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# MIX<sup>®</sup>

PROFESSIONAL RECORDING · SOUND AND MUSIC PRODUCTION

## Planning and Equipping Your Project Studio

## Sequencing Tips: Mixing with MIDI




### SOUND FOR CLAPTON'S CLUB TOUR

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## Choosing Studio Monitors

## The Problems and Pitfalls Of International Touring

# Either Way

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*- Francis Buckley, Independent Engineer:  
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*- Charlie Brewer, Chief Engineer,  
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| 1954 |



| 1955 |



| 1956 |



| 1957 |



| 1958 |



| 1959 |



| 1960 |



| 1961 |



| 1962 |



| 1963 |

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World Radio History

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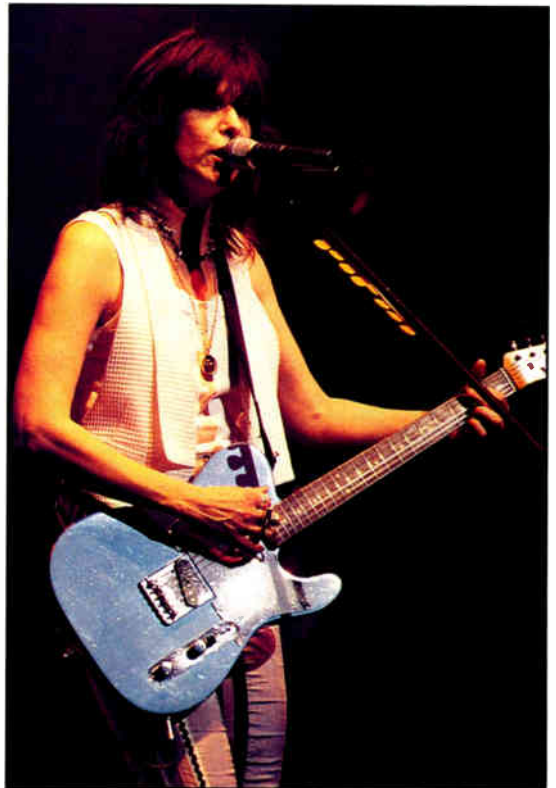
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PROFESSIONAL RECORDING • SOUND AND MUSIC PRODUCTION

FEBRUARY 1995, VOLUME 19, NUMBER 2

## AUDIO

- 20 The Fast Lane:** Can You CDRed Light?  
*by Stephen St. Croix*
- 26 Insider Audio:** Top Ten Technical Complaints  
*by Stephen Anderson*
- 32 Lunching With Bonzai:** Shelly Yakus of  
A&M Studios *by Mr. Bonzai*
- 44 Project Studio Startup:** To Open a Facility, You'll  
Need a Plan *by Jim Mandell*
- 58 Project View:** Where Do You Want to Be in  
Five Years? *by Dan Daley*
- 62 Audio & Multimedia:** New Developments in  
3-D Audio Shown at AES *by Paul Potyen*
- 68 International Update:**
- British Producers—A World Apart *by Dan Daley*
  - Facility Spotlight—Studio Zorrino (France)  
*by Guillaume Schouker*
  - Facility Spotlight—Feedback Studios (Denmark);  
Bits & Pieces *by Barbara Schultz*
- 83 Mixing With MIDI:** Using Sequencers for  
Automating Mixes and Triggering Effects  
*by Paul D. Lehrman*
- 96 Choosing Studio Monitors** *by George Petersen*
- 156 Recording Notes** *by Blair Jackson*
- 20 Favorites from '94
  - Classic Tracks—The Doors' "The End"
  - American Gramophone's New Studio
  - Casey Rankin—An American in Japan
- 172 Tape & Disc News/Splices** *by Philip De Lancie*



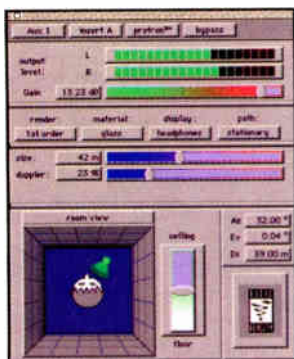
PAGE 117

## PRODUCTS

- 90 Technology Spotlight:** SSL Axiom All-Digital  
Production System *by Mel Lambert*
- 102 Field Test:** DynaudioAcoustics BBC LS5/I2A  
Monitors and Chord SPA 1016DA Power Amp  
*by George Petersen*
- 106 Field Test:** CAIG ProGold Conditioning Treatment  
*by George Petersen*
- 108 Field Test:** HHB PDR 1000 PortaDAT  
*by George Petersen*
- 112 Preview/Hot Off the Shelf**

## LIVE SOUND

- 116 **Tour Profile:** Eric Clapton's Club Tour  
*by Mark Frink*
- 117 **Tour Mini-Profiles:** Lyle Lovett's Large Band  
*by Mark Frink*; Capturing Chrissie Hynde's Vocals  
*by Barbara Schultz*
- 120 **Soundcheck:** Sound Reinforcement at AES; Club of  
the Month—NYC's Mercury Lounge; QuickTips  
*by Mark Frink*
- 132 **The Problems and Pitfalls of International  
Touring** *by Dinky Dawson*
- 138 **New Sound Reinforcement Products**



PAGE 62

## AUDIO POST-PRODUCTION

- 140 **Post Script:**
  - Sound for Film—Balancing Film Sound  
on the Cutting Edge, Part 1 *by Larry Blake*
  - Edit Suite Monitoring *by Tom Kenny*
  - Alan Splet Remembered *by Randy Thom*
- 154 **Audio Post Products**

PAGE 20

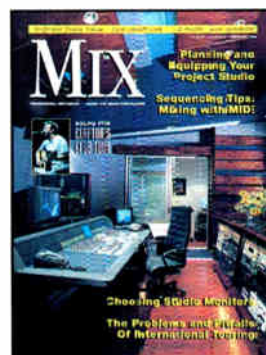


PAGE 108

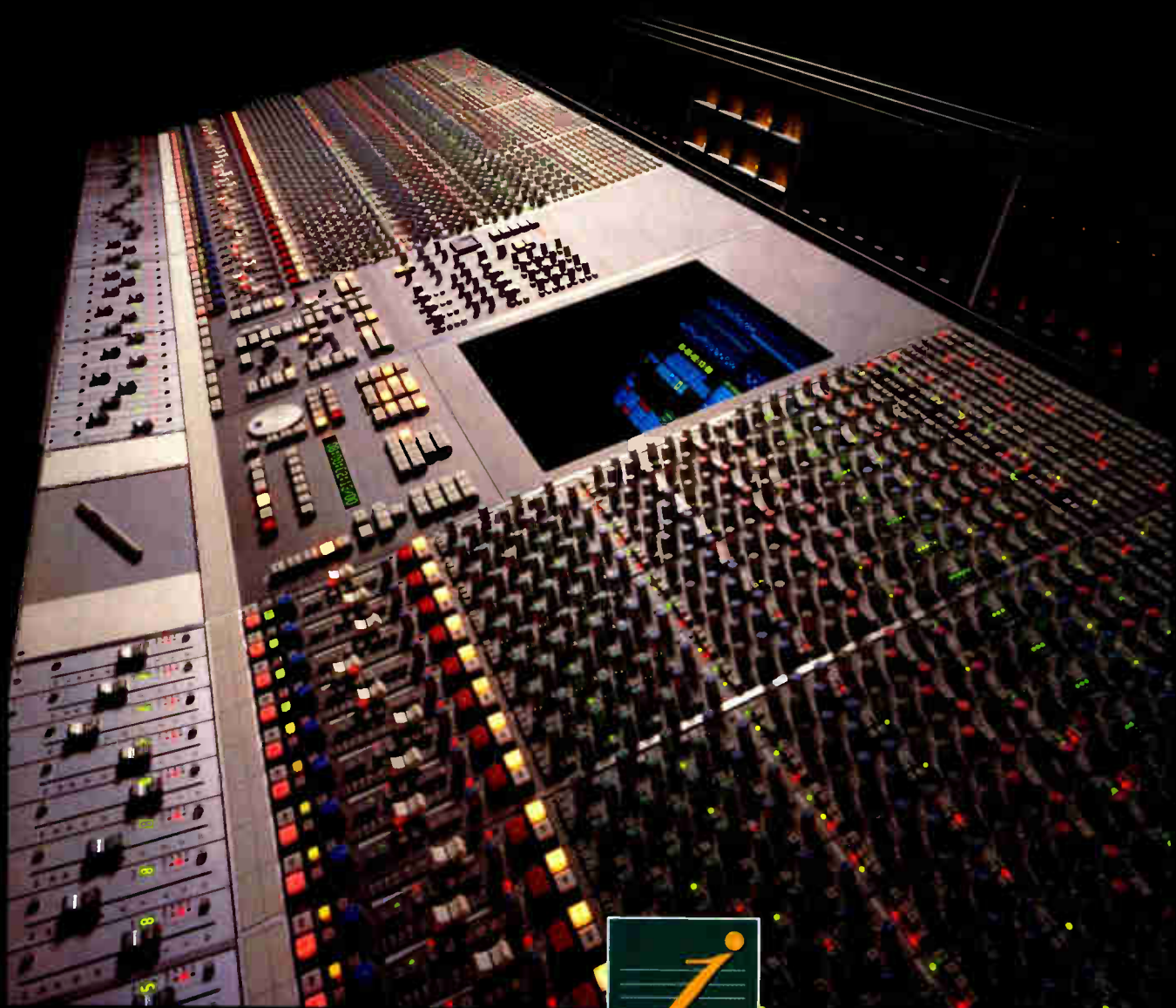
## DEPARTMENTS

- 8 **From the Editor**
- 12 **Current**
- 16 **Industry Notes**
- 178 **Coast to Coast** (Including L.A. Grapevine, NY Metro  
Report, Nashville Skyline, Sessions/Studio News,  
Studio Spotlight: Dockside Studios)
- 188 **Studio Showcase**
- 192 **Ad Index**
- 195 **Marketplace**
- 198 **Classifieds**
- 208 **Feedback**

Cover: American Gramophone's new studio in Omaha, Neb., is a personal-use facility for the label's co-founder and most successful artist, Chip Davis (of Mannheim Steamroller fame), as well as for some other AG projects. Designed by studio bau:ton of L.A., the facility includes: a Euphonix CS2000 console, Otari DTR-900 and Tascam 2A-88 digital multitracks, Meyer HD-1 and Genelec 1031 loudspeakers, and outboard equipment galore. See story on page 157 for more. **Photo:** P. Drickey. **Inset Photo:** Steve Jennings.



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# FROM THE EDITOR

## The International World

**M**ake no mistake, the world is getting smaller. These days, anyone within earshot of a telco line and equipped with a codec and/or modem can transfer record masters, rough mixes, ADR files, video workprints, sound effects, MIDI sequences, synth patches, samples, software, automation data...even overdubs in real time! Virtually anything that can be converted into a string of ones and zeros can be sent around the globe in a matter of minutes—depending, of course, on file size, transfer rates and desired resolution.

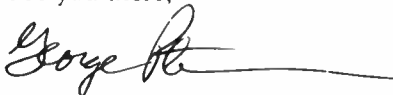
In cases where live, real-time transfer is inconvenient or impossible, we can turn to any of a number of overnight couriers. I sleep easier at night knowing that somebody can get that hot, new dance master to my A&R rep in Bouvet by next Tuesday.

Back in the studio, I'm constantly reminded of the audio community's dependence on the world market. This week, I'm mixing a track for a tribute album to an English artist, featuring an American band covering a tune for a German record label. The equipment complement includes an American multitrack, English console, French automation system, Japanese 2-track, German MIDI software, Australian power amp, Canadian monitors, Italian guitars, vintage Turkish cymbals and signal processing from just about everywhere. My mic locker has selections from Austria, Denmark, England, Germany, Japan and, of course, the U.S.

