuts on its RCD-202 CD-mastering systems. The RCD-202 MAC now retails for \$2,495, down from \$3,995, while the price for the RCD-202 PC for Windows has been lowered to \$2,695.

## SPLICES

Sonolux of Bogota, Colombia, is the first Latin American duplicator to install the MAX digital bin from Gauss. The company is combining the purchase with ElectroSound 9500 dual-slaves...Saki Magnetics (Calabasas, CA) introduced ferrite replacement heads for the Telex 6120 and ACC 4000 in-cassette duplicators...Tape-matic (Orlando, FL) has increased the operating speed of its 2002 CR dual-pancake audio loader 25% for a throughput of 2,800 to 3,000 cassettes per shift. The company's ST-31 duplication spectrum analyzer has also been upgraded and is now available with a choice of three speeds from 40:1 to 128:1...Emerald Technology introduced the CD-8000 inserting system for CD packaging. The system features fully automated infeed of discs and jewel boxes...Sol-las Corporation (Morristown, NJ) introduced the SB Series of stretch banders for automatically grouping individual pieces into multipacks. The packaging machines are available in fully automatic or semi-automatic models...Mobile Fidelity (Sebastapol, CA) released five vinyl titles in the company's new ANADISQ 200 LP series. The records are half-speed mastered from the original master tapes...Sterling Sound (New York, NY) announced the addition of Tom Coyne to its mastering engineering staff. Coyne previously worked at the Hit Factory and at Frankford/Wayne... Engineer Robert Vosgien mastered for Johnny Clegg & Savuka at CMS Digital in Pasadena, CA...Phil Austin of Trutone (Hackensack, NJ) mastered the Laura Enea release *Catch Me Now*...Kewall Real Time Duplicators (Bayshore, NY) reports working with health and fitness bestseller *Stillness in Motion*, the Jeff Denny Blues Band and the Arnie Mig Orchestra... Electro-Sound Recording Studios (Kent, OH) completed digital editing/mastering for Boogie Man Smash. ■

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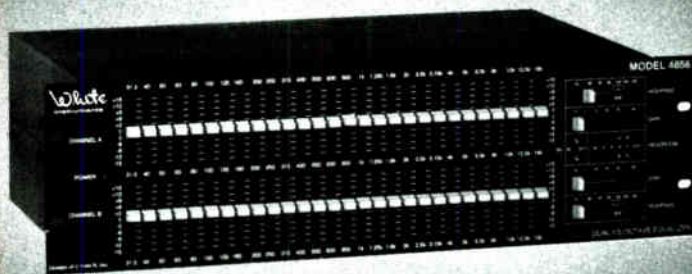
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# C O A S T

## L.A. GRAPEVINE

by Maureen Droney

As an engineer who once recorded at the original NRG Studio, I was more than impressed with the new one—a striking facility located on Weddington near Vineland in North Hollywood. The NRG of old was what its name implied, raw energy that happened to be paired with a great old Neve console and a rehearsal studio. But because it was housed in a small Valley ranch house where sessions ran 'round the clock, the atmosphere was not exactly relaxing. My most vivid memory of the old NRG is the evening the next session's bandmembers, a bunch of

—CONTINUED ON PAGE 196

**Manager Daniel Clements at the Neve 8068 in NRG Studios, North Hollywood**



PHOTO: MAUREEN DRONEY

## SESSIONS & STUDIO NEWS

by Jeff Forlenza

### NORTHEAST

More production notes on ol' Blue Eyes' upcoming Capitol release: Clinton Recording in New York City had producer Phil Ramone and engineer Ed Rak recording and mixing a large

orchestra on a classic Neve 8078 console for the *Duets II* project. The recordings in Clinton's Studio A included "Mack the Knife" and "My Way"...At Acme Recording in Mamaroneck, NY, producer/engineer Peter Denenberg completed overdubs and final mixes for the latest Spin Doctors album for Epic. Denenberg and Frankie LaRocka co-produced *Turn It Upside Down* with



PHOTO: ELIZABETH ANNAS

**Above: Producer Nile Rodgers mixed the score for Eddie Murphy's Beverly Hills Cop III at the 96-input SSL 8000 G Series console at RecordPlant/Hollywood. Clockwise from top left: musician Rich Hilton, Record Plant engineer Brian Pollack, engineer Gary Tole and Rodgers.**

the band. Thom Leinbach and Derrick Garrett assisted on the sessions...Jazz-fusionaires Pieces of a Dream were at Kajem Studios (Gladwyne, PA) recording piano tracks for their latest album with engineer Glenn Barrett...Jersey rockers Bad Biscuit were at Showplace Studios (Dover, NJ) cutting tracks with veteran producer Tom Allom (Def Leopard, Judas Priest), engineer Ben El-

# C O A S T



**Producer/engineer Peter Denenberg completed overdubs and final mixes on the Spin Doctors' new release (Turn It Upside Down) at Acme Recording Studios in Mamaroneck, NY.**

liott and assistant Rick Deardorff for a TBJ Entertainment project... Quirky popsters The Cucumbers did overdubs at Manhattan's Ground Zero Studios with producer/engineer Roger Moutenot (Velvet Underground, Yo La Tengo) for their latest release... At Baltimore's Oz Recording Studio, Girls Against Boys recorded their upcoming release for Touch and Go Records with producer Ted Nicely and engineer Eli Janney... At Desta Productions and Recording in New York City, vibraphonist Mike Mainieri remixed tracks from his '70s all-star fusion project, White Elephant, which included star sessionmen Michael and Randy Brecker, Steve Gadd and John Faddis. Originally slated for a double-album set,

the CD will be reissued on Mainieri's NYC Records label. Jay Messina engineered the remix sessions...

—CONTINUED ON PAGE 200

## NY METRO REPORT

by Dan Daley

Harley Flaum, founder and owner of Penny Lane Studios and the multiple-Clio Award-winning commercial production company Radio Band of America, died May 8 after a bout with cancer. He was 48. Flaum was well-known and well-regarded by the New York recording and jingle community, particularly for his brand of comedy radio productions. What is less known is that Flaum also had a career

—CONTINUED ON PAGE 201

**Stereo Society, a 24-track recording and music production facility featuring an 80-input Amek Einstein console, recently opened in New York City.**



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## SOUTHWEST STORIES

by Jeff Forlenza

In Phoenix, a new all-digital audio recording and post-production facility opened in April. Owned by Slobodan Popovic, Prodigit West was designed by the Walters-Storyk Design Group and features a floating studio/control room and an isolated suite for editing and MIDI work. "Our goal for this project was to position the five rooms with the best possible ergonomics, as well as isolate them from each other and from the street noise," Storyk says of the design. Prodigit West's gear includes a Sonic Solutions 24-track DAW, Tascam DA-88 MDM, Fostex PD-2 DAT, Genelec S30C monitors and a Mackie 24x8 console. Recent sessions at Prodigit West include corporate audio-for-video work for Southwest Parks and Monuments Association, Intel Corporation and Gold Wings Riders Association.

Planet Dallas chief engineer Rick Rooney says they are planning to put a B room for digital editing and recording with Pro Tools and other Digidesign gear into their facility, which resides in a 98-year-old house. The ten-year-old recording facility is primarily used for music recording, and recent sessions include Tripping Daisy working with producer Patrick Keel and engineer Rooney, and MC 900-ft. Jesus (a.k.a., Mark Griffin) was working on and off for eight months at Planet Dallas on a new project for American Recording.

Also in Dallas, the James Neel Production Group Studios specializes in advertising music and audio post-production services. The fully equipped digital facility at JNPG Studios features three studios (each equipped with a TimeLine Wave-Frame DAW) and two recording rooms. Services are divided into three com-

panies: the music group, the post-production group and an artist's production label group. Creative staff at JNPG includes founder/producer Neel, composer/programmer (and former Virgin recording artist) Michael Floreal and chief engineer/editor Olfert Kempff. As for future endeavors, Neel hopes to get involved in the production of soundtracks for feature films.

TM Century Studio opened its new Multimedia Room in Dallas at the beginning of 1994. The Russ Berger Design Group worked with studio manager Tom Cusic and studio CEO P. Craig Turner in designing the room, which is used primarily for vocal work—group and solo. Cusic says the main business at TM Century is broadcast support for radio stations: jingles, commercials and production libraries. Equipment at TM Century includes a Euphonix CS2000 console, an E.M. Long CRM 100 custom monitor system, and digital recorders from Sony and Mitsubishi. Recent radio IDs include those for KISS-FM in L.A. and WPLJ-FM in New York.