Limiting one's equipment choices to products manufactured by a single country makes no sense, from an economic or technological standpoint. The entire industry benefits from this diversity of products, as competition from the world market leads to better products for everybody.

While we're in the international spirit, the Audio Engineering Society returns to the Palais des Congres in Paris this month (February 25-28) for its 98th convention. The theme of the show is "A Sound Investment," and aside from providing the perfect tax deduction for traveling to one of the world's great cities, AES Paris should offer the best and brightest from the world of professional audio. If past AES Paris shows are any indicator, this one's going to be quite an event.

See you there,



George Petersen,  
Editor

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Circulation independently audited and verified by  
Business Publications Audit of Circulation since 1985.

Mix magazine is published at 6400 Hollis St., #12, Emeryville, CA 94608 and is ©1995 by Cardinal Business Media, Inc. Mix (ISSN 0164-9957) is published monthly. Subscriptions are available for \$46.00 per year. Single copy price is \$4.95. Back issues \$6.00. Mailed issues within the U.S. must be claimed within 45 days of publication date and abroad, within 90 days. Send subscription applications, subscription inquiries and changes of address to Mix magazine, PO Box 41525, Nashville, TN 37204 or call (800) 843-4086. Outside U.S., call (615) 377-3322. POSTMASTER: Send address changes to Mix magazine, PO Box 41525, Nashville, TN 37204. Address all other correspondence to Mix magazine, 6400 Hollis St., #12, Emeryville, CA 94608; (510) 653-3307; Fax: (510) 653-5142. Second class postage paid at Oakland, CA, and additional mailing offices. Editeur Responsable (Belgique), Christian Desmet, Vuurgatstraat 92, 3090 Overijse, Belgique. This publication may not be reproduced or quoted in whole or in part by printed or electronic means without written permission of the publishers. Printed in the USA. Canadian GST #129597951; Canada Post International Publications Mail Product (Canadian Distribution) Sales Agreement #0478733.

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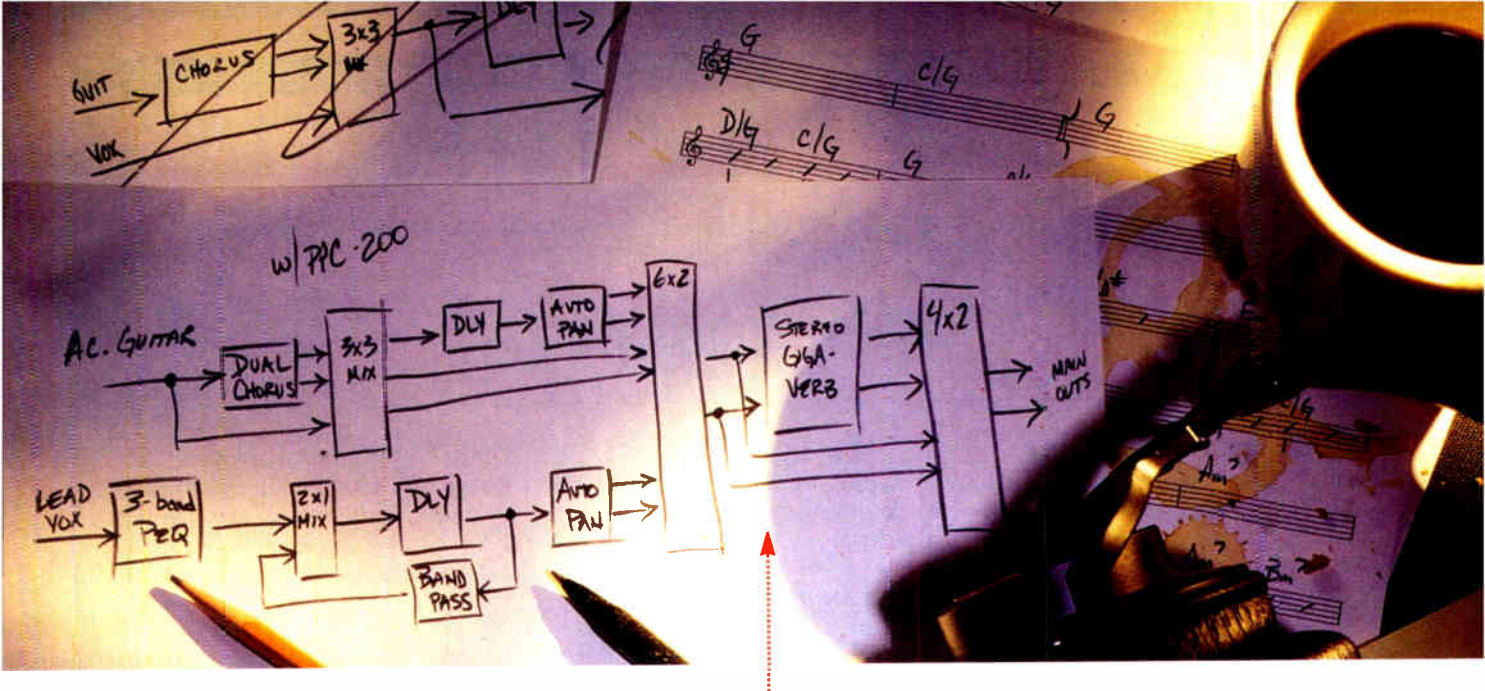
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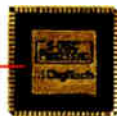


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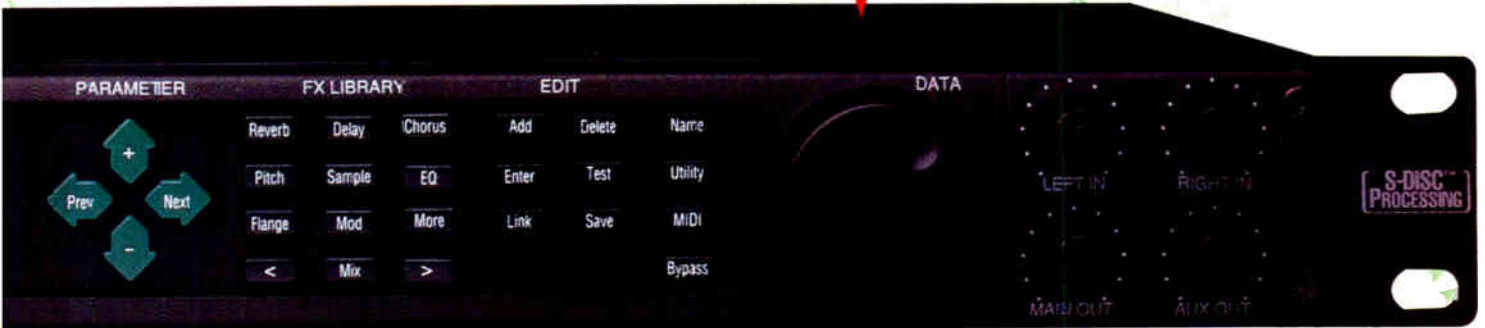
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**Currently in Spain tracking new album on multiple Mackie 24•8 consoles.**  
Def Leppard

**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

# OUR 8•BUS REALLY

**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>

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

**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

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

**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."

# 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 Venice,  
CA production complex.

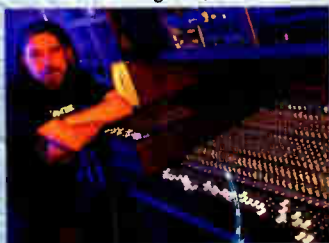


MB•E Meter  
Bridge  
\$695\*

The  
Side-  
car  
\$395\*

**Skittles TV  
commercial, demo  
for new artist Nita  
Whitaker, original music  
for Terpsicorps modern  
dance company.**

Lincoln Adler  
Are We Famous Yet? Productions  
Los Angeles, CA



**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."

**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 sermons.**  
New Life  
Assembly of  
God  
Lancaster,  
PA

**Sound  
reinforcement  
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

\* Suggested retail price. Slightly  
higher in Canada.

## 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.

20205 144<sup>TH</sup> Ave NE • Woodinville • WA • 98072 • 800/898-3211 • FAX 206/487-4337  
Outside the US, call 206/487-4333 • Represented in Canada by S.F. Marketing • 800/363-8855  
World Radio History

# INDUSTRY NOTES

New hires at Paramus, NJ-based **Crest Audio Inc.**: **Andy Simmons** was appointed professional markets manager, and **Crest Consoles** appointed **Taz Bhogal** to the position of design engineer...**Carver Professional** (Lynnwood, WA) appointed two new reps: **Piper Associates** will handle New England, and **RPM Sales** will represent **Carver** in Texas, Louisiana, Arkansas and Oklahoma...**Bryston** (Peterborough, Ontario) was appointed North American distributor for UK-based **Professional Monitor Company's** loudspeaker products...**Elpitha Votisis** is the new vice president of finance at **DOD** (Sandy, UT). She is spearheading financial duties for the **Harman DOD** and **dbx** groups, made up of **Allen & Heath**, **dbx**, **DigiTech**, **DOD** and **Spirit**...**Beaverton**, OR-based **Tektronix Inc.** appointed **David Carroll Electronics Inc.** as its rep in Northern California and northern Nevada...**Sabine** (Gainesville, FL) appointed two new reps: **Audio Associates** is handling Virginia, Maryland and Delaware; and **Excellence Marketing** is covering North and South Dakota and Minnesota. The company also named **JMS Marketing** and **Online Marketing** its 1994 reps of the year...**Nevada City**, NV-based **NVision** appointed several new international sales reps and distributors, including **Boxer Systems Ltd.** in the UK; **C.V.E.** in Italy; **f.f.d. Vertriebsgesellschaft** in Germany and Austria; **Gerrit de Jonge bv Axel** in the Netherlands, Belgium and Luxembourg; **IMMAD Broadcast Services** in eastern and central Canada; **Lynx SA** in Switzerland; **REA/Elda Video** in France; and **VideoCad AB** in Sweden. Domestically, **NVision** appointed **Studio Supply Company** (in Tennessee), **The Video Production Systems Co.** (in Florida, Puerto Rico and the Caribbean) and **Washington Professional Systems** (in the greater D.C. area) as sales reps... **Jeff Van Ryswyk** was promoted to vice president of sales and marketing at **White Instruments**, Austin,

TX...Three new vice presidents at **Avid Technology Inc.** in Tewksbury, MA: **James J. Ricotta** is VP, Post-production Products Group product management; **John S. Robotham** is VP, New Media; and **Robert E. Sullivan** is VP, Business Solutions Group...In preparation for a planned staff expansion after a 100% increase in sales in '94, **Hughes & Kettner** moved to larger facilities at 1848 S. Elmhurst Rd., Mt. Prospect, IL 60056; (708) 439-6771; fax (708) 439-6781. The company recently hired **Eric Shea** as managing director of U.S. operations...**Dallas-based Russ Berger Design Group** has hired **Robert Traub**, AIA...**Pop Rocket** moved to 1320 7th Ave., San Francisco, CA 94122...**Kurt Schwenk** was hired as vice president, film applications, at San Francisco's **Dolby Laboratories**...**Distributor QMI** (Hopkinton, MA) appointed **Mid-America Marketing Associates Inc.** as its exclusive rep in Illinois and Wisconsin...**Digital Designs** moved to 912 N. Classen Blvd., Oklahoma City, OK 73106; (405) 239-2800; fax (405) 239-7100...**Radius Inc.** (Sunnyvale, CA) appointed **Laurin Herr** to the position of vice president of business development and strategic relations...**The National PC & MIDI Databank** is a BBS that can be reached at (708) 593-8703 or -8724...**Rental, sales and installation company Sound Associates** opened a new office in Atlanta at 506-F Amsterdam Ave., NE, Atlanta, GA 30306; (404) 724-9050; fax (404) 724-9891...**The Banff Centre for the Arts** in Alberta, in conjunction with the **International Computer Music Association**, will host the 21st annual **International Computer Music Conference**, September 3-7, 1995. Call (403) 762-6669 for more information...**Skip's Music and Sound** is holding its fifth annual **Music and Sound Expo** on February 18-19 at **Red Lion's Sacramento Inn** in Sacramento, CA. More than 100 manufacturers will be exhibiting. For more information, call **Joe Lamond** at (916) 484-7575. ■

—FROM PAGE 12, CURRENT

co-organizer of this year's Beijing show, scheduled for May 9-12. "Both parties felt that keeping B&I involved during the transition was of paramount importance to all of our customers," said **Arthur Spurdle** of B&I.