Malcolm Harper started Reelsound Recording 25 years ago in Manchaca, Texas, just outside of Austin. He began remote recording by hauling gear around to gigs, then built his first mobile facility—inside a bus—in 1976. In 1982, Harper bought a semi, which he still has today and has outfitted with all Sony equipment. Storage is 24- and 48-track analog with SR. Today, Harper doesn't always have to travel great lengths to make tracks; thanks to a spacious cab in his remote and console automation, musicians can now work *inside* the

—CONTINUED ON PAGE 202

**Prodigit West, a new all-digital audio recording and post-production facility in Phoenix, was designed by the Walters-Storyk Design Group.**



PHOTO: MICHAEL PAULSON

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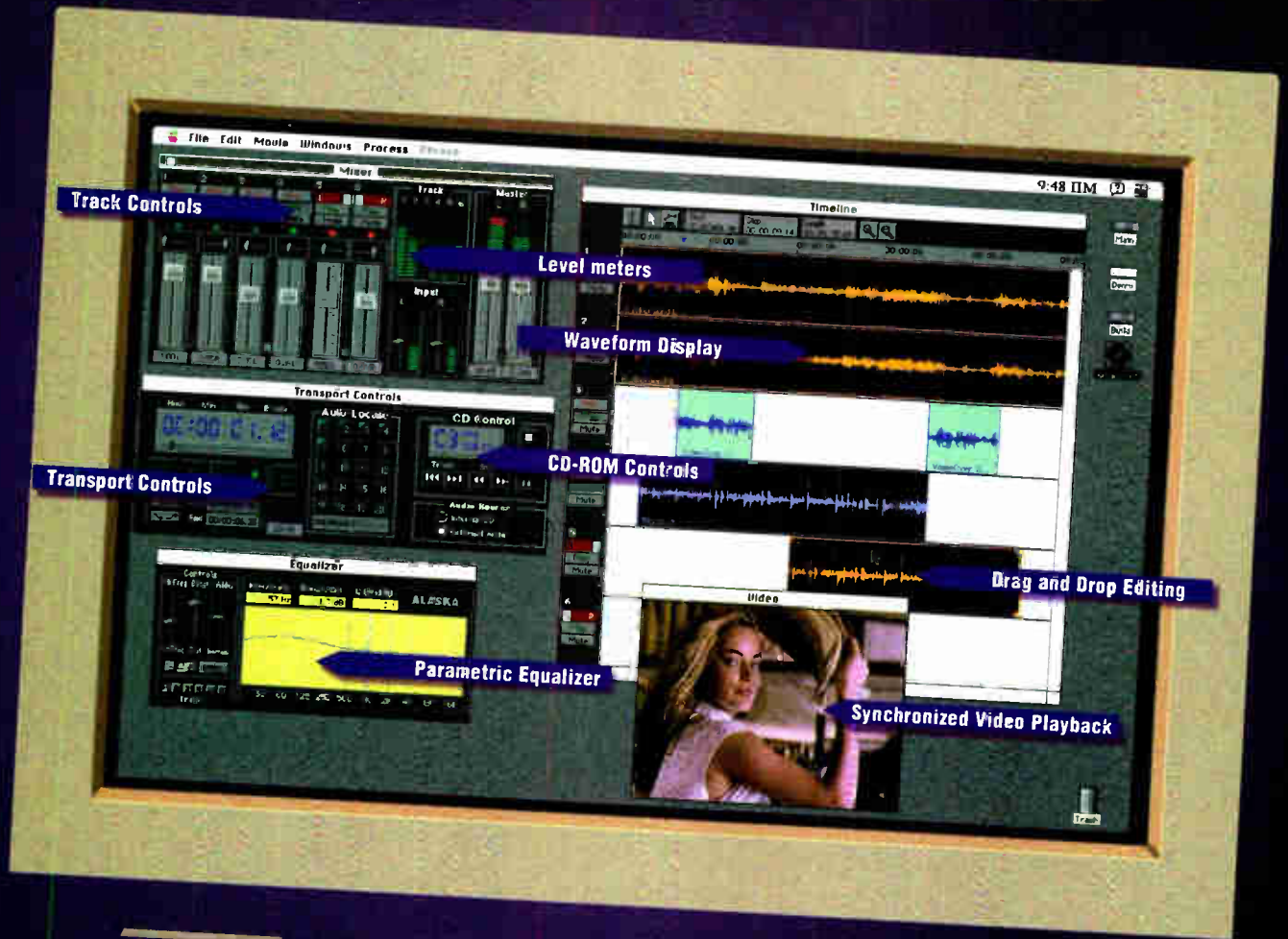
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World Radio History

—FROM PAGE 192, L.A. GRAPEVINE

gangling rockers, hauled their entire truckload of band equipment through the control room as I was struggling to record vocals on an R&B project. Oh, and as they passed through, they volunteered helpful criticisms of the music! At the old NRG, the atmosphere was really more a rock boys club than a recording studio.

But the new complex, run by owner Jay Baumgardner along with manager/engineer Daniel Clements, has slowly but surely evolved, and the new studio bau:ton-designed facility is comfortable, private and very

### The live recording room at Ocean Studios/Burbank

cool. The feel of the control room made even this jaded engineer want to sit down and record something! Featuring a 64-input Neve 8068 (three consoles combined) with Flying Faders, the control room also has "Whisper Wall" acoustical treatments.

Out in the studio, the clean lines of the 30x40-foot tracking room are brought about by cement walls and



PHOTO: LAUREN DRONEY

birch paneling. Three iso booths are attached to the studio. In the lounge and kitchen is a stylish '50s decor with furniture by Jazz and fabric art by Robert A. Fisher. The feeling is artsy without being overbearing. NRG also offers a rental selection of vintage guitars, basses and amps, including a '64 Supro and a '63 "Black-face" Fender Twin.

Manager Clements says, "People feel comfortable here knowing the space is all theirs. They don't have to share the pool table with the band down the hall." Masters of Reality were recording on the day we stopped by. Other recent NRG clients include Vince Neil, Crash Test Dummies, Duran Duran, Green Jelly, Mark Isham, Los Lobos and Take Six.

With the original NRG leased out long-term to Thomas Dolby, two more self-contained studios are planned for the Weddington location. One will be a tracking and mix room with a Class A modified Neve 8078, and the other a mixing suite featuring a Euphonix console.

Also just completed by studio bau:ton: Ice T's home studio in the Hollywood Hills, complete with shark tank. When I asked bau:ton's Peter Grueneisen what sharks eat, he said, "I don't know, maybe engineers?" Grueneisen and partners Peter Maurer and George Newburn built a new shell inside one of the bedrooms to house the studio. It has walls of Finnish plywood, polished chrome and fabric, a Euphonix console and sweeping views of the city. bau:ton estimates that Ice T's room is their 65th studio design.

Over in Burbank, Ocean Studios is nearing completion, but its vintage edge has attracted bookings from in-the-know clients even before the official opening. Built in 1926, the tracking room boasts a 21-foot ceil-

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ASHLY was the first to release a series of professional, fan-cooled amplifiers featuring power MOS-FET technology. The new CFT-1800 now offers the superior fidelity and rugged reliability of MOS-FET output devices in a quieter, convection cooled package. Designed primarily for use in recording studios, post-production facilities, or broadcast control rooms, the CFT-1800 will also satisfy even the most demanding audiophile enthusiast. In stereo operation, the powerful CFT-1800 delivers more than 300 watts per channel. Mono-bridged, the amplifier will put out a thundering 600 watts RMS for those room shaking subwoofer applications.

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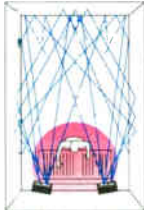
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The truth...you can't expect to find it everywhere you look, or *listen*. But when mixing music, hearing the truth from your monitors will make the difference between success and failure. You'll get the truth from the Alesis Monitor One™ Studio Reference Monitor.

## Room For Improvement

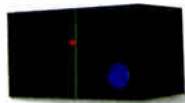
Fact: most real-world mixing rooms have severe acoustical defects, with parallel walls, floors and ceilings that reflect sound in every direction. These reflections can mislead you, making it impossible to create a mix that translates to other playback systems. But in the near field, reverberant sound waves have little impact, as shown in the illustration. The Monitor One takes advantage of this fact and is built from the ground up specifically for near field reference monitoring.



The pink area in the illustration shows where direct sound energy overpowers reflected waves in a typical mixing room. The Monitor One helps eliminate such complex acoustic problems by focusing direct sound energy toward the mixing position.

## The Truth From Top To Bottom

The Monitor One's proprietary soft-dome pure silk tweeter design delivers natural, incredibly accurate frequency response while avoiding high frequency stridency and listener fatigue—typical of metal-dome tweeter designs. The Monitor One overcomes wimpy, inaccurate bass response—the sad truth about most small speakers—with our exclusive SuperPort™ speaker venting technology. The design formula of the SuperPort eliminates the choking effect of small diameter ports, typical in other speakers, enabling the Monitor One to deliver incomparable low frequency transient response in spite of its size.



Alesis SuperPort™ technology gives you the one thing that other small monitors can't: incredibly accurate bass transient response. No, the SuperPort doesn't have a blue light, but it makes the picture look cool.

The result? A fully integrated speaker system that has no competition in its class. You'll get mixes that sound punchier and translate better no matter what speakers are used for playback. The Monitor One's top-to-bottom design philosophy is a true breakthrough for the serious recording engineer.

For more information about the Monitor Ones and the Alesis Monitoring System, see your Authorized Alesis Dealer or call 1-800-5-ALESIS. Monitor One, SuperPort, and the Alesis Dream Studio are trademarks of Alesis Corporation. Alesis is a registered trademark of Alesis Corporation.

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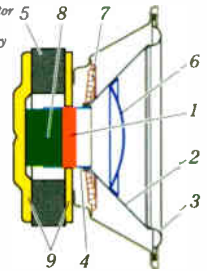
## Power To The People

While most near field monitors average around 60 watt capability, the Monitor One handles 120 watts of continuous program and 200 watt peaks...over twice the power. The Monitor One provides higher output, more power handling capability, and sounds cleaner at high sound pressure levels. If you like to mix loud, you can.

## The Engine

Our proprietary 6.5" low frequency driver has a special mineral-filled polypropylene cone for stability and a 1.5" voice coil wound on a high-temperature Kapton former, ensuring your woofer's longevity. Our highly durable 1" diameter high frequency driver is ferrofluid cooled. Combined, these two specially formulated drivers deliver an unhyped frequency response from 45 Hz to 18 kHz,  $\pm 3$  dB. The five-way binding posts provide solid electronic and mechanical. We even coated the Monitor One with a rubber textured laminate so when your studio starts rockin', the speakers stay put. Plus, it's fun to touch.