**David Korse**, president of **IIR Exhibitions**, says, "We are proud to add these two important international trade exhibitions to our portfolio of events. We have great respect for what B&I has accomplished and will do our best to continue their tradition of excellence." The seventh **Pro Audio & Light Asia** will take place at **Singapore's World Trade Centre** on July 12-14.

## LDDS AND IDB COMPLETE MERGER

At separate meetings, shareholders of **LDDS Communications Inc.** and **IDB Communications Group Inc.** approved the proposed merger between the two companies.

**LDDS** is one of the nation's largest long distance carriers, providing telecommunications services through its digital network to business and residential customers. **IDB** is an international telecommunications leader.

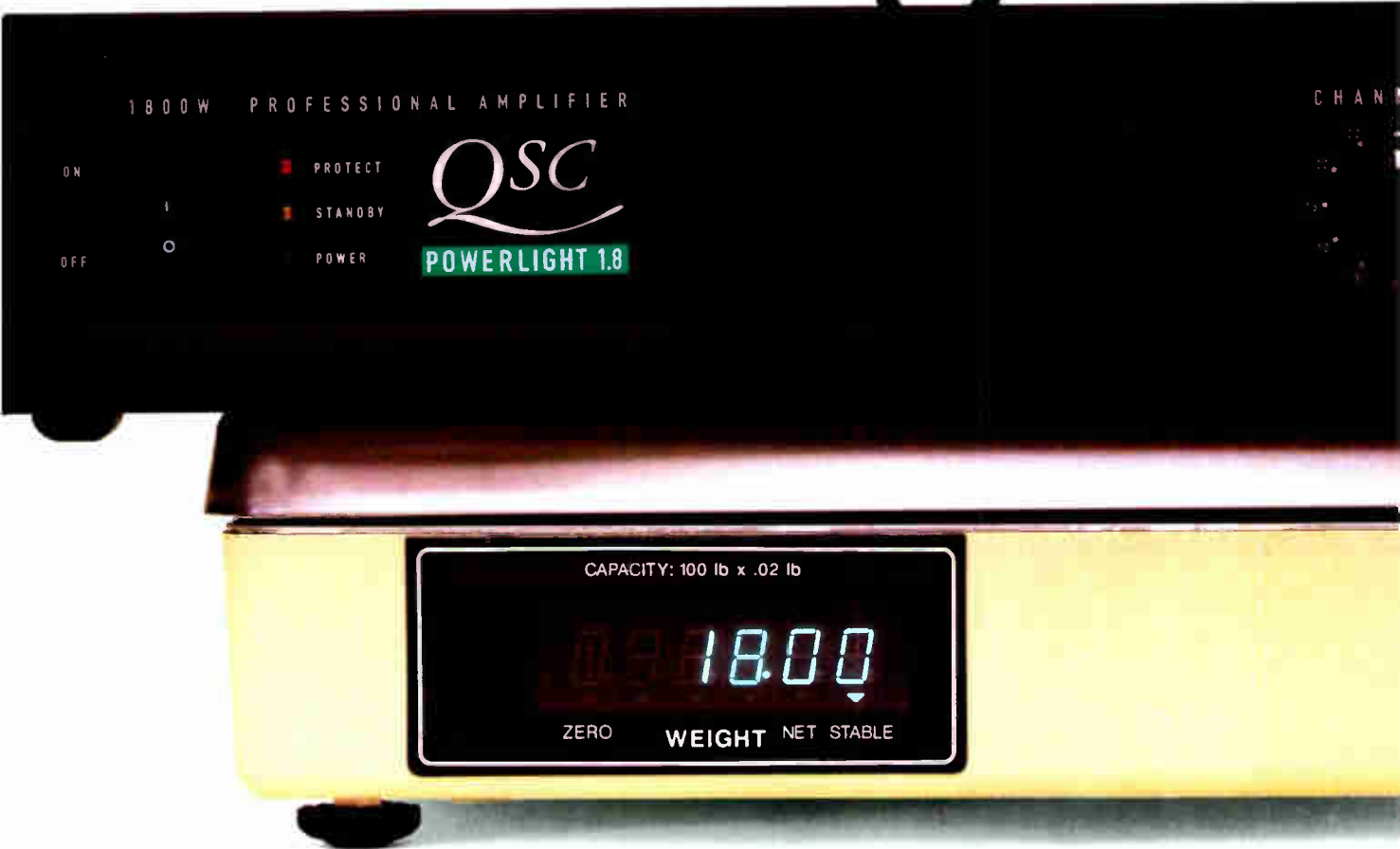
## FULL SAIL TO OPEN TEN NEW SUITES

**Full Sail Center** for the **Recording Arts** in **Winter Park, Fla.**, is expanding its facilities, opening ten new labs and suites. The school is debuting a new six-station lab environment that will feature the **Roland DM-80** digital audio workstation at every position, and **Room Roland**, a **Roland** suite featuring a full range of **Roland** equipment.

For video applications, **Full Sail** is opening four new media suites, one equipped with a **Montage** workstation, one with a **Grass Valley 100** system, and two dedicated **Newtek Toaster Suites**. The school is also upgrading its **Tascam** lab with six automated **M3700** consoles and additional **DA-88s**, and adding a room of **Macintosh 6100** **Power PCs** to its computer lab. ■



# PowerLight.



## Uncompromised Performance In A Light Amp.

The new PowerLight™ Series of Professional Amplifiers from QSC are the first light amplifiers to deliver performance uncompromised by lightweight technology.\*

PowerLight Amps sound incredible, especially on the low end, due to advanced power regulation and "loss-less" switching. They work reliably under grueling road conditions with QSC's rock-solid, drop-tested construction and the best protection circuitry available. And, with unequaled thermal capacity, PowerLight amps deliver excellent 2 ohm performance.

Three models are available. PowerLight™ 1.0, 1.4 and 1.8—1000 watts, 1400 watts and 1800 watts respectively (at 2 ohms, both channels driven). Each amp weighs in at only 18 lbs.

LOAD IMPEDENCE	PowerLight 1.0	PowerLight 1.4	PowerLight 1.8
2OHM*	500 Watts	700 Watts	900 Watts
4OHM**	300 Watts	500 Watts	700 Watts

\*1kHz, 1% THD, TYPICAL. \*\*20Hz to 20 kHz, 0.1% THD

Each amp is covered by QSC's 3 Year Warranty\*\* and highly efficient service department.

We always believed that the promise of switching technology should be more than lost weight. So we made high performance a mandate. Groundbreaking amplifiers are the result. High quality sound. High reliability. Very low weight.

If you've been waiting for a light amp without compromise, see the PowerLight Series at your QSC Dealer, or call 714-754-6175 for a free brochure.

Your wait will be rewarded.

**QSC**<sup>®</sup>  
A U D I O

\*The high performance of PowerLight Amplifiers is due to QSC's PowerWave Switching Technology™ \*\*A total of 6 years coverage is available for PowerLight Amplifiers with QSC's exclusive 3 Year Extended Warranty. PowerWave Switching Technology is a trademark and QSC is a registered trademark of QSC Audio Products, Inc. 1675 MacArthur Blvd., Costa Mesa, CA 92626 USA 714-754-6175 Fax 714-754-6174.

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World Radio History

**Your shrink doesn't listen to you.  
Your boss doesn't listen to you.  
Even your dog doesn't listen to you.**

**We hear you.** Introducing the new standard in synthesizer modules: the Roland JV-1080. The module which has the features you've been asking for and some you haven't even imagined yet. For starters, it has 64-note polyphony, is 16-part multitimbral and comes with 512 of Roland's newest and hottest patches. It's also ultimately expandable, taking up to four SR-JV80 Series 8 Mbyte expansion boards simultaneously. An additional SO-PCM Series wave card can be added which gives you a whopping 42 Mbytes of internal ROM. That's over 1500 Roland patches at your fingertips. It's more performance power than was possible ever before.



With the optional M-512E Memory Card, you can store an additional 128 user patches.

We heard you when you asked for effects. In addition to global reverb and chorus, the JV-1080 has 40 insert effects combinations including rotary, dual pitch shift, tempo delay which syncs to MIDI clock, Hexa-chorus, distortion, and even multiple effects like overdrive/flanger.

If that weren't enough, we made it easy to use and gave it a General MIDI mode so it's compatible with the world of Standard MIDI Files (SMF). You asked for extensive synth editing parameters. We heard you. So the JV-1080 has 10 advanced tone structures and even LFOs that sync to MIDI clock.

But perhaps best of all, the JV-1080 has a surprisingly affordable price. Which should be music to your ears.

Haven't you waited long enough? Visit your nearest Roland dealer today and ask to hear what you've been asking for all along: the JV-1080. Or call (800) 386-7575 and select 3 to receive an exciting, full-color brochure. Think of the JV-1080 as our way of letting you know we hear you. Loud and clear.

Roland SUPER JV SYNTHESIZER MODULE JV-1080 4x EXPANSION

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PHONES

1-8  
9-16  
PALETTE PARAMETER  
SETUP

1/9 2/10 3/11 4/12 5/13 6/14 7/15 8/16  
TONE SWITCH 2 3 4 1 2 3 4  
PART SWITCH SELECT  
COMMON EFFECTS CONTROL WAVE LFO PART TUNE  
COMMON EFFECTS CONTROL WAVE LFO PART TUNE

GM SYSTEM 11 UTILITY EFFECTS ON/OFF  
PATCH RHYTHM  
PRESET EXP C  
A B C  
MEMO CARD DATA ROM  
POWER  
JOB CABS PRESET EXP  
MESSAGE  
POM CARD  
DATA L

**Roland**

Roland Corporation U.S., 7200 Dominion Circle, Los Angeles, CA 90040 (213) 685-5141  
Roland Canada Music Ltd., 5480 Parkwood Way, Richmond, B.C. V6V 1M4 (604) 270-8826. COMPUSERVE: GO ROLAND

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World Radio History

by Stephen St.Croix



ILLUSTRATION: MIKE TOFANELLI

## CAN YOU CDRED LIGHT?

**S**o, I'm cruisin' along in my monster cool super speedster nitrous-methanol 22 PSI twin-turbo 3000, with the new Buddy Guy CD pouring out of the 8-subwoofer-assisted fiber-optic-wired 13-channel tune-providing system, and I hand the IR remote to the poor unsuspecting passenger/victim who is helplessly five-pointed into the seat next to me. "Push that oval button that says 'caution' under it," I say, as I quietly downshift a gear or two. I see the concern in her eyes, the tension in her white knuckles, and I know it's now or never. "Push it!" I yell over the huge walking bass intro that already feels pretty much like we are being rear-ended by an 18-wheeler, four times a second. I watch, she hesitates. "Okay," I think to myself, "If we're gonna wait, we're gonna make it something worth waiting *for*." I flip

the little red switch that turns on the alcohol-assisted injector banks, changes the turbo boost curves and warns the two 68020-based fuel/oxidizer ratio controllers to take one last air temperature and exhaust oxygen reading before hell itself is created under the hood. I'm not worried about cops; the car is already red, and once I'm a second or two into it, the additional red shift should make me invisible to any car not time-compressed to at least 5 billion tons. You followin' me here? So anyway, using her left hand, she finally uncurls the index finger of her right and reaches for the gray rubber button. My foot is poised over the drilled-out titanium accelerator pedal. She hits the button, I floor the it; world squishes down to an endless cylinder behind me.

Things get very noisy and very

# IF YOU'RE LOOKING FOR A MASTERING FACILITY THAT IS FIRST IN TECHNOLOGY AND SERVICE, MAKE ONE LAST CALL TO QSI.

**QUINTESSENTIAL SOUND BECOMES AMERICA'S FIRST AUDIO FACILITY TO INSTALL COMPLETE CEDAR II SYSTEM**  
Quintessential Sound, one of America's premier facilities for the restoration and re-mastering of early

For re-mastering, restoration, or other advanced audio processes, one of several concerns in choosing a facility is which noise removal system to use: NoNOISE™ or CEDAR™

Of these preeminent systems, no other facility in the USA affords its clients the elegant and simple solution of *both*.

Whether you need the speed and efficacy of CEDAR, or the exacting

manual control of NoNOISE, QSI offers you either discrete system or *any combination of the two*.

In one re-mastering suite you will find the full implementation of the Sonic Solutions NoNOISE system—in the other, the complete CEDAR Series II line of real time restoration processors. These include the DC-1 De-Clicker, the CR-1 De-Crackler, the AZ-1 Azimuth Corrector, and the brand new DH-1 Real Time De-Hisser.

While the technologies and facilities of QSI are a paradigm of the art and science of audio, they are matched only by the dedication of its staff—accomplished engineers who are musicians themselves. Having re-mastered every conceivable style of music from Cab Calloway to Glenn Gould, our engineers strive to capture every nuance of the original recording, and to provide you with an incomparable transcription of a musical event.

QSI can work from all manner of early recording formats: tape, vinyl, acetates, verticals—even cylinders. The QSI client registry includes some of the most demanding, and *satisfied* members of the audio industry and music community—recording and broadcasting companies, libraries and foundations, and private

collectors worldwide. Our mastering suite was designed by award-winning acoustical designer John Storyk, and features one of the finest audiophile monitoring systems in the world, including the Wilson X-1 Grand SLAMM loudspeakers. Our on-site *direct-to-disc* CD mastering system allows us to produce *pressing plant-ready* final optical masters on-premises. QSI stands ready to assist you through the exacting



Part of our complete CEDAR II System

processes of transcription, re-mastering, and pressing. We also provide premier editing and mastering services for new Compact Disc releases.

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Quintessential Sound, Inc. / 1600 Broadway · Suite 610, New York, NY 10019-7485 / 212.586.4200 / FAX: 212.586.5339

quiet at the same time. Exactly when she pushes the button that kicks in the other three-deep cycle batteries and the four differential subwoof power amps, I begin the violent yet effortless departure from our 88mph minimum-reference roll-on cruisin' speed.

You ever been on a DC-10 late at night, when the crew wants to get home, and you are the only passenger aboard, and it's a short flight, so they are only carrying a few thousand pounds of fuel and zero luggage weight? And then they find out that you are a pilot, and everybody is in a good mood, and the captain says, "Hey, you might like this; you ever felt what one of these babies can do when you force a full-thrust locked-brake, minimum-runway take-off with an empty plane?" I love when that happens. Well, that's what this Mitsu feels like when you squeeze it, only more.

I take a casual glance over to her, and she is either very impressed or catatonic. It don't matter. I reach over to *my* remote (conspicuous consumption can be endearing if they think they can fix it in the mix) and

hit the 20dB attenuator, bringing the cabin SPL down to a reasonably healthy 110. I point to the speedo so that I know she reads it and continue at this speed, calculated to impress while remaining just under the point of complete loss of control. Now, to show that what is scary to her is normal to me, I start some real casual patter "One of my cats has diabetes, and I have to give her two shots a day." "You give your cat shots?" she asks in a wavering voice. "How can you do that? My cat freaks out if I even try to give him a pill..." "Well, it's like this; you take the cat, stand him on a table facing left. You load the syringe and hold it in your right hand, just behind the cat, with the needle pointing at his rear. Then with your left hand, you show the cat a pill. He sees the pill and backs up directly into the needle. Done." Meanwhile, all the time I know we are comin' up to a real scary corner that will either make me a legend or kill us both, when this fax comes in from Ricoh...

Well, since my interest in impressing the locals with violent speed is only a superficial hobby, and my true dream is to bring you relevant infor-

mation that will help you on your own personal journey through the digital maze, I instantly stopped the car, politely asked my passenger to get out and read the fax. They wanted me to know that they, too, make media and recorders, and that they have a 2X coming along soon, just around the corner, so to speak. Okay. The fax was well-written, so I called them. In that conversation, direct references were made to a concept that was emerging in my ongoing research: that single-speed drives don't work. Now, *Ricoh* didn't say they don't work, but they did say that error rates are often problematically high when using 1X recorded CD-Rs as mastering sources. Basically, because the majority of mastering houses reject the entire project if *any* E32 errors show up, and because recording with a single-speed CD recorder apparently almost always produces such errors, you really can't get away with using them as source recorders for glass mastering.

While I was thinking this over, I got a call from Elektroson B.V., which publishes a CD-R package named GEAR. They took it personally that I said in a recent bio that I didn't like it when gear

## The longest lasting battery\* for the home...



doesn't work! What's this world coming to? You can't find a place to drive fast anymore, and you can't say anything without scaring somebody. I guess we need more roads and more words in our language. I think it's your own damned fault if you name your product the same word that is generically used for equipment. But they sent me their package, and it does look versatile and interesting...More later.

Then I got a package from Pauler Acoustics (a German mastering house). They sent along pages of BLER and E32 error printouts showing that after exhaustive research, the only setup that they have found that can successfully record Red Book CD-Rs is the Sony CDW-900E with the Sonic Solutions software. He further recommended that I pick up a Koch CD-tester so that I could see for myself. This is endless.

Wait! It's even more than endless. Minutes ago, I got a call back from Doug Carson, whose glass-mastering packages are in the vast majority of U.S. houses today. I have known of him for some time now, and to say that he clearly has the dominant market share is a severe understatement.

I had originally called him because his name kept coming up whenever the subject of using CD-R as a mastering source was discussed. I wanted to ask him about E32 errors—what is causing all the stories about why they exist in such huge bursts on some CD-Rs, and what it means. Some of what he had to say surprised me.

He explained that "write at once" machines like the Sony never turn off their lasers, so they don't generate the garbage that is always generated when lasers *are* turned off. You see, error-recovery encoding routines spray the data all over the place, with certain redundancy, so that a single scratch or ding on the mass-produced disc might be recovered by the player reading a copy of that obscured data from an alternate chunk written just for that reason. Well, there is also a "checksum" that verifies that all this spraying is okay, and at any given point, some of the data needed to satisfy a read may still be ahead of you. Now, if the writing laser turns off, the data sitting in the buffer waiting to be sprayed onto the disc a little later is never written. But the player is promised by the data already

written by the encoding software that it is coming soon. The player believes this, and it freaks when the data isn't there—so a giant burst of E32 errors magically appear. This in no way reflects bad media or a bum recorder; it's just the way it is. Recorders that are not "write at once" *do* turn off the lasers during the muting in between songs, or in what is properly called the link areas, so these garbage bursts do appear there. LOGO: Laser Off, Garbage On.

So the newest Carson software has an optional function that checks for the location of the link areas, *ignores* the E32 error bursts that appear there and replaces them with what you really want: digital silence. Makes sense to me! Of course, the operator is still notified of any E32s that are *not* in the link areas and has the choice of aborting, or if the user really needs the money, letting them through, thereby burying them in the error-encoding datastream for all time. Very nasty.

This would seem to pretty much nullify the observation that only the Sony CDW-900E with the Sonic Solutions software (PMCD) can produce



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valid discs. (I guess now he will rescind his gracious invitation to visit him when I am next in Germany.)

So what is this all about anyway? We all know that errors are unacceptable and that you can't expect a mastering house to go ahead with a project that they receive with any (now any non-link area) E32 errors. But some people think that if these errors are passed along and printed into the glass master, and if they are small enough so that the final audio players can recover, it is not so critical. Well, it *is*, because each player

will interpolate for the damaged data a little differently. It comes down to this: A master with no errors will result in discs that sound the same when played on different players, while a disk with errors may sound quite different from player to player.

So I made a disc with errors and another one without and tested all this out. It is true. Various CD-Audio players' interpolation routines are so dramatically different that it is actually quite easy to hear them. This is much more pronounced than the differences in modern DACs! And the error-free CD? The playback differences were so subtle that it was obvious that we

were hearing DAC designs and nothing more. Interesting, huh?

What other critical information did I gather today? Well, a CD is one single 4.8-mile long data spiral. Man, I hope the airlines don't find this out, because then they would realize that the length of the data track almost exactly equals the preferred long-range cruising altitude for commercial airliners, and they might get paranoid like they did because CD clock rates are the same, and ban CD players altogether.

Enough is enough! I was planning on covering some nice software this month and going into the CD-R hardware and media weirdness next time, but with all this noise (and much, much more), I guess I'll do it now. I know *one* person who I think has access to enough knowledge to be useful, and who has the real-world, hands-on experience to back up his observations, and who will tell me the unbiased truth, and whom I really trust: Digidesign's Evan Brooks. Even though he wears little tiny round 1965 junkie wire-framed sunglasses with totally opaque green lenses at 11:00 at night, he really *is* the guy when it comes to this. He actually called me once and discussed the intricate Hyperdweeb details of the transition from analog to digital cellular phones for one hour, coast-to-coast before he bought one—so now I'm not the only guy I know who has done this. He has that sickness, the one where he needs to get it *right*. He's perfect for this question, so I made a note to call him about it, and before I could, he called and told me that he had read my last column on the subject, and that there were some things that I should know.

And even though Evan didn't make me wait, I am going to make you wait. I have to, I am out of space. So, please tune in next month for "Red Light Reading, Part Deux," and find out what Evan said, along with some other spooky stuff. As soon as I modem this column to *Mix*, I am off to New York, where MTC has promised a rare look at some very revealing media test results. ■

*Stephen St. Croix apologizes profusely for the unusually high actual information content of this month's column. He asks that you bear with him until he returns to his usual barely relevant, opinionated alternate realities.*