A cross section of the Monitor One's proprietary Alesis-designed 6.5" low frequency driver



- 1.5" voice coil.
- Mineral-filled polypropylene cone.
- Damped linear rubber surround.
- Kapton former.
- Ceramic magnet.
- Dust cap.
- Spider.
- Pole piece.
- Front and back plates.

## The New Alesis Monitor One™

You don't design good speakers by trying hard. It takes years and years of experience and special talents that only a few possess. Our acoustic engineers are the best in the business. With over forty years of combined experience, they've been responsible for some of the biggest breakthroughs in loudspeaker and system design. The Monitor One could be their crowning achievement. They're the only speakers we recommend to sit on top of the Alesis Dream Studio™.

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World Radio History

ing. With sandblasted brick walls and wooden ceiling beams, the skylit room was designed by Vincent Van Haaff (Conway, A&M "A," CanAm "B"). The control room houses a custom Neve 8108 and a large amount of vintage gear. Tube mics include AKG C-12s and C-24s, Neumann U-47s, 49s and 67s, and Telefunken 250s and 251s. The outboard complement is impressive, with three Fairchild limiters (one stereo), LA-2As and even an RCA BA-6A limiter (try it on bass or bass drum). Extremely popular among clients are the Langevin tube preamps.

Coordinator Christina Smith tells us that recent clients at Ocean Studios have included drummers John Robinson, Chad Smith (Red Hot Chili Peppers) and Matt Sorum, along with artists Peter Cetera, 4 Non Blondes, Brenda Russell, Lita Ford and, most recently, Power Station. Ocean's press release quotes Guns N' Roses drummer Sorum's comment about the studio: "The rockiest drum room in L.A.!" Working on the day we stopped in were Buddha Heads with producer Dennis Walker and engineer Chris Minto, who, by the way, was using the BA-6A limiter with an SM7 on his bass drum!

**M**eanwhile, over at Andora Studios, perched on the Cahuenga Pass between the Valley and Hollywood, engineer Richard Dodd has been mixing two dozen or so tunes for the new Tom Petty album on the 72-input Neve 8078. Co-produced by Petty along with Rick Rubin and Heartbreaker guitarist Mike Campbell, the songs were recorded mostly by engineers Jim Scott and Dave Bianco. Tracking was done on the Neve at Sound City, and overdubs were at Campbell's home studio.

"I wish I could tell you we did something wild in the tracking, but it was really straight-ahead," Scott says. "One mono headphone mix for the band, and the only gear we used was an old Neve and 1176 limiters." All tunes are only 24-track (!), except those that had the addition of orchestra sweetening at Andora with composer Michael Kamen. Andora owner Doug Parry tells us that the orchestra dates were especially fun. Booked as an evening session, the studio found out after 5:00 p.m. that the 16-piece setup had been unexpectedly increased to 35 pieces. Scrambling was required for the ad-

ditional headphones, music stands and chairs, but the session came off flawlessly and all involved were pleased.

On this project, mixer Dodd sticks to his conviction that effects are often not necessary: "The first and most important thing to learn about a new piece of signal processing is where the 'bypass' switch is," he says. "But seriously, with an artist of this caliber, there is so much integrity on tape, it's about *not* doing, actually, rather than doing."

The project is being mixed to ½- and ¼-inch analog along with DAT, with the ultimate format decision

being left until the end, when they will decide which format suits the project, or perhaps which format suits each song. Says Dodd, "With this console and these excellent 24-track analog recordings, I can maybe even tolerate going to digital! We may use different mix formats for each song, depending on what is called for. Maybe for a really quiet song we'll use the DAT to lessen tape hiss. Of course, Rick [Rubin] may not let me! He doesn't even like to let me get rid of hums and noises. He's a real performance guy."

Fax L.A. news to Maureen Droney at (310) 472-8223. ■

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### SOUTHERN CALIFORNIA

After penning songs for Bonnie Raitt, Rita Coolidge and Kris Kristofferson, singer/songwriter/keyboardist Glen Clark recorded a collection of his own tunes for his Dos Records debut, *Looking for a Connection*. Clark recorded with producer/drummer Ricky Fataar and engineers Michael MacDonald and Vincent Cirilli at Trax Recording in Hollywood...Urban contemporary singer/songwriter Gary Taylor recorded and mixed his latest release, *Square One*, at Ameraycan (North Hollywood), Skip Saylor (L.A.) and Aire L.A.

(Glendale) studios. Taylor self-produced the sessions for Morning Crew Music with the aid of engineers Ross (The Dr.) Donaldson and Anthony (A.J.) Jeffries...Producer/engineer Ricky Delena was at Ocean Studios (Burbank) recording Rhino Bucket for Moon Stone Records with assistant Michael Geiser...Robin McCauley (of the McCauley Shenker Group) was at Track Record (North Hollywood) cutting tracks for a solo project with engineers Paul Foley and Ken Paulakoich...Gino Vanelli was at Blue Moon Studio (Agoura Hills) working on overdubs for his latest Verve release. Gregory Hines

added tap overdubs to one of the tracks engineered by Joe Vannelli...

### SOUTHEAST

Gloria Estefan was at Miami's Criteria Recording Studios working on her latest release with producer Emilio Estefan, engineer Eric Schilling and assistants Clay Ostwald and Jorge Cassas...At Nashville's Sound Emporium, country producer Garth Fundis was working with a number of RCA artists: Lari White, Jon Randall and Ruby Lovett were tracked by the engineering team of Gary Laney and Dave Sinko as they worked on album projects with Fundis...Guitarist Chris Whitley was at Muscle Shoals Sound (Sheffield, AL) working with engineer Stephen Melton and producer John Custer on a project for Sony Entertainment...At Underground Studios (North Topsail Beach, NC), Atlantic recording artist YZ was working with producer/engineer Eric Wallace...

### NORTHWEST

Alternative engineer/producer Lou Giordano (Smithereens, Husker Du) was at San Francisco's Coast Recorders producing Samiam for Atlantic Records...Tesla recorded and overdubbed their most recent Geffen project at Fantasy Studios in Berkeley, CA. The rockers worked in Studios A, B and C with producer Terry Thomas and engineers Rafe McKenna and Andy Scarth...Tenor saxophonist Eddie Harris was at Musicraft Recording and Duplicating (Wilsonville, OR) recording his recent release for Flying Heart Records. Harris and local musicians tracked live-to-multitrack with producer Jan Celt and engineer Drew Canulette...HB Concept was at Bluewave Studios (Vancouver, BC) mixing their latest album with producers Henry Brown and Gordon Durity. Kirk Furniss mixed the HB Concept sessions, which included tracks by guest drummer Buddy Miles...

### NORTH CENTRAL

Sire recording artists the Poster Children were at Smart Studios (Madison, WI) tracking and mixing their upcoming release with producer Brian Anderson and engineer Mark Haines...Turbos Recording (Inkster, MI) had local artist Tacena working with producer/engineer Jim Randolph...At Electro-Sound Recording in Kent, OH, owner/chief engineer Greg D. Feezel

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mixed the latest CD from Anagram...

#### STUDIO NEWS

San Francisco's **Russian Hill Recording** revamped and remodeled its Studio B. **Dennis Stearns** designed and constructed the completely redone control room, which has more room to accommodate new gear: a Euphonix CSII console, a Studer Editech Dyaxis II DAW, Sony 7030 time code DAT and Meyer 833 monitors...**Matlin Recording** recently opened its Suite A in New York City with a DDA DCM224V console for audio post-production work. Matlin has two audio layback suites, and Suite A is equipped for film scoring work...**Exocet Communications**, an Atlanta-based recording studio, put a DDA DMR-12 mixing console into Studio A, which is used primarily for music recording...**JLR Productions** (Lincolnton, NC) updated its studio with three Alesis ADATs (with BRC remote), a Mackie 32-channel console and an Akai DR4d 4-track digital recorder/editor...**Blank Productions** (Stamford, CT) recently added an Avid Media Composer 1000 to its all-digital production facility...In the Big Apple, **Manhattan Production Music**, and its publishing companies Chesky Productions and Coconut Bay Music, recently moved to a new address—355 West 52nd St., 6th floor, New York, NY 10019—but retains the same phone and fax numbers. ■

*Send nationwide sessions and studio news to Jeff Forlenza, c/o Mix, 6400 Hollis St. #12, Emeryville, CA 94608.*

—FROM PAGE 193, NY METRO

as a broadcast journalist and had received an Edward R. Murrow Award for his investigative work, which gives me two bases for which to admire him. Flaum was a New York original and will be sorely missed. The studio and production company will continue as before, now headed by Harley's wife, Margie.

**R**oy Cicala, chief engineer at the former New York Record Plant and part-owner of New Jersey's SST Studios, is now consulting with Sony Music Studios to help obtain vintage equipment. Cicala has procured more than two dozen tube mics and several pieces of outboard gear, including Fairchild compressors and

Neve modules. Sony Music also picked up the Neve 8078 that was formerly in Long Island's Pie Studios to go in a new room at the facility. The room, which was expected to open at the end of the summer, was designed by Vincent Van Haaft of Waterland Design Group.

**P**ie Studios, meanwhile, has completed an extensive wiring upgrade that also saw a new Neve 8078 console installed with 72 GMI-automated faders. The room acoustics were tweaked with design consultation from George Augspurger, and a new lounge was added. "This brings it up to a 100-percent spec," said owner Perry Margouloff. "We wanted to be in the space for a while first to feel it out before going great guns on it. I wanted to know which doors creaked. Now we know."