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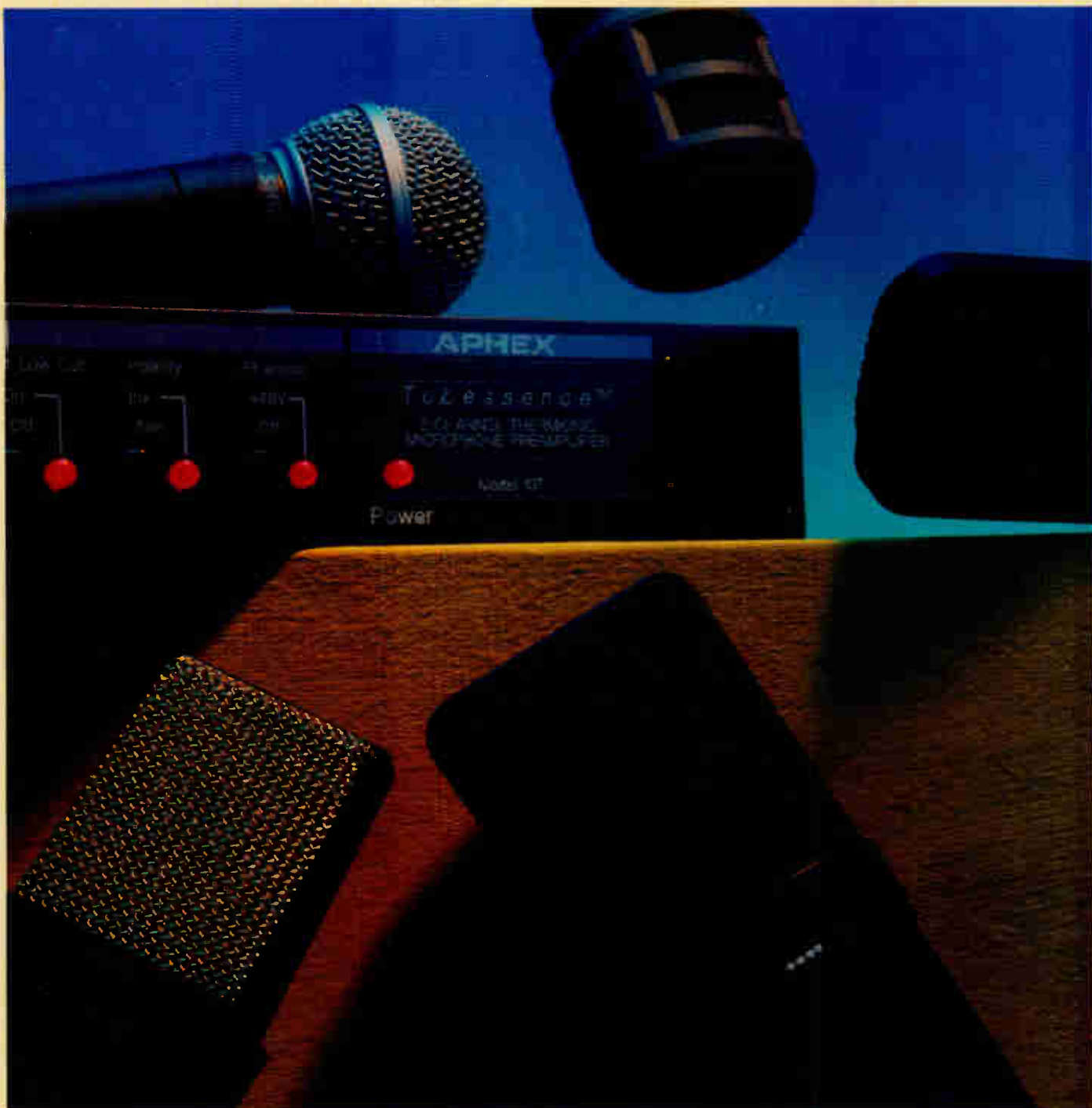
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by Stephen Anderson

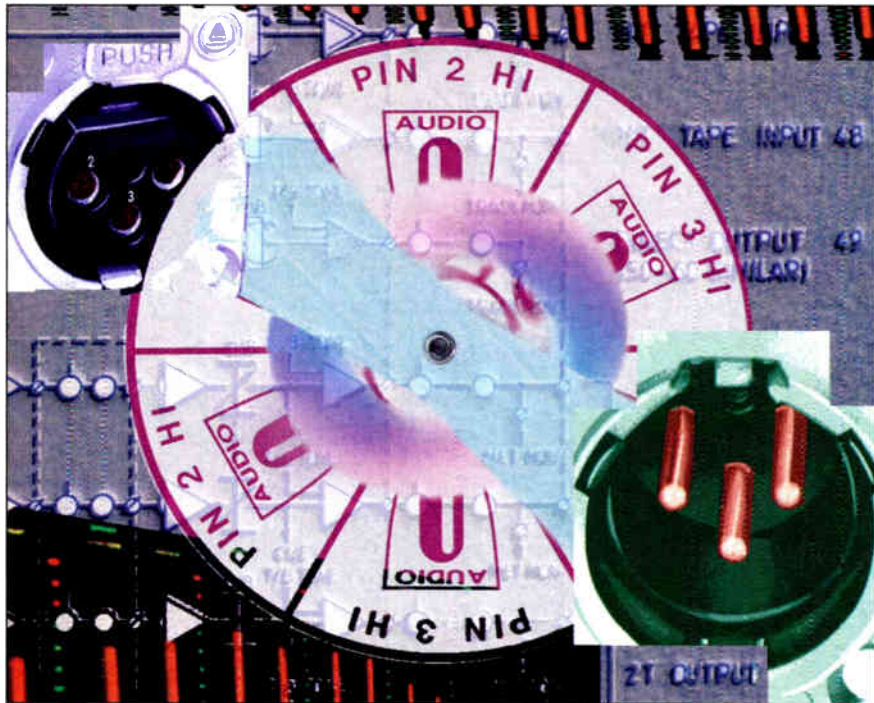


ILLUSTRATION: MARY DALY

# TOP TEN TECHNICAL COMPLAINTS

**T**he City. Los Angeles. I'm a tech, studio systems designer and installer, and maintenance person. I just finished wiring and installing yet another recording studio. I like my job.

We have a larger concentration of world-class recording facilities and industry talent here than anywhere on the planet. I know most of the other techs in the area, personally, by phone, or at least by reputation. And we talk and share horror stories. For the most part, we share the same gripes about manufacturers of pro audio equipment. (We have another list of complaints dealing with clients, which we'll get to at another time.) I decided to present my list to the manufacturers in hopes that they

will, in the words of *Star Trek's* Captain Jean-Luc Picard, "Make it so!"

## 1) XLR: PIN 2 OR PIN 3 HOT?

Come on guys, what's the deal? I know it's hip to be a rebel in rock 'n' roll, but the IEC, AES, EBU, SMPTE, ANSI and NASA all say Pin 2! (IEC 268.12, AES DRAFT AES14-299X). And this is not new, this is old news. Okay, so I don't really know about NASA, but I bet they would say Pin 2. I asked a salesperson once why his otherwise respectable company still used Pin 3, and he said, "Well, we just don't get any complaints." Sure you don't. Because the client doesn't know, hires me to interface the unit, or is in too big a hurry hooking it up

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and using it to be bothered to call or write. But here's a flash for the end-user: It costs more for the installation! I have to take time to read the owner's manual cover to cover. Even then, I sometimes can't find out (see #5). And when the manual is missing, as in the case of a lot of used gear, I consult my trusty list compiled over the years of who does it which way, or take the time to run signal through the unit and check with a phase meter, scope or other means. All this takes time. Please, make it easy on us. We use NTSC for television, 44.1 for CDs, red means stop and green means go. Why can't we all just get along with Pin 2?

## 2) BALANCED INPUTS

Balanced, or differential inputs, have one very important trait called common mode rejection. This means the ability to reject, to some degree, any signal present on both input legs and to pass only signals that are "differential." There are many variations of this concept, using both transformers and active circuits. There are also opinions on how to optimize for matched impedance vs. balanced gain, but that's not important right now. I'm going to go out on a limb and say that *any* balanced input is better than an unbalanced or single-ended input, especially in a grounding scheme that demands lifting input shields. I'm going farther out on that limb by saying that *any* piece of equipment designed for professional use should have balanced inputs. I have tried and tried and can't come up with a single reason today for unbalanced inputs. Cost can't be the issue. You have the connector and the input stage op-amp already, so what's the problem? I know James Demeter with his wonderful tube limiter would disagree, but it would be even cooler with a transformer-balanced input. Balanced outputs would also be really neat, but since most of the benefit is accrued on the input side, I'll settle for that. Which brings me to the next point.

## 3) BALANCED INPUTS, PART 2: THE OUTPUT SIDE

What's with you folks who balance some inputs and not others? I refer specifically to the console-makers who have servo-balanced, cross-coupled outputs everywhere but have

unbalanced insert returns, or even 2-track returns! I bet most of you never had to interface one of your products in the real world. Cross-coupled servo whizbang outs are almost cool, a little unstable and cranky when feeding long cable loads with lots of capacitance, but potentially useful. Unless you feed them into an unbalanced input! Yes, I know that's what's supposed to be the advan-

adapter cables to make a piece compatible everywhere in a multiroom facility. This would save money and hassles for the end-user.

## 5) 1/4-INCH JACKS

I know some of you manufacturers will continue to use 1/4-inch jacks, but you could at least use Tip Ring Sleeve jacks for all outputs and inputs, balanced or not, with unused ring con-

I DECIDED TO PRESENT MY LIST TO THE MANUFACTURERS IN HOPES THAT THEY WILL, IN THE WORDS OF STAR TREK'S CAPTAIN JEAN-LUC PICARD, "MAKE IT SO!"

tage, but wait: What really happens is that if the cable is longer than two feet, the return sense on the side being pulled to ground has enough impedance that the gadget is unstable at high frequencies. I know, I know, so what if it oscillates, it's ultrasonic, you can't hear it. If a cross-coupled, "self-correcting" output will ever likely be connected to an unbalanced input, then it needs to be permanently unbalanced with the shortest possible ground current return path, right at the output connector. This is the only way to guarantee stability. Otherwise, it will oscillate, maybe not now but certainly later when plugged into a different unbalanced piece of gear. And now, the expensive servo output is a total waste, all because some people believe in balancing only some inputs.

## 4) XLRs

Unless a piece of equipment needs 39 inputs and outputs in a single rackspace, please use XLRs, especially since we're all going to use balanced signals now. In manufacturer quantities, the cost increase would be no more than a buck or two (I checked 10,000 and up prices on circuit board mount, 1/4-inch jacks and XLRs). Yes, I know you want to appeal to the studio owners who can buy all their gear at the local music store and use off-the-shelf molded cable, but 1/4-inch connectors are simply not as good or reliable as XLRs. And because many pro studios use XLRs for all tielines on panels and in effects racks, this simplifies the cabling requirements. We wouldn't have to build XLR to whatever

tacts taken to ground along with sleeves. This way, we could use TRS plugs everywhere in an installation, wired in balanced fashion, and let the equipment take care of terminating low side wires. Yes, I know there would still be other grounding issues, and TRS jacks and plugs cost more, but it would simplify an installation in terms of labor and research.

## 6) DOCUMENTATION

Which brings me to my next gripe. I am tired of hunting through pages and pages of text in the hope of finding reference to audio connections for some equipment and then sometimes not finding any mention at all! Sure, I can see that the ins and outs are 1/4-inch, but are they balanced or not, +4 or -10, or what? A graphic on the back with connector information, either silk-screened or a stick-on label for the smaller companies, can be a lifesaver. Some companies also become forgetful with information in the manual, like, is the timecode input balanced or not, and what is the range of level the TC input will accept? But you know the four-color graphics, racing stripes, blinking lights and front-panel menu that includes Swahili as a language option are all present and accounted for. Priorities, kids.

## 7) 1/4-INCH TRS INSERT SENDS AND RETURNS

I did a service call a few years ago on a live rig because the engineer was upset. Seems he plugged his new limiter into a TRS insert jack and, upon dialing up only 10 dB or so of output gain post-limiter, all of a sudden he had red lights and meters

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flashing all over the place. He didn't understand what was causing this oscillation and overload. Well, I did. A single piece of shielded-pair went from the channel module to the insert jack—red wire was the send, black wire the return. A 10dB gain differential, in phase, on these two wires in the presence of cable capacitance, caused the thing to go unstable. And don't tell me we should bandwidth-limit the send and return stages to 20 kHz or so. This is a Band-Aid and you know it! I know most companies have found this out now and are using ribbon cable, but we still have two other problems. First, no possibility of balanced returns. Second, it means custom cables unless permanently wired to patchbays, and you know what Murphy says about custom cables. You will break them and lose them, but you will never use them. I know, sheet metal and silk-screening costs money, \$0.49 for another jack, it all adds up. But it saves the user money and hassle and lets them inventory fewer standard cable types.

### 8) WALL WARTS

Rather simple here, only a few requests. If you insist on using them, please do three things.