**A**s befits the increased interaction between New York and Nashville, it was a tough call deciding in which column to place this item. New York gets it because Jersey needs a little face time in this space. Record Plant Remote NYC, based out of West Milford, N.J., took a break from its 60-

plus-venue tour of "The Road" series of country shows to be the lead audio component of the reopening of the Ryman Auditorium in Nashville. The 100-year-old former church was refurbished, and its June 1 opening was documented by a CBS crew for a June 25 prime-time air date. RPR president Kooster McAllister handled the API console for the broadcast taping, which included performances by Loretta Lynn, Chet Atkins, Marty Stuart and Vince Gill. Storage was to a pair of Ampex MM 1200 analog 24-tracks (one with SR) and a pair of Tascam DA-88 decks. Biggest problem—not all the venue tielines were in place yet, so Kooster maxed out his truck splitters. This was RPR NYC's second visit to the Ryman; in 1992 it recorded an Emmylou Harris live album there.

**W**ater Music in Hoboken, N.J., celebrated its 10-year anniversary by reopening its facility in a new location in the same town. The new space is larger, according to owner Rob Grenoble, designed by George Augspurger with his monitoring system into a 24x31-foot control room.

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Other technology updates at Water Music include the replacement of the studio's API console with a 48-input Neve 8088.

Upstate's Black Dog Studios and Thus & Such Productions have merged to form PM Productions. Owners Bill Philbrick and E.D. Menasché have based the new Westchester studio on a Fostex 16-track and 56-input Soundtracs console, augmented by new Sound Tools II and Digital Performer systems on a Mac IIx, as well as an existing Turtle Beach IBM-based system.

Crew Cuts opened two new audio suites in New York this May. The sound design room has a Mackie console, a Sony PCM-3324 digital deck and outboard gear including Aphex Compellor, Eventide DSP-4000 and Drawmer gates. The second suite is equipped with an SSL Scenaria, ScreenSound and SoundNet. The new audio installation is encompassed by a new company, Buzz Audio, owned by film and video post house Crew Cuts. "It's our first venture into audio at this level," said co-owner Steve Kraftsow of the Richard Alderson-designed sound component of the facility. "We can offer film and video clients more services, and it helps keep more of the work in-house."

Tim Finnegan from Sam Ash mentioned that NBC's broadcast audio department installed an Amek Big by Langley automated console with Recall for post-production. The network also upgraded its Digidesign Pro Tools with PostView digital video for RA picture reference. Also, Acme Soundworks upgraded its DAR SoundStation from eight to 16 channels, and Liebert Recording bought its second 16-channel SoundStation.

Brooklyn's Funky Slice Recording was hit with a serious robbery on May 2. Studio owner Yoichi Watanabe and three employees were tied up and beaten in the course of the crime. Two perps were arrested, but two others escaped with some of the studio's MIDI equipment and microphones, including a Neumann U87, a Lexicon PCM 70 and several keyboard instruments.

Fax N.Y. news to (212) 685-4783. ■

—FROM PAGE 194, SOUTHWEST STORIES

truck. "A lot of the projects we're doing now require mixing," he explains. "Since we have automation, we've been mixing right in the truck. In fact, the truck is big enough for clients to come in to do overdubs."

On the island of Oahu, Audio Resource Honolulu is a five-minute drive from downtown Honolulu and Waikiki. Managing partner Tony Hugar tells of some recent acquisitions at his Neve/SSL/API-equipped facility: A custom 24-channel Neve 33115 console, a 10-channel Neve BCM 10/2 portable mixer and an AMS AudioFile were recently installed. Hugar reports an influx of sessions by Japanese artists: Tube recorded their latest release (which included a Number One single in Japan), Japanese jazz-fusion group Casiopea recorded and mixed their latest album, and another Japanese act, Human Soul, also tracked at Audio Resource. On the sound-for-picture front, ARII was the site for dialog looping for the recently cancelled Stephen Bochco Productions/ABC-TV series *Byrds of Paradise*.

**OTHER SOUTHWEST SESSIONS**

At Houston's Digital Services, ZZ Top was in with sound reinforcement engineers M.L. Procise and James Hoover doing pre-production for their *Antenna* tour; and Scarface of the Platinum-selling rap group Geto Boys was doing a solo project for Rap-A-Lot Records with engineer Mike Dean...At Houston Sound Studio, jazz guitarist Mike Wheeler cut tracks with producer Willie Nelson and engineer Randy Miller for a project on Nelson's own label. Also at HSS, La Mafia recorded a Spanish version of "Let It Be" for the Sony Discos Beatles tribute album...Also in the big state of Texas, alternative act *Gone by Dawn* was at Planet Dallas producing, recording, editing and mastering their latest CD, *Painted*, with engineer Rick Rooney...At Austin's Arlyn Studios, Flowerhead worked with producer/engineer Robbie Adams for Zoo Records...At Pedernales Studio (Spicewood, TX) producer Phil Ramone worked with Willie Nelson on the *Frank Sinatra Duets II* album for Capitol with engineer Larry Greenhill. Rumor has it that Frank and Willie trade verses on "My Way." ■



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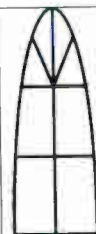
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# STUDIO SHOWCASE



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# STUDIO SHOWCASE



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—FROM PAGE 23. SNAP. CRACKLE. DROP

teristics. You also know that the problem with them is that they (gold and then silver, of course) are heavy, weak and, most critically, in rare supply on Earth, so they are *expensive*. Because of this, we only electroplate a thin layer of these precious metals onto our connectors and switch contacts. Or we make them out of brass. Or we nickel-plate them or chrome-plate them over brass or steel. Or...wait a minute. See the problem developing here? In a typical patch bay, we may have casual contact with any combination of gold, brass, silver, nickel, chrome, steel, bronze or tin, then soldered contact with any of these metals plus lead, bismuth, antimony, additional complex silver alloys, along with fluxes and wetting agents present in the solder. A truly impressive array of dissimilar metals in contact with each other, with varying degrees of intimacy, in an oxygen-rich environment. Oh, did I mention that we throw *water* in as an oxidation and electrolytic agent just to keep it interesting? Isn't that what humidity is *for*, after all? Of course it is.

So many combinations of these different metals in contact with each other oxidize in very interesting ways, and with water, ionic transfers take place and we get electrolytic interaction between dissimilar metals, like a car battery. With this, we get biased, nonlinear electron flow—we can actually grow nasty little *semi-conductors*! Add leftover flux, dirt and various metal oxides in complex combinations, along with aggressive agents such as tar from cigarette smoke or the violent alkaloid cocaine hydrochloride from producers' noses, and we have our own special primordial soup. Way before we hear the well-known snap, crackle, *drop* of a dirty connector or bad solder joint, we may well be recording noise and *distortion* from these semi-conductive junctions! This is not theoretical dweeb stuff; this is real. What do you think happens to our music if it has to fight its way through the wet, green, gritty slime of copper sulfate and other unknown copper salts that appear on those brass TTs? Or the black coating that silver loves to make? And that's just the connectors and switches.

What about all the wires that are soldered to these connectors and

switches, or to the back of your patch bay, or between the ends of each wire and the connectors on the wire? Think of the number of dissimilar metal junctions that you force your signals to go through. Take a moment and trace just one signal path: mic to console, with the solder joints in the mic, the connector, the solder joints in the cable, the other connector, the solder joints in the preamp and the joints to its connector, the hundreds of joints in the preamp circuitry, and the EQ, the casual semiconductive nonlinear contacts of every pot and fader in the signal path, the post-fade insert and return paths to yet another set of patch cords to your outboard limiter, the connections and joints in there, back to the console, out again to the recording device, using still more pressure connectors of dissimilar metals, and then later, in remix, back again from the recording device and through the entire console, trimmer, fader, sidechain, special effects patch bays routing torture *yet another time*, and then on to the target recording device. Nice, huh? Did you make it through that sentence? Well, then you can imagine what the chances are of your signal making it through the real torture that I described. And if you think about it, I left out at least as much detail as I put in, because if I had not, there was no hope of you making it to the end of the sentence. And this doesn't even touch on the fact that plated connectors have several layers of dissimilar metals successively applied to the base metal in order to get to the final outer plating!

#### OH, WHAT TO DO, WHAT TO DO?

Have I discouraged you so completely that you want to give up and leave the industry altogether? If so, please send a list of all the gear you want to dump cheap to me at *Mix*, so I can take it off your hands. Or have I stretched my credibility beyond even my usual limits, so that you will laughingly dismiss this column altogether, shaking your head while thinking, "I guess the '60s were very, very good to him"? If so, try this:

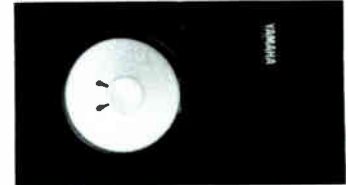
Set up a typical recording configuration of a singer and an acoustic piano. If you have the facilities, record twice in stereo, simultaneously: one version with signal paths as you currently have them, and another with the same paths after you have done what I suggest. If you

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cannot hear the difference in an A/B comparison, bad mouth me at your next Grammy party. If, on the other hand, you *do* hear it, buy me a beer when you see me. Here is what I suggest:

**THE SIMPLE, OBVIOUS STUFF**

1) Obviously, clean the hell out of everything. Use an abrasive for solid brass plugs, followed by a solvent to remove all traces of metal particulate, because that stuff will oxidize again in an hour. Use very small amounts of Cramolin red on all other plugs and in the jacks. Rinse well with whatever spray solvent is legal this week.

2) Make sure that all pressure connections have *pressure*. There will always be *some* oxidation and dirt on the metal surfaces, and you need to crush through it.

3) Use a little Cramolin blue on everything that you will be plugging in and out all day, and use Tweak on stuff that you will be plugging in and leaving. These coatings do more than just help keep oxygen and moisture away; some of them actually increase the electrical efficiency of the metal-to-metal-interface.