- Buy the style that has an actual-length of AC cable, rather than pins sticking out of the box. It won't take up two holes in an AC power or Plug-mold strip. This also means that we can experiment with placement in a rack, because...
- These unshielded suckers generate hum fields! Please use shielded style. They are available and don't cost that much more.
- Please use a more reliable connector rather than an 1/8-inch mini phone plug. Especially on the road, no matter how you tie-wrap the cables, they still come unplugged. My favorite, which some companies do use, is a circular DIN-style. Cheap, and good friction fit. Ask any MIDI nut.

### 9) INTERNAL CABLING

I used to work for a retailer who sold a great line of midpriced consoles. Did everything a mixer could want. But when it came to maintenance, it was another story. After unscrewing a module, you could pull up the near

side by three inches, while the far end would hardly move. With 1.5-inch module spacing, they had included a generous three inches or so of ribbon between each module. By the way, the circuit boards were so close to the edge of the module that you had to power down, yank the module, fit the ribbon extenders—which only covered some of the signals—and then power up and try to troubleshoot.

I worked on another console the other day, a real little powerhouse—32 inputs, 64 inputs in Mix mode, and built-in VCA automation with a 3.5-inch floppy drive, under \$15,000. Very well-designed for the engineer and the tech. Except for the computer. It's a four-board sandwich with very short ribbon cables (many of them), and they can be neither separated nor pulled out of the console. I asked the factory tech how he worked on these. His answer: "I carry spare boards and swap them until I fix it." Doesn't that translate in French to "Let them eat cake"? Every factory designer should be forced to do a field repair of his/her creation at least once. I guarantee we would see better designs with more wire service length.

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## 10) SCHEMATICS

Even if you can't afford to label the circuit board, at least label the schematic. I worked on a midpriced automated console yesterday with an automation problem. It had schematic designations, i.e., "U4," but no function notes, no board designations and no connector pin-outs. I told the client it was like looking at a road map with no cities labeled and no freeway names. And it took me longer to troubleshoot because I had to discern the function of each IC and signal path.

## BONUS: OBSCURE PARTS

A well-known tape machine manufacturer uses a three-pin threaded connector for AC power entry, not the world-standard, IEC three-pin connector. When it fails, and it does, you can only get it through the manufacturer for about \$13. Another analog tape machine has meter lamps that are only available from Europe for about \$4 each. A certain mixing console manufacturer used a custom five-deck pot assembly for its EQ, then stopped stocking the part after only six years. Another console manufacturer used three different vendors for channel-mute switches, each requiring a different lamp. When a client calls and asks me to order lamps, am I supposed to just guess?

The list goes on: I see custom-potted hybrid assemblies costing between \$20 and \$50, where two quality FETs or 5534s would do fine; transistors with no known cross-references instead of a 2N3904 or a BC159 (did your supplier get a great deal at a closeout?); pots with mounting nuts for which no manufacturer makes a wrench.

I know in our quest for sonic perfection that we all discover new parts and devices we feel compelled to use. I just get the feeling after doing this for so many years that some manufacturers try to be clever and devious, and dare I say it, want a little extra profit.

Thanks to Peter Igel, Mark IV Pro Audio, for the suggestions. ■

*Stephen Anderson took his guitar amp apart as a teenager, and still hasn't put it back together. Instead, he's been doing studio installation, technical maintenance and consulting in the Los Angeles area for the past 17 years. He can be reached at (714) 572-1622, or e-mail 73043.3562@compuserve.com.*

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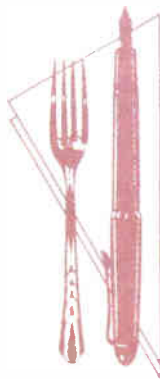
by Mr. Bonzai

# SHELLY YAKUS

## GOLDEN EARS



PHOTO: MR. BONZAI



Shelly Yakus, chief engineer and vice president of A&M Recording Studios, is believed by many of his peers to have among the best ears in the business. His special sensibilities have been heard in the work of hundreds of artists, including U2, Don Henley, Dire Straits and John Lennon. Born the son of a Boston studio owner in 1945, Yakus began his serious audio explorations at the legendary A&R Studios in New York during the mid-'60s. Assisting such greats as Phil Ramone and Roy Cicala, he quickly absorbed their diverse talents and within three years was engineering Van Morrison's *Moondance* and The Band's *Music From Big Pink*. In 1970, he moved across town to The Record Plant, sculpting sound for ten years during the studio's peak years of hitmaking.

During this period, Yakus teamed with producer Jimmy Iovine for a relationship that created some fine records with artists such as Tom Petty, Stevie Nicks and Bob Seger. In 1985, Yakus and Iovine were asked by Herb Alpert and Jerry Moss to resur-

rect the aging A&M Recording Studios in Los Angeles. Ten years later, the work continues, as A&M consistently attracts top artists such as the Rolling Stones and Bruce Springsteen. Art is abundant in this unique environment of high technology, vintage tools and earthy comforts. Join us now for some Pakistani take-out in an office adjacent to the construction zone.

**Bonzai:** So, you're building a new room?

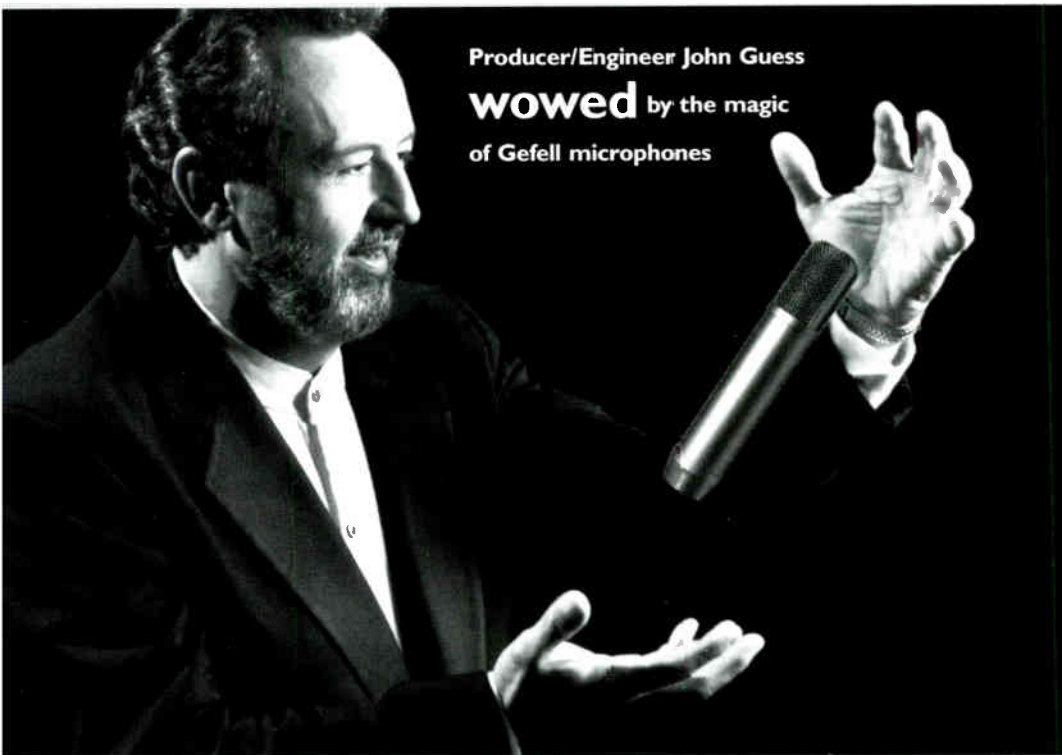
**Yakus:** Yes, a room for Dave Collins, our chief mastering engineer. Dave's become so popular that we felt we had to build a room that was equal to his ability, instead of the room he's been working in, which is about the size of a phone booth.

**Bonzai:** How many rooms do you have here at A&M?

**Yakus:** Five studios and six mastering rooms, and one tape copy room with 130 real-time machines, plus assorted DAT machines and 1630 players. The room is divided so that we can do voice-overs on one side and duplica-



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tion on the other.

It's really one of the most interesting rooms we have. Whenever you make cassette copies, how do you know that those machines are actually recording? Our techs invented a computer program, which in 60 seconds allows you to evaluate 60 cassette decks over the speakers, with a counter on a screen. If you hear something muffled, or one side of the stereo drops out, you know which deck is being sampled. You shut that machine down, and the computer skips it in the scanning. The operator making the labels can listen as he works to all of the cassettes being made.

**Bonzai:** Are these limited-edition cassettes?

**Yakus:** The record companies call them pre-release cassettes, and we do runs of anywhere from ten to 3,000. Because these are real-time and the quality is so good, the demand is high from the major labels—these are the advance releases for the key radio personnel and record company people working the albums. These cassettes are used to raise excitement, and the artists want them to sound as good as it does in the studio.

**Bonzai:** Is there a favorite room at A&M?

**Yakus:** Each room has a different personality, and everyone has a personal favorite.

**Bonzai:** Is Studio B the room that was never finished?

**Yakus:** Yes, and here's why: The studio was almost done and we needed to do some overdubs. The control room was finished, and we just wanted to set up some drums and have the workers stop for a few hours. There were stacks of plywood, the floor was bare concrete, and Herb had a large crystal hanging near the wall. One hit on the snare drum and we realized that we had to leave the room as it was. We just didn't want to mess with a perfect sound.

Designers are very "finish" conscious, because they want it to be their visual trademark. I told the architect, Vincent Van Haaff, that we wanted to stop working on the room, and he thought I was nuts. We discussed it, and he just did minimal surface treatment on the ceiling. We tried sanding the floor with a special sander to get rid of the coffee stains,

but all it did was make a lot of dust. The stains are still there, and in the name of making a great record, we just left it the way it was.

**Bonzai:** Wasn't your first job as an engineer at A&R studios in New York?

**Yakus:** That was my first studio in New York, but my dad had a studio in Boston called Ace Recording. I grew up in that studio—going for coffee, cleaning ashtrays, doing errands. Even though it was a great-sounding room, the engineers in Boston didn't have the demands placed on them as those in New York. We got tapes in from New York, 3- and 4-track, that just sounded remarkable. I was about 16 years

the equalizer. You go out and listen in the room. He also gave me the confidence that it could be done. Hearing his incredible work, with very little EQ and limiting, just blew me away. My first day in the studio as an assistant engineer was a Phil Ramone session with Dionne Warwick and Burt Bacharach. I was trained by a professional assistant, Major Little, a young guy who just wanted to be a great assistant and nothing more. He taught me how to set up the studio. And that first day, I stood behind Phil watching him balance an orchestra and saw the way it should be done.

**Bonzai:** How many tracks?

**T**here were no holds barred in getting sounds, because we didn't have the equipment we have now to make instant sounds. You had to go out there and work your ass off to make it sound exciting.



old and asked my dad how they got that sound. The Boston producers weren't really driving the engineers, so they fell short of that New York sound, or Los Angeles and Chicago. I was hearing tapes made outside of Boston and realized that I had to go to New York. Ace would have been my studio when I grew up, and my dad was disappointed, but he was proud of me for getting a job in a great studio in New York.

When I got the job at A&R in 1967, the studio was attracting just about every major producer and group in the world: We had Phil Ramone, Roy Cicala, Donny Hahn, Tony May, Dave Sanders, Roy Hallee, Brooks Arthur, and each guy specialized. One did the original Broadway cast albums, one did jazz, one did commercials, one did rock 'n' roll, and so on. Phil was doing Sinatra, Count Basie, Leontyne Price, Burt Bacharach. Being an assistant engineer for all of these guys, I took what I liked and learned from each one.

**Bonzai:** What did you learn from Phil Ramone?

**Yakus:** How to use echo, and when you hear something you don't like, you go out to the room and move the microphone, instead of moving

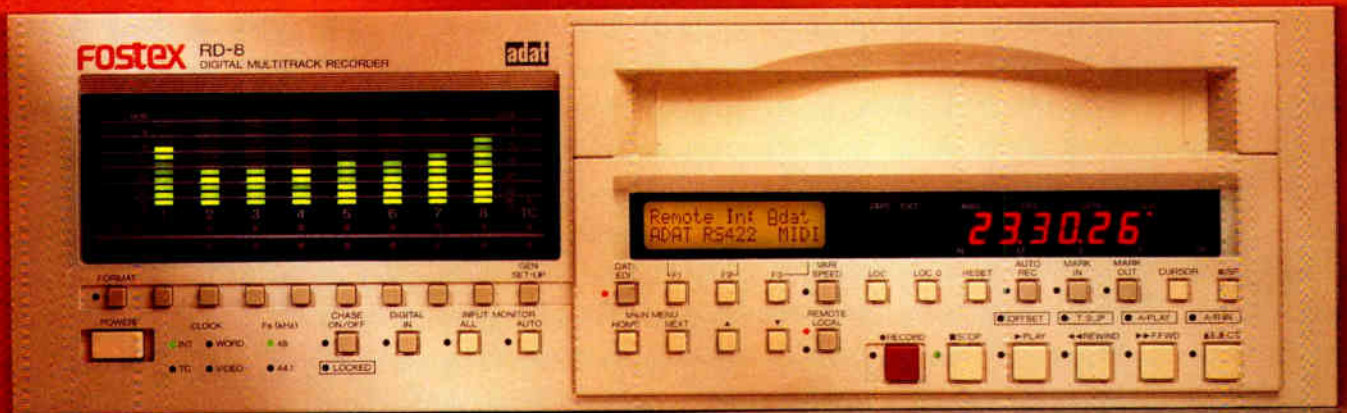
**Yakus:** It was 8-track, but that was really the safety. We had something called the "jukebox," which was a routing device separate from the console. He could mix those eight tracks down to four tracks, a 2-track and mono. We had five or six machines running on every take. Dionne recorded three songs in three hours that day, and two ended up as major hits, "Valley of the Dolls" and "Alfie." Phil's balances, which he got at the time of the session direct to the mono and 2-track machines—those were the masters. It seems funny now, but stereo at that time was just done in case the industry went stereo. It was a new thing, and no one knew if it would catch on.

**Bonzai:** Was Roy Cicala your main mentor?

**Yakus:** Yes, because he worked at night. Roy was the engineer who did most of the rock 'n' roll at A&R Studios, and he began requesting me as his assistant. He was also producing his wife's records at night after the rock sessions. I learned how to get vocal sounds, because if he didn't come up with a great vocal for his wife, there would be trouble at home.

Basically, what these guys taught me was that anything goes. Don't be

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 World Radio History

afraid. There are no rules. One time, we put a prophylactic on a long thin mike, put it into a milk bottle filled with water and then put headsets on the bottle to send a sound through it. We tried everything, especially after the Beatles showed everyone how far you could take it. One time, Roy got a great kick drum sound by taking the cardboard liner from a tape box, which had a metal center, adding a block of wood and taping it to the drum head. Then he hung the mic in surgical tubing so that there was no vibration from the floor.

There were no holds barred in getting sounds, because we didn't have the equipment we have now to make instant sounds. You had to go out there and work your ass off to make it sound exciting. These guys also taught me to recognize what was loud on the radio and how to do it. I was working around the clock and becoming a zombie, so I asked to start at 6 p.m. with Roy and sleep in the daytime.

**Bonzai:** How did you make the transition from an assistant engineer to solo?

**Yakus:** It happened in a very natural way. This studio was so busy that they had second and third holds on the time. The traffic managers controlled the engineers' lives. We had two women booking A&R, which had three studio complexes in different parts of New York. One day I got a phone call at 8 in the morning from Carol Peters at the office. She said, "The engineer is sick and can't make the session. I need you to come in and record this album." She told me it was bass, drums, guitars, vocal and horns. I said, "I've never recorded horns." She replied, "I've heard that you are very good at what you do. I talked with the other engineers, and I know you can figure this out." Then I asked who the artist was, and she told me it was Van Morrison. It turned out to be the *Moondance* album. Now I didn't do it alone, because in those days engineers would fill in for each other, and Elliot Scheiner did the mix. Van probably had four engineers working on that album. The Band's *Music From Big Pink* had three or four.

**Bonzai:** What was it like working on their first album?

**Yakus:** Well, at the time they called themselves The Crackers, and they

became The Band by the finish of the album. People were saying to me, "What's that shit you're working on? What is that stuff?" I said, "This is the next big thing, this is the kind of music that's gonna take over." People thought I was crazy, but I knew something good when I heard it.

**Bonzai:** After *Moondance*, did that mean you were a solo engineer?

**Yakus:** When that album came out, I started getting calls like crazy. I was halfway between assistant and engineering on my own. The day after it

**One time, we put a prophylactic on a long thin mike, put it into a milk bottle filled with water and then put headsets on the bottle to send a sound through it**



came out, I became so popular that it was kind of annoying to me. It showed me a lot about the business. I was no different, but suddenly the phone was ringing off the hook.

A&R was an amazing training ground. Bob Ludwig, Elliot Scheiner and myself were hired within a few weeks of each other. Bob went right into mastering, but I knew that if they got me in mastering, I'd never get out. I wanted to make records, and part of the program was supposed to be mastering, to make you a "well-rounded guy."

**Bonzai:** Did you do it?

**Yakus:** No, I escaped. I also escaped commercials, which I hated.

**Bonzai:** Was your next step moving over to The Record Plant?

**Yakus:** Yes, Roy Cicala got an offer from Chris Stone. I think Roy had temporarily burned out and had been giving me all his clients. When he got the offer from Stone, he said I had to come with him or he'd shoot me—"You have all my clients." He wanted me to come with him and work as a

team. I had been at A&R for three years and loved it, and didn't think I could quit. So I asked him to record something over at Record Plant so that I could listen to it. I figured if it sounded as good or better than what we were doing at A&R, I would be interested. Well, it was great work they were doing over there, so I decided to leave in 1970.

I started working with groups like The Raspberries, Alice Cooper—records like *School's Out* and *Billion Dollar Babies*—and stayed for ten years. Jimmy Iovine was my assistant engineer, but around 1976 he had begun producing on his own. It's funny, but he went to Roy and asked him if he would ask me to engineer this record he was producing with Patti Smith, with a song from Bruce [Springsteen] called "Because the Night." Because he was my assistant, I guess he was shy, but I told Roy I would love to work with him as his engineer. In those days, it wasn't uncommon for a young guy to get the confidence of an artist and have a shot at a hit. Anyway, I mixed the Springsteen song, and we had this huge hit. Jimmy felt we could do some great things together because we complemented each other so well.

Then the next four records we did were stiffs. [Laughs] I was vice president of Record Plant getting a check every week. He looks at me and says, "There's this guy Tom Petty out in California. Listen to this—tell me what you think." I think it was something from his first album, and I just said, "Whoa, this is fantastic." So, I decided to take a leave of absence so Jimmy and I could work together. I was about 30, and he was 23. People told me I was crazy going off with this lunatic kid nutjob. But I believed in him, and we stayed in L.A. for nine months. We did [Petty's] *Damn the Torpedoes*, around '77-'78. For the next four years, from 1978 until 1982, we worked in Los Angeles during the winter and in New York during the summer. We started picking up more and more work with each hit. From Tom Petty to Stevie Nicks, Dire Straits to Bob Seger.

By 1982, we decided to make the move to California. The artists that we worked with were always unusual—they weren't the run-of-the-mill, "happening" stuff. The unique artists we worked with really propelled our careers: Dire Straits' *Making Movies*. Three albums for Tom Petty; three for

## LUNCHING WITH BONZAI

Stevie Nicks. I recorded that song "Like a Rock" for Bob Seger.

**Bonzai:** So, how did you get to the A&M chapter of your career?

**Yakus:** Well, Herb Alpert and Jerry Moss were looking for someone to rebuild and operate their studios. They had made great records, but the facility was getting a little run-down, and the technology had changed so much over the years. So they approached Jimmy and myself. We met and really hit it off. It was unusual for us, because we weren't in construction. We hired an architect who could understand our crazy ideas, Vincent Van Haaff. I explained what I wanted to hear and he would figure out a room with that sound. We also had George Augspurger on the project, too. It worked.

**Bonzai:** Everyone knows you're a great engineer, but did you ever produce?

**Yakus:** I don't like producing. I've been asked quite often to produce, and people are surprised when I turn them down. I just feel that I am a better engineer than a producer. I

like helping people make their records.

**Bonzai:** Do you ever have a piece of the action?

**Yakus:** Yes, I get points on what I mix. So, I have points on all those records that Jimmy and I did together, and what I've done since.

**Bonzai:** You've been here at A&M ten years—and you're still in construction.

**Yakus:** [Laughs] You never stop, or you fall behind. It really started with Herb Alpert as the driving force behind having a state-of-the-art studio. Jerry supported Herb, because he wanted to have great music on this lot. Sure, we might attract a good unsigned group that might come to A&M, but a great studio was the goal. Jimmy and I helped that dream come true, and a lot of my wishes came true as well. I never expected to be in the studio business again because it's difficult to make money.

But my background was in staying with a studio for years, and you *knew* those rooms. Freelance engineers in those days were highly unusual. When Jimmy and I became independent, going from studio to stu-

dio, it began to screw with our heads. It really is unnerving being in a room that you have never been in before, trying to mix an important album. Actually, each album is important, and by the time you get to the mix it is the most important album of your life. When you are in a place you don't know, you are at a

**The use of vintage gear with modern equipment is the way to make a record now. Modern equipment on its own has no sound.**



tremendous disadvantage. This was a great opportunity to build our own place, a studio with no surprises for us. And I didn't have to travel all

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over the world while raising a kid. There were a lot of pluses for me, besides the association with Herb and Jerry.

**Bonzai:** What are the significant advances in recording since you began?

**Yakus:** It's all been downhill since the late '70s, in my opinion. It's only now starting to come back up to something that makes sense to me. The use of vintage gear with modern equipment is the way to make a record now. Modern equipment on its own has no sound. They've worked so hard to take the personality out of this new stuff, that it has no sound. The theory is that if the equipment has no sound, then you get the sound of the instrument. Well, that's a nice idea, but it doesn't fly so well. What *does* work, for example, is an old Neve console, which has a personality all its own. It makes a sound with the instruments. Okay, it changes the sound, but it changes it in a way that makes a better record. But if you know how to use the new consoles you can make a great record. You combine vintage gear with the new gear and get a tremendous sound, because you have the

presence of the modern sound with the warmth of the '60s.

**Bonzai:** Are you talking about tube mics, tube limiters, preamps?

**Yakus:** Yes, and things like Neve modules, Fairchilds, Pultecs.

**Bonzai:** Do you track to analog?

**Yakus:** Yes, I try to never use digital. In my opinion, digital is not ready yet, although the Sony 48-track is the closest. That's a big statement, but my feeling is that digital is not as good as it will be in five or ten years. When I listen to one instrument off a digital machine, I multiply that sound—the buzzy top and that hard digital sound—by 24 or 48 tracks. And what will that sound like in a mix on a record? It isn't going to sound good. It'll be like fingernails on a chalkboard. It's annoying, but if you combine it with outboard gear and microphones that have a warm sound, the two together are fantastic. You can actually make a more present record than you could in the '60s and the '70s. That period had a lot of depth to the sound, which is missing today. Today's records don't have what I call the "front to back," the depth. They have a sound, but

you hear them one after another on the radio, the modern records sound small next to older records.