**THE WEIRDER, CRITICAL STUFF**

4) Avoid dissimilar metal contact! Brass to brass, gold to gold, silver to silver, ashes to ashes and, of course, dust to dust. This is very, very important. You might not (or you might) hear it at first, but after the connection has been around in the real world's oxygen/water atmosphere for a week, you will. Water, oxygen, different metals and electricity equal weird science, yet we do it every day, in every studio.

5) In order to get the full benefit of this test, build up a set of cables using *silver solder* instead of the horrible conventional stuff you have always used. Don't let your joints crystallize! If you can't solder, rope someone who can. Keep the tip and the junctions clean and bright while working, or you will actually bury semiconductive pollutants inside the joint itself, where they will haunt you for the rest of your life, and two weeks beyond. This is a very important step.

6) Clean every IC and socket the same way you would clean a plated connector. Spray the juice into the

socket and put the chip in three or four times, remove it and rinse thoroughly, put Tweak on the chip's pins and push it in to stay. It is just as important to avoid dissimilar metal contact here, too, although it is obviously much more of an effort.

7) Clean and protect all circuit-board edge connectors, Molex connectors and any other type of releasable connections that you may find on the PCB. Clean the boards themselves. The lint and schmutz on there hold moisture and various special lint- and schmutz-conductive salts, allowing possible unpredictable interaction between adjacent traces.

8) Clean your faders and pots. Check with the manufacturer on exactly how they would like you to do this, as various greases and coating agents may be removed in the process. Dirty conductive plastic faders—even the very good ones—can distort like hell. Some of them *live* to become semiconductive. ■

*Steve St. Croix has several internal metal components, compliments of surgeons on both coasts. He is going to have them cleaned now.*

—FROM PAGE 32, BOOKER T. & THE MGs

tric, just magic. We loved it so much, and Albert just lit into the song.

**Cropper:** It worked perfectly for him. Albert wasn't really a line man or a chord man, he was a soloist. Most of the stuff that he had done up to that time was really traditional blues. For him to get something like that with a unique line, he jumped right on it and played so good over the top of it.

**Jones:** And I was freed up by Steve's playing, and Duck playing the bass line, because when I was writing it I was playing the bass line on piano and the rhythm on the right hand. When they took that over, I could just play that high part.

**Bonzai:** How would you compare the old days of writing with today?

**Jones:** Well, we don't have the artists now that we did then.

**Cropper:** And you can't write one night and record the next. In the old days, Booker and I could get excited by an idea, like we're talking now, write this thing tonight and go into the studio tomorrow and have William Bell or Otis Redding or Eddie Floyd say, "Hey, let's do this." By one in the afternoon, we'd have it mixed and ready to go master. If we wanted to,

we could have it out on the streets in a week. I miss that a lot, but as far as the physical writing, it's pretty much the same. We get in a room, get our instruments and hash out ideas.

**Bonzai:** Could you tell me about the two drummers on this album?

**Jones:** Both of these drummers have a lot of respect for our original drummer, Al Jackson [who was shot and killed in 1975]. Both of them have studied extensively, and religiously. Steve Jordan really pays his respect to Al Jackson in his playing. James Gadson is a Kansas City native, so his background is blues—he could pretty much be himself and play with this band, which is what he's done.

**Cropper:** Jordan actually has one of Al's drums, that he acquired through Willie Mitchell. It's the drum that was used on most of the Al Green records, that little tom-tom thing. I thought that was something real special, which brought a little magic to these sessions.

**Jones:** And he knows everything we've ever recorded, every song that Al played on, so we were lucky to have real good choices, good people to play drums.

**Bonzai:** Drummer Jim Keltner told me there's a great story about the session for "Green Onions." What actually happened?

**Jones:** The session was never supposed to happen. The little riff was something I had been playing on piano, and we were just messing around that day. The session was supposed to be a country music session.

**Cropper:** The story goes that the artist never showed up, but he was there. I've talked with Billy Lee Riley, and he remembers the day we cut this. His session was set up for a Sunday afternoon. They were listening to the playbacks and we were just jammin', waiting to see if we were going to cut another tune, or recut the last one. We were playing some blues, the song "Behave Yourself," which was the flip side of "Green Onions." Jim Stewart, our engineer and the owner of Stax Records, went to hit the talkback switch to tell us we were done and he heard what we were doing, and he just reached over and hit the record button. We didn't even know he was recording—we just finished the song and started laughing. He brought us in to listen and that's where it all started. He asked us to go out and do one from top to bottom, and we cut what we all know now as "Behave Yourself." Jim was very serious about this and

thought it could be a hit instrumental. He asked Booker if we had anything we could cut as a B side, and Booker had this riff. How many cuts do you think we made on "Green Onions?"

**Jones:** One?

**Cropper:** Maybe two...I kind of remember changing the intro. The guitar thing was in the middle, and I think maybe Booker suggested we move that up and make it the intro and do a solo instead. If you listen to the record, the second half of the solo is a higher version of the intro, which I never play live because it doesn't seem to work onstage.

**Bonzai:** Who taught you how to play guitar?

**Cropper:** Self-taught. Guys in school. Booker taught me a lot when we were hanging out in the studio. I just picked up things here and there. Me and a guy named Charlie Freeman had a band in school called The Royal Spades, and later The Marquees. Duck Dunn, Charlie, myself and a drummer named Terry Johnson. We did the hits, some Elvis stuff and Jimmy Reed. Charlie was taking some lessons and used to teach me what he had learned that day.

**Bonzai:** How many guitars do you have in your working arsenal?

**Cropper:** Not very many that I use all the time. I've got a couple of different Tele's, and I'm presently playing a Tele copy, a prototype custom-made Peavey that I've been using a lot. It has all the things I want out of a guitar.

**Bonzai:** Is this going to be the Steve Cropper signature guitar?

**Cropper:** I don't know, but it could be. I have several guitars, and a lot of them I've used through the years, and sometimes you move on. Sort of like girlfriends, you know? You go with them for a while until they start getting serious and you go on to the next one. Every now and then you call 'em up and go to dinner. I've got a couple of guitars that were on well-known albums that I love pulling out once in a while to take along to a session. The engineer's eyes light up when I say, "Yes, this is the one I played on 'Tonight's the Night' for Rod Stewart."

**Bonzai:** Booker, I understand you've relocated to the Bay Area?

**Jones:** Yes, I've moved my equipment into The Plant in Sausalito. I have a room with an 80-input DDA board and a 24-track machine. I've been working on some songs for my solo project, and I'm preparing to produce Wendy Matthews, an Aus-

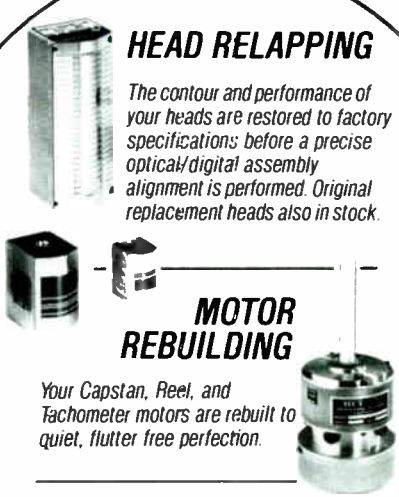


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tralian artist and one of their top singers. I did some of the arrangements and played on her latest album, which T-Bone Burnett produced. I like it in the Bay Area, there's a nice little music community up there. Some good studios, and I'm writing again.

**Bonzai:** The Hammond B-3 was originally a church instrument to be played sitting down. Have you ever had any problems banging your shins on the woodwork while you were playing?

**Jones:** [Lifts up his pant leg] Here's a scar from the wooden bar underneath. I had to take bone from my hip and pulverize it to redo my knee in 1968 because of going up and down on the volume pedal from eight years on-stage. Now I never play without a kneepad. I was in a cast and on crutches for eight months. When we took that picture for the *Soul Limbo* album, I fell down that day and never got up again for another eight months. I had a good doctor and he saved my leg. You rub a bone up against a hard surface every day, in and out, year after year, and you deteriorate the bone.

**Bonzai:** Since Duck isn't here, let's talk about him and his contribution.

**Cropper:** He's sort of the life of the party and keeps everything rolling along in a good mood. Duck Dunn has got to be one of the best bass players on the planet. You should underline *bass*, because he is a bass player, not a guitar player, as so many bass players try to be. They try to play guitar an octave lower. Duck plays bass. He puts bottom and feel in the rhythm, and he chooses his notes in and around what the singer, or the soloist, is doing. He doesn't just sit over in the corner in his own groove saying, "Stick with me." He listens to what everybody is doing and bases his patterns and licks on what he hears. He's proven himself numerous times on different artists' sessions. Artists love that because who wants to go into the studio and fight with some guy who's trying to solo? Duck is the guy who puts it in the pocket and gets with the drummer. I think we were one of the innovators of the old school where the kick drum goes with the bass. It's made a lot of records, I can tell ya.

**Bonzai:** How long have you known each other?

**Cropper:** Duck and I have been together since the sixth grade, and in bands together since high school. We

started as neighborhood kids playing little league baseball, shooting baskets, throwing rocks, jumping ditches and playing music.

**Bonzai:** What was it like being in the Blues Brothers band?

**Cropper:** Who knew that it would be that big? It was kind of an experiment. It was something that John and Danny had dreamed of doing. They played all the time—sitting in with bands, had a little band up in Toronto. Belushi had a band in Chicago, and they loved the music. John was one of the foremost fans and students of the blues, with one of the largest record collections I'd ever seen. He knew the bands, the musicians, the writers, the players, and if you listen to the records, he's calling out these names that the average listener wouldn't know about. They were both paying tribute to blues and that era. The nice marriage that happened when Duck and I got involved was that I am always thinking commercial and these guys wanted to do this blues project, which I thought was great. I said, "Guys, if you're going to make a record, can't we lift it up from the street level and bring it to the radio level." They said, "What do you want to do?" I suggested something like "Soul Man," and it was the biggest hit we had.

**Bonzai:** Why weren't you involved, Booker?

**Jones:** I was out in California hanging with Willie Nelson.

**Cropper:** Duck and I got involved because of Levon Helm and the RCO All Stars, which we had worked with for two years. The gist of the band was the Saturday Night Live Band, with Paul Shaffer as musical director and Steve Jordan on drums. They added Duck and me.

**Bonzai:** How many live dates did you play?

**Cropper:** Really not many. We went out once for the *Briefcase Full of Blues Tour*. The album came out of nine dates. We opened for Steve Martin at the Universal Amphitheatre. Then we went out and did about 17 cities when the movie came out, and then a dozen dates for the Made in America tour.

**Bonzai:** Is this new Booker T. & The MGs project going to keep you busy for the next ten years?

**Jones:** We hope so. It looks like Columbia Records is committed to it, and we have a long-term deal.

**Cropper:** If we stay the family we started out to be, it could last until

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we all can't do it anymore, or there's no market.

**Bonzai:** What else have you been up to?

**Cropper:** Well, we did the Neil Young tour last year with Jim Keltner, who we've done many sessions with over the years.

**Jones:** I really enjoy playing Neil's music. He's the originator of heavy, soulful hard rock.

**Cropper:** I'd forgotten how many great tunes he'd written.

**Jones:** Great ballads, great political songs. The hard R&B Memphis style mixed real well with songs like "Southern Man."

**Cropper:** He wrote the liner notes for our new album and paid us a lot of respect by doing that. During his tour, we had fun and he enjoyed himself. He came in one night and said, "Guys, I gotta tell ya, I feel like a bandmember now!" He's a great guy to work with.

**Bonzai:** With all the songs you guys have written, you must haul in a lot of royalties?

**Cropper:** I don't look at it for the

money. When you're successful at something, that comes. But you *never* ever make enough money—trust me. [Laughs]

**Jones:** He's lyin'. He doesn't have to work another day in his life, and neither do I. We just work because we love it, and the royalties are really a blessing. But without them, we'd still be working. It's just something that we're born to do, so we do it. It's a calling, something that comes through you. If you're lucky, you find other musicians to share your ideas with. I enjoy the music we made in the '60s more than just about anybody I know. It's really a pleasure to still be playing "Green Onions."

**Cropper:** We never get tired of it, which is just the opposite of what you think you'd hear. Most guys would say, "If I have to play that song one more time, I'm gonna shoot myself."

**Jones:** We're lucky, it could have been music that we weren't crazy about.

**Cropper:** Some artists do get hits on records that they really didn't want to cut, and they hated it from the get-go, even though it went to Number One. We played the music we loved,

and we call the shots.

**Jones:** I'm a Steve Cropper fan, too. I still love "Knock on Wood," "In the Midnight Hour." I didn't play on those records, I'm just a fan. I'll give you a story—you remember in the late '50s and early '60s you could go into a record shop and listen to maybe ten or 15 records before choosing the record you wanted to buy? Well, there was a clerk working at Satellite Records in Memphis when I was in the eighth grade. I'd spend my afternoons listening to jazz and country records, and the clerk would bring them over and put them on the turntable. Guess who the clerk was? Steve. So, I first knew him as the guy behind the counter at the record store.

**Bonzai:** Must be great to still be together.

**Cropper:** It's a great reunion. I missed all the times that we weren't together, I truly missed it a lot. I'm so glad now that this is happening, that we didn't burn it out before. Now it's like a whole new thing again. ■

*Mix roving editor Mr. Bonzai is compiling an all-instrumental collection of his stories entitled Groovin' with Mr. B.*

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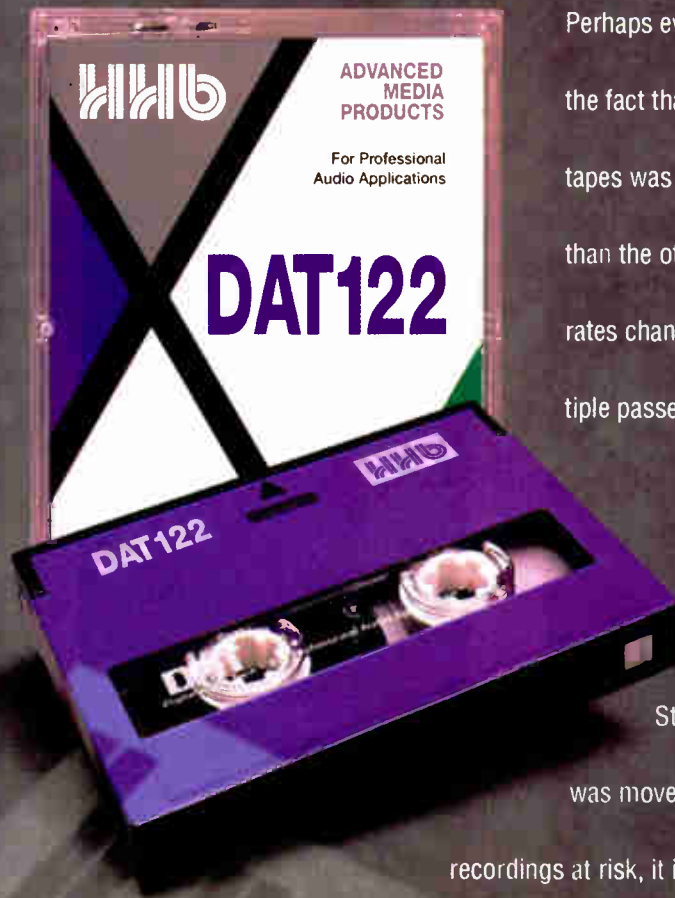
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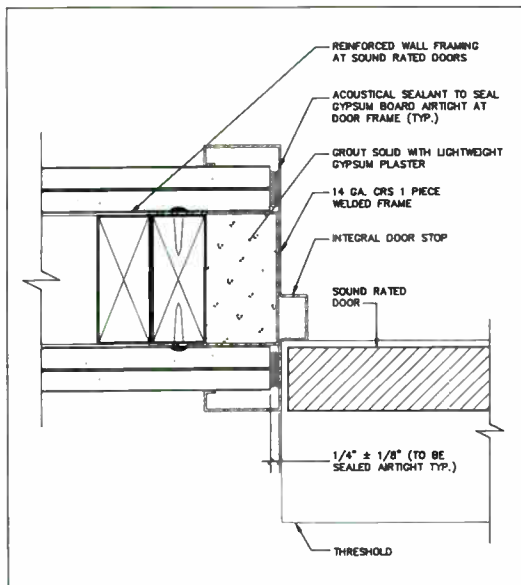
World Radio History

—FROM PAGE 27, DOORS AND WINDOWS provide adequate sound isolation. This can be overcome by using a vestibule arrangement of double doors. If the installed performance of the door or doors is a concern, we often specify that *in situ* tests for verification be performed.

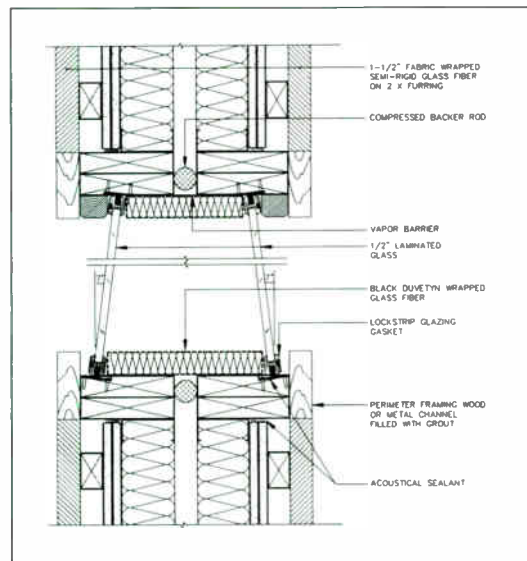
With sound-rated windows, there are similar problems as those described for sound-rated doors. Windows are important in acoustically rated rooms to allow views between adjacent rooms as well as to allow for daylight. To minimize claustrophobia, views to the outdoors are desirable in many cases.

We were involved in the design of a recording studio that included a window to the outdoors. Acoustically, we attempted to control the exterior noise intrusion, which included aircraft overflights.

Important elements of sound-rated window assemblies are minimal air infiltration through the frames; thick (1/4-inch minimum) glazing, preferably laminated; and a 2-inch minimum air space between double assemblies.



Door jamb detail for sound-rated door



Side view detail of double glazed window construction

This was achieved with double 3/4-inch-thick laminated glass having a 14-inch air space. The window had a laboratory rating of over STC 65.

A window contractor will often attempt to lower costs by substituting non-sound-rated glass installed in a non-sound-rated window frame for the specified sound-rated window assemblies. As with doors, if you do not insist on laboratory testing, you cannot be sure that the noise control criteria for a product will be achieved.

Triple glazing is acoustically inferior to double glazing.

In selecting sound-rated doors and windows for acoustically important projects, you must not only specify the necessary STC rating of the construction but also meet other important needs. Because of the relatively high cost of sound-rated doors and windows (\$100 a square foot or more installed), there is pressure to reduce costs. For these and other design decisions, it is important to consider the risk of accepting a perhaps unknown, unrated product to save money. If the product does not meet the project needs, what will be the cost to fix it? How much

down time will there be to replace the window? Who will pay for the replacement? If the answers to these questions are unpleasant, then it is best to stick with known acoustically rated products. ■

*Charles Salter operates Charles M. Salter Associates, a San Francisco-based design/acoustics firm whose clients include Lucasfilm, Paramount, Disney, Dolby Labs, CBS/MTM and the Hollywood Bowl.*

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—FROM PAGE 162, BITS AND PIECES

and recording vocals with Dave Way engineering and Rhett Lawrence arranging. Other recent sessions at Plus XXX include Duran Duran recording for an oldies album, and Peter Kinsberry working with engineer Gary Langan...Gold Line (West Redding, CT) appointed Eurocase Deutschland GmbH (Essen, Germany) as its exclusive German distributor. Eurocase will also represent Gold Line in Belgium and the Netherlands...Sound Performance Laboratories, manufacturer of Vitalizer psychoacoustic equalizers, appointed two new distributors: KEM Electronics (Greece) and C&C Musik (Turkey)...Swedish post-production facility MediaDubb took delivery of three TC Electronic M5000 digital audio mainframes for its new digital dubbing suite. MediaDubb does post-production work for animated features. M5000s were also recently purchased by ZDF and RTL television in Germany...

**UK**

The Royal Shakespeare Company (Stratford upon Avon) installed a Cadac J-Type 32-input mixing console. The new desk was ready-to-use for the company's new season, which opened with *Macbeth*, starring Derek Jacobi...The M2 Facilities Group, an independent London TV company, is equipping a new room with an SSL Version 5 ScreenSound system with VisionTrack™ and a SoundNet system. Recent projects at M2 include an episode of the internationally distributed *South Bank Show*...At Roll Over Studios (London), 19-year-old record producer Ollie J is working on albums for Sony Music's Rosalla, Epic band 2/3rds and a new album for Leftfield. Roll Over recently moved a Soundtracs Jade into its Studio 1, shifting its Soundtracs In Line to Studio 2...Ray Gillon left his position as senior sound consultant at Dolby Laboratories UK to pursue his interests in three other firms: G Minor and G Major (film sound production/post-production companies, which Gillon founded), and Camelot Productions, where he serves on the board of directors...In collaboration with *Pro Sound News*, The World Studio Group has published a directory of its members, to be distributed to PSN subscribers worldwide. To get a copy, call (213) 465-7697. ■

—FROM PAGE 119, TANNOY LIMPET

well to other monitoring systems, ranging from boom boxes and car stereos to large audiophile setups.

Besides the 6.5s, I also used the Limpets on other studio monitors, including Tannoy PBM-8s, and small models from four other manufacturers. In every case, I was pleased with the results.

One of the most common problems of using small reference speakers in various studios is that every playback amp will make speakers sound different. This situation is made worse by the fact that the

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amps for the secondary speakers are rarely of the caliber of the amps on the main system. The Limpets offer an ideal solution to this dilemma, so if you are an independent who works in a number of facilities, you can bring your own powered monitors along. Of course, if the studio where you're working already has PBM-6.5LMs, you can work with confidence by at least eliminating the amp/monitor variable when looking for a reference point.

Whether you're looking for a solution to your amplification problems or a reference monitoring system, the Tannoy Limpets are an excellent choice, offering a formidable combination of flat, wide-ranging response in a compact, high-power package. At \$995 per pair, the PBM-6.5LMs should find a happy home in all types of audio applications: post-production, broadcast, desktop audio, multimedia suites, and studios, both large and small.

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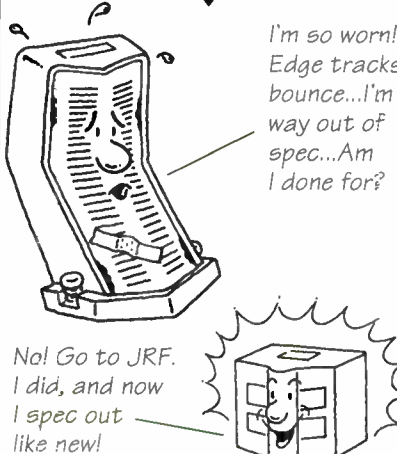
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—FROM PAGE 82, MUSIC &amp; MULTIMEDIA '94

ternative model for the distribution of music and other creative arts, an opportunity to bypass the big businesses that currently arbitrate mass culture. But there was little agreement on how creators could pay the rent in the absence of mechanisms for collecting compensation from their online audiences.

Consensus was also scarce on the "Record of the Future" panel, hosted by NARAS president Michael Greene. Todd Rundgren proclaimed himself the "inventor of interactive music" (none dared disagree) and tried to focus the discussion on interactive records such as his *No World Order*. But uncertainty over music's future role in multimedia was reflected in the fact that the panel, abetted by questions from the audience, kept drifting into a discussion of music in general multimedia applications.

Even so, ample evidence was provided that the music industry has begun to take multimedia seriously, which reflects a big change over the past two years. Ralph Simons, executive VP of Capitol Records, noted that the company's whole artist development strategy is expected to shift from an emphasis on records toward exploitation of a "rainbow of derivative elements" flowing from an artist's creative work. But he cautioned that most artists have yet to express much enthusiasm for jumping into the new field.

MCA's Alex Melnyk inadvertently illustrated how difficult it will be for the big entertainment companies to come up with new and original uses of multimedia technology. Answering a question from Greene, she began by noting that when recently hired to head the company's new interactive division, she told MCA chairman Al Teller that she wasn't interested in doing artist retrospectives. But by the end of her response, it was clear that the appeal of MCA's catalog as a ready source of content would prove irresistible, at least for the company's initial interactive efforts.

#### THE SCREENINGS

More than a dozen titles were shown throughout the day, either during two "case studies" segments or on the evening's "Premieres" program. Some are already on the market, others approaching release and still oth-

ers just "prototypes" (demonstration versions) of works in progress. The good news is that nearly all were credible efforts, meaning that they seemed as if they were (or were going to be) successful at what they set out to do. A few may even recoup their development costs. But it is probably unrealistic to expect any one to be the "killer application" that motivates a whole new group of consumers to buy into the CD-ROM experience. Space doesn't allow me to go into every title in detail, but here's a taste of what to expect from the class of '94...

With a few refreshing exceptions, the titles tended toward retrospective-type applications, most including ample opportunity to sample excerpts of music by a particular artist. The most obvious example of this genre was *Heart: 20 Years of Rock & Roll*, an exhaustive look at the band's lives and career. Complete with baby photos and family dogs, it promises to be a dream scrapbook for hardcore fans but of little interest to anyone else.

*Imagine*, a title on John Lennon (under production with the cooperation of Yoko Ono), is supposed to take the user on a walk-through of a "virtual museum" of Lennon's music, art and writing. Except for the museum's lobby, however, the prototype wasn't ready to be shown, so it is hard to say whether this high-profile project is likely to please or disappoint fans of the late Beatle.

Other artist-centered projects include discs from Peter Gabriel, David Bowie and the artist formerly known as Prince. His *Purpleness*' emissaries served up a nicely rendered virtual walk-through of imaginary Princely digs, complete with secret keys to enter hidden areas and various morphing "hot" objects (meaning they do something when mouse-clicked) distributed throughout. As might be expected, the disc is rich in cyber-bimbos—definitely politically incorrect.

The graphics in Mr. Unpronounceable's title are great, but the walk-through navigational technique—also used in the Bowie title (*Jump*) and *The Residents' Freak Show*—is less successful. The idea of this approach, in which the location of the mouse tells the program which way to go, is to encourage exploration and get away from the menu-driven computer look. But one of the great things about interactivity is the potential to hyper-jump nonlinearly from

anywhere to anywhere. Instead, the walk-through concept has you plodding along hallways and trudging click-by-click up stairs. On most personal computers, the graphics are slow enough that users may end up feeling as if they are exploring in leg irons.

The Prince, Bowie and Gabriel titles feature music remix capabilities (the Prince console wins for whimsicality), and the Bowie and Prince titles let the user edit videos as well. But the Gabriel title feels the deepest because it offers something beyond just pop idol worship. The disc (profiled as a work in progress in the July 1993 *Mix*) includes a look at the world music artists signed to Gabriel's Real World Records, as well as sections on Amnesty International and other projects close to Gabriel's heart.

A couple of the titles were focused on a musical work rather than an artist. *Tommy* traces and compares the rock musical's genesis and subsequent incarnations at Who concerts, on film and on Broadway. The audio and video quality in this prototype were noticeably rough; hopefully, those areas will be improved in the final version. The disc is being prepared with the cooperation of Pete Townshend, who also figures prominently in the video interviews.

The Residents' title (profiled in June '94 *Mix*) is a beautifully drawn but painfully slow peek behind the scenes at the private lives of circus freak show performers, based on the similarly themed *Freak Show* album.

A broad variety of musical styles is represented in *Grammy Interactive*, which features a nicely designed virtual theater for viewing video highlights from Grammy broadcasts of years gone by. *Haight Ashbury in the '60s*, on the other hand, concentrates on the glory years of the "San Francisco Sound," featuring music licensed from the Grateful Dead, the Jefferson Airplane, Big Brother (featuring Janis Joplin) and other luminaries of West Coast psychedelia. When completed, the fun is supposed to include a game based on a day in the life of a hippie runaway (meet your connection, bum a meal, find a crash pad, etc.). The goal will be to avoid having to call home for help.

A more explicitly game-oriented title was shown by Steven Rappaport of Interactive Records, who signed his distribution contract in front of the Premieres audience. Rappaport survived a music publishing licensing

nightmare to put excerpts from 300 pop music hits onto his game show-inspired *What's That Song*. By allowing up to four players at once, the title is one of the few that actually encourages interaction on a person-to-person rather than just a person-to-machine basis. The title would probably work even better on a set-top machine hooked to a TV, as standing around the computer may not be everybody's idea of a party.

Rundgren's *No World Order* is another effort that is better suited to the "entertainment" room than the computer room. Available on CD-I, the album contains about 900 pieces of musical Lego designed by Rundgren to snap together in any order based on parameters set by users according to their mood. The idea, Rundgren said, is not for the artist to give up responsibility for creating but rather to allow musical works to be experienced, like sculpture, from many angles. Once the music is off and running, the user can sit and listen or go about doing all the other things that people do with music playing. The musical results are mixed, but the concept is intriguing.

Rundgren's musical colleague Thomas Dolby was also on hand. He demonstrated the concept behind AVRe, a software system that he is developing to allow the music in video games to seamlessly evolve in response to user choices.

Aside from Rundgren and Dolby, it was up to the younger generation to champion originality at the event. When Joe Sparks, president of San Francisco-based Pop Rocket slyly confided to the crowd that he didn't have any big-name stars associated with his adventure game *Total Distortion*, it was clear that he was proud to be creating rather than recycling content. (For more on *Total Distortion* see "Pop Rocket's Distorted Vision of Interactivity," page 74.) Similarly, the cryptic, neo-psychedelic interface of *Substance Digizine*, a quarterly CD-ROM magazine by and for members of Generation X, underscored the fact that the "do-it-your-loft-with-no-money-and-no-sleep" school of developers has as much to offer to this new genre of music CD-ROM as those who see the future in "repurposing" the past. ■

*Mix Media & Mastering editor Philip De Lancie is a mastering engineer at Fantasy Studios, Berkeley, Calif.*

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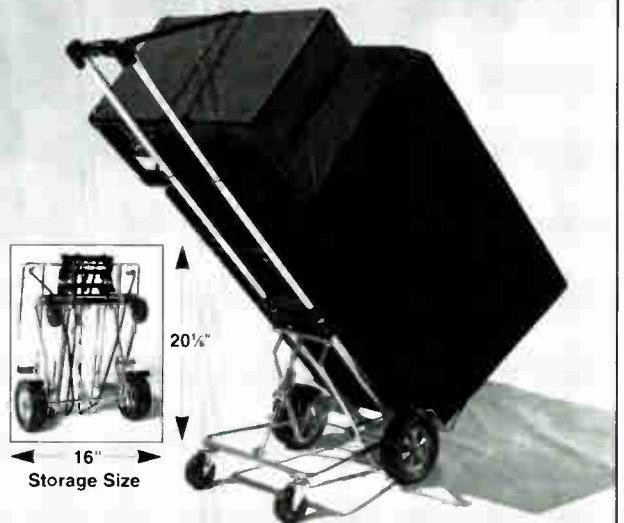
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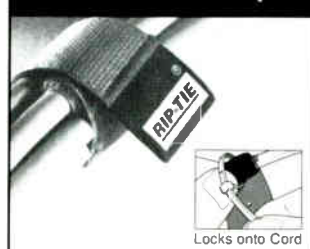
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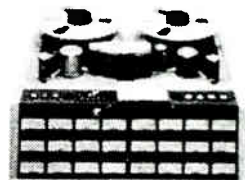
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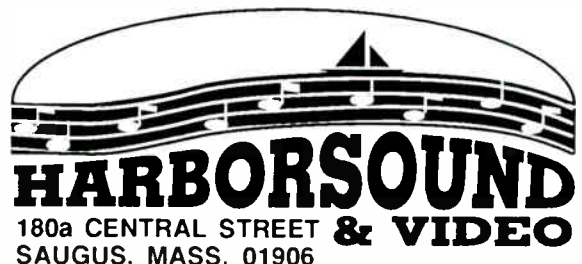
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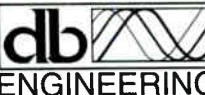
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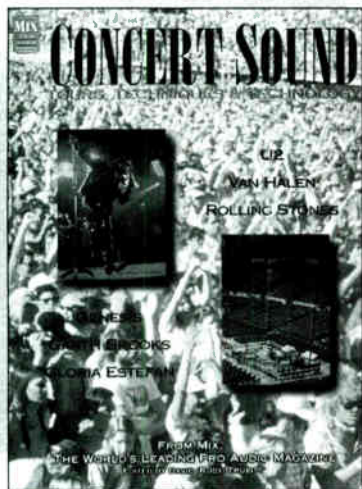
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—FROM PAGE 44, RECORDING ACOUSTIC PIANO

"We recorded the orchestra at Mosfilm Studios in a huge, beautiful scoring stage used for Russian films. The YRO consists of Moscow's finest young players, between 18 and 29 years old, and they played exquisitely.

"After the Moscow orchestral sessions were completed," she says, "we traveled to Italy and recorded the piano parts at Capri Digital Studios. This studio on the island of Capri is pretty amazing. It sits high in the hills overlooking the bay of Capri, and [owner] Carlo Quinto is entirely devoted to great audio.

"On this record, I was looking for a sound that was classically inspired but not overly classical in the traditional recording sense. We again experimented with many of Capri's fine mics and outboard devices until settling on the right sound. I guess I'm a real fan of the KM-140, because that's what we picked again, although this time we settled on a 90-degree coincident technique placed up near the fully opened lid at the edge of the piano curve. Then, during the mix, we panned the piano at various locations to avoid cluttering the symphonic pieces." [Look for more on Ciani's remarkable trip in a forthcoming issue of *Mix*—Ed.]

"One more thing," Ciani interjects. "If budget allows, hire a piano technician for your recording sessions. It's remarkable what a difference it makes. At Capri, a technician from Naples named Thomas joined us, though it became humorous as the three project engineers would converge on Thomas with serious emotional pleas to 'Make the piano sing, Thomas!' Here's poor Thomas just trying to keep the piano in tune, and all this Italian passion was swirling around him. It was like opera!"

#### PHIL EDWARDS

With more than 500 jazz sessions to his credit, Bay Area engineer Phil Edwards is no stranger to piano recording. He spoke with me from a Mel Torme string date at Sunset Sound in Los Angeles.

"Most of my piano recording has been in jazz settings: quartets, quintets and such. In small group situations, musicians feel uncomfortable if they're isolated in different rooms. And since I rarely stack tracks, leakage becomes a very big concern. When piano isolation is necessary, which is most of the time, I tend to

keep the lid on short-stick and place a blanket over the exposed areas," says Edwards.

"Keeping a good line of sight is also important for all involved, especially the pianist and recording engineer. And most jazz musicians I've worked with prefer to play without headphones, so the group can't be spread too far around the room or they lose the tight ensemble feel. This makes isolation even more important."

Edwards compares recording to sports, musing that "a recording session is like a round of golf. I navigate the course with a full bag of clubs, though it's my trusty five-iron which seems to get used most often. Such it is with a piano: I have a standard tech-

**"Keeping a good line of sight is also important for all involved, especially the pianist and recording engineer."**

**—Phil Edwards**

nique that often works well, though I'll frequently need to change that technique, depending on the situation."

Edwards' standard piano recording technique is based mainly on "large-diaphragm, multipattern mics. I like the older tube mics, but it's hard to find matched sets, and they're notoriously unreliable. If I'm working with a pianist or piano that is new to me, I'll usually 'salt' the piano with a number of mics in various locations and monitor various combinations during rehearsals. There's nothing esoteric in my choice of mics. I like the old standbys, such as Neumann U87 and U89 and AKG 414."

By contrast, his mic placement methods are a bit more unique: "I may start with five or more microphones, with at least three placed close to the hammers, all pointed directly down in hyper patterns and arrayed throughout the entire range of the piano's low, mid and high keys. Another mic is placed in the curve and another at the toe end. There's a particular spot at the toe end of certain grand pianos where everything seems to come into a fairly balanced focus. The toe-end mic helps define

that balance while the hammer mics add specific detail and percussives.

"Another 'club' which can work well is a coincident pair directly over the hammers in the mid-point. I'll keep the capsules together and angle the mics around 120 degrees. If the piano is balanced and well-regulated, the coincident approach is especially attractive. And when the project calls for strict mono compatibility, coincidence is the only way."

When asked about recording solo pianos, Edwards acknowledges a completely different approach. "When the piano is solo, the room becomes a bigger part of the sound, and my technique changes from close-mic to far-mic. I also raise the lid to full-stick and really experiment on mic placement. I listen for an unconstricted sound, like the piano is able to breathe. The big room at Coast Recorders [San Francisco] is one of my favorites for solo instrumental work," says Edwards.

"I like Steinways and Yamahas, in general. Jazz players seem to favor the action on most Steinways, though the sound of a Yamaha CJ-7 is really popular these days in small jazz group recordings. And though Yamahas tend to be brighter, there seems to be a better spectral balance.

"After the piano is set up and the mics are placed, you'll usually catch me running the mics through the normal console path, unless I'm using outboard preamps and running direct to tape. My favorite recording consoles are the API and Neve VR. I own a vintage API and think it's one of the best-sounding boards ever. I frequently add top to a piano, and if the mics aren't getting the right sound, I'll also try moving the mics."

Asked if he's had any unique piano experiences, Phil shared the story of a live nightclub recording where the piano was "in really horrible condition. It was two hours to showtime, and the piano was wickedly out of tune. On some notes, one of the tripled strings could have been 50 cents off. Not having the tools or time to tune, I simply muted the offending strings by wrapping duct tape around them. After the show, it was impossible to remove the tape; the residue wouldn't come off." Edwards refused to identify the nightclub. ■

*John La Grou is an engineer, musician and inventor.*

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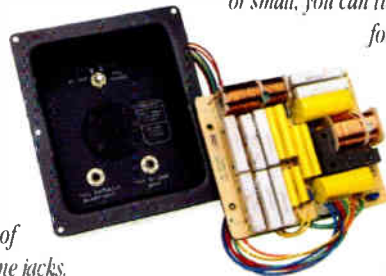
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