**Bonzai:** Who is the most amazing artist you've worked with?

**Yakus:** So hard to say, because I've worked with so many great people. But it was amazing working with John Lennon on *Walls and Bridges*: Jim Keltner was the drummer, Klaus Voorman on bass, Jesse Ed Davis on guitar, Ed Mottau on acoustic guitar and Nicky Hopkins on piano. John was producing. He was the kind of person that even if you didn't know who he was, and he was standing in a crowd of a thousand people, you would pick him out first. He just had this aura, and he was also a very kind person. He'd come in after each take and look at the musicians and say, "Anybody have any mistakes they want to tell me about before we play this, so I know what I'm listening for?" During one take I had the Fairchild on the overhead tom-tom mics and somebody kicked the plug out of the wall in the middle of the song. When the tom-tom part came during the break it sounded like they were down at the end of the street.

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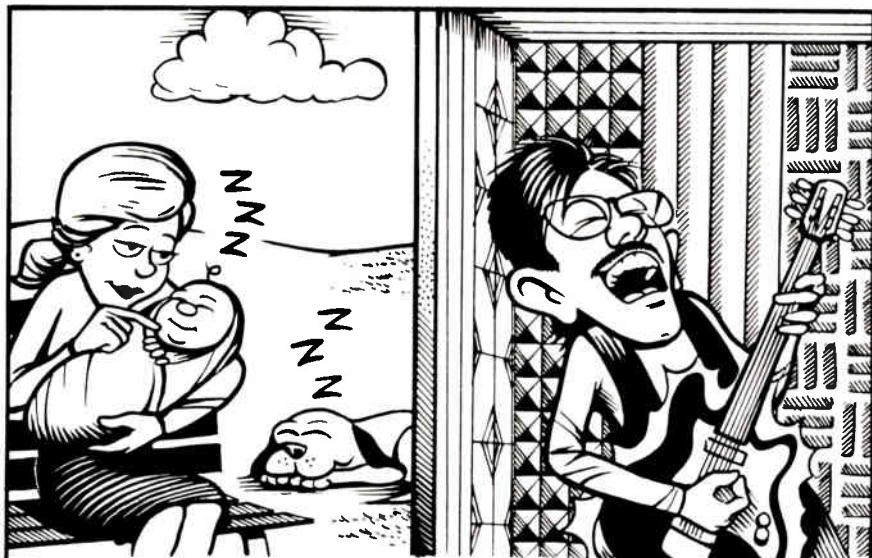


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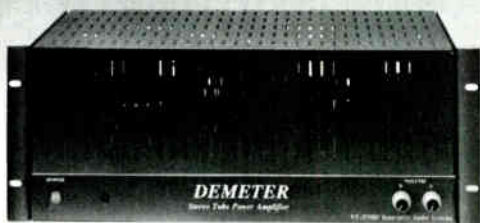
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But it worked, just one of those lucky things. John was definitely an amazing person to work with.

**Bonzai:** How would you like to be remembered in history?

**Yakus:** As a guy who made records that people really enjoyed listening to. I get a lot of compliments, and I enjoy that. When somebody sits down and listens to a record I've done, and they get the essence of that band like they never got it before, that's how I'd like to be remembered—someone who made a difference.

**Bonzai:** We can't go back to the days when you were starting out, but what advice do you have for people starting today?

**Yakus:** Actually, today it's happening more like it did for me than any time since. We have a program here at A&M where people start as runners, then become assistants. We build from within and rarely hire from the outside. Believe me, I couldn't run a successful operation like this without Mike Morongel, my head tech; Ron Rutledge, studio manager; Colleen Harris, my trusty assistant; and the entire A&M staff, who are simply the best—no more, no less. Because of the talent that comes through this studio, they recognize the value of the people we have here.

Many times, they take away our best people, which is good. I hate to see them leave, but I love it when they come back as engineering clients at A&M. The dream is still alive, and many of our people are now very successful, like Rob Jacobs, Randy Staub, Mark McKenna, Mark Desisto. You couldn't go to Harvard for four years and make what these guys are making now.

I say to the assistant engineers that I wish I could be an assistant again. I wish I could assist some of the great engineers of today, to understand how they make such terrific records. I don't get to see this anymore, and I can't learn from these guys. If I could be an assistant again, I could pick up some more tricks—and I've picked up some good ones over the years. The new people have the advantage of learning from the best of our time, just as I did when I was starting out. ■

*Roving editor Mr. Bonzai ponders the musical question "What's for lunch?"*



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# PROJECT STUDIO Startup



The author in his home studio

by Jim Mandell

*This article is adapted from the second, revised edition of The Studio Business Book by Jim Mandell. This book offers practical advice for anyone starting a facility from scratch or looking to upgrade an existing facility. Although Mandell's book is geared mainly toward starting a commercial project studio, most of his observations are also applicable to personal project studios. The sidebar, by Mix technical editor James D'Angelo, comprises case studies of actual project studio owners, with their thoughts on putting together the best startup project room.—Eds.*



**TO OPEN YOUR  
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**T**he most important item you'll ever need to start up a studio (or any venture) is a plan of action: a business plan. A business plan outlines the way the facility is going to start up and operate and serves as a presentation document for lending institutions. Any lender you approach when seeking funding for your facility is going to want to see some detail on this big idea of yours before deciding to help you make it real.

A business plan contains a complete projection of what your recording studio is going to look like, how it's going to function and a forecast of just how beautifully everything is going to work out. The reason for having a plan is so that you and everyone else who becomes involved can look at a hard copy of

—CONTINUED ON PAGE 47

# THE DREAM STUDIO, ON (AROUND) \$20,000

Mix asked four project studio owners for their ideas of the perfect \$20,000 project studio. Please note that the prices listed are estimates based on the most current information available at press time.

## ART NOEL

Art Noel, who works out of Sigma Studios (Philadelphia) and his own immense (60x40x14 feet) space in North Philly, is a big fan of live recording. His 20-grand dream list involves having both analog and digital capabilities; he's a big fan of vintage sound, and he loves recording as much of the music live as possible. For him, vintage equipment has always been a great way to provide his clients with an alternative to the proliferation of modular digital multitracks and expensive new analog studios. He looks for real, warm, classic recordings and large rock drum sounds. His dream list is pretty close to what he uses in his personal studio.

- 1 Mackie 24x8 . . . . . \$3,200
- 2 AKG C414 . . . . . 1,900
- 1 AKG D12E . . . . . 225 (used)
- 2 AKG D1000E . . . . . 200 (used)
- 1 RCA 44BX . . . . . 400 (used)
- 6 Shure Beta 57 . . . . . 750
- 2 Shure SM81 . . . . . 600
- cords and cables . . . . . 200
- 1 Tascam 1-inch 16-track . . . . . 3,500 (used)
- 1 Tascam DA-30 DAT . . . . . 1,100
- 1 Tascam DA-88 8-track . . . . . 4,000
- 1 Aphex 107 tube preamp . . . . . 475
- 1 Aphex 105 4-channel gates . . . . . 300
- 5 dbx 160 (compressor/limiters) . . . . . 1,000

## TOM WALTZ

Tom Waltz of Waltz Audio Productions (Boston) is concerned with being able to record a variety of styles of music. He has worked the gamut from major label to budget demo, and he covers a wide spectrum of music from rock to rap to jingles. For him, one of the biggest priorities in a small studio is flexibility; over the years, his tastes have changed, and so have his clients (a couple of Platinum acts). Another priority is designing a studio that is able to embrace the future, so his system is expandable and modular.

- 1 Portable DAT . . . . . \$700
- 1 Mackie 24x8 or Fostex 820 . . . . . \$3,500
- 7 Mics (AKG 414, 4 Shure SM57,  
2 Audio-Technica Pro 37R) . . . . . \$2,000
- 1 Roland MC50 II Sequencer . . . . . \$1,000
- 1 Sampler (Ensoniq ASR 10 or Kurzweil K2000) . . . . . \$3,000
- Cables and mic stands . . . . . \$500
- 2 Monitor Speakers  
(Yamaha NS-10M or Tannoy 6.5) . . . . . \$400
- 1 Amp (Peavey CS 200X, Alesis RA100,  
or Carver 120) . . . . . \$400
- 1 Headphones (Sony) . . . . . \$80

- 2 Alesis ADATs or Tascam ½-inch 16-track  
with Dolby S . . . . . \$6,500
- 1 Stereo Compressor/Gate (dbx 266  
or Symetrix 425) . . . . . \$500
- 1 Lexicon ALEX, LXP-1 or LXP-5 . . . . . \$500
- 1 Patchbay (Furman, Tascam or Fostex) . . . . . \$120
- 1 Generic Cassette deck . . . . . \$300

## JONATHAN BURNSIDE

With this core setup, Burnside (owner of San Francisco's Razor's Edge studio) aimed to get gear with enough power and character to do 90% of an album or remix a project in a basement or attic instead of burning valuable studio time. When the project is nearly complete, the gear can be wheeled into a vintage Neve or Trident room for the mix and mastering. With some practice, this approach can give you that major-label flavor. Much of Burnside's music is based on sampling and looping, but he tries to balance it out with the Neve preamps, the B&K mics and the ADL 1000 tube compressor to yield an accurate and warm sound. A veteran of digital recording, Burnside swears by his Lexicon AD 20/20 "20 bit" analog-to-digital converter, which he uses on the front end of the Pro Tools, the 3200 or DAT; he claims it has really helped with depth of field and low end. He believes that any studio could use more gear, but when he expands, he's "just saving money on big studio time."

- 1 4-channel Pro Tools . . . . . \$5,000
- 1 Akai S3200 . . . . . \$4,000
- 1 Mac Ilci (20 MB RAM) . . . . . \$1,600
- 2 Genelec 1031 Powered Monitors . . . . . \$2,500
- 1 Mackie 1604 Mixer . . . . . \$900
- 1 Neve 1089 or 1073 Class A Preamp and EQ . . . . . \$2,000
- 1 B&K 4011 Condenser Mic . . . . . \$1,400
- 1 Opcode Studio 4 MIDI Interface . . . . . \$500
- 1 ADL 1000 Tube Compressor . . . . . \$1,500
- 1 1.2-Gigabyte Drive . . . . . \$850
- 1 Sample Cell . . . . . \$1,995
- 1 Studio Vision Pro . . . . . \$1,000

## BUZZ HAYS

Buzz Hays is a San Francisco-based movie guy. He has done time with Lucasfilm and just recently sold his own independently produced movie, *The Buddy Factor*. With a budget of under \$50 grand to put together a surround sound, digital audio track for the picture, he knew that he had to start budgeting his studio. The following is what he would take to the proverbial desert island if he had to start premixing

—CONTINUED ON PAGE 48



**A True Multitrack:**  
RADAR operates like a true multi-track; there are as many dedicated inputs and outputs as there are tracks. Track arming buttons indicate the input and record status of individual tracks.

**Expandable:**  
RADAR can be configured as an 8, 16 or 24 track recorder/editor and upgrades easily.

**Durable:**  
RADAR's rugged steel enclosure is road-worthy and, at only 40 pounds, it's completely portable.

**Professional:**  
RADAR locks to all standard SMPTE rates and formats, video composite (NTSC and PAL), and word clock. Its sampling rate is variable between 32 and 48kHz, and you can assign the AES/EBU and S/P DIF digital I/O's to any 2 tracks at one time.

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Random Access Digital Audio Recorder –  
Your Next Multitrack!



RADAR full-function session controller.

**Flexible:**  
RADAR's large 32 character back-lit LCD provides visual feedback on all parameters, including SMPTE location, project labels, and edit functions. Dedicated function buttons make RADAR both powerful and fast.

**Upgradeable:**  
Integral 3.5" floppy disk drive provides for fast and convenient future software upgrades.

**Familiar:**  
Standard transport controls make RADAR easy to operate. No computer peripherals are necessary—RADAR is self-contained!

**Reliable:**  
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World Radio History

—FROM PAGE 44, PROJECT STUDIO STARTUP

your whole idea to see if it really looks feasible. The process of actually writing a business plan is creative, challenging and time-consuming; it's also educational and rewarding.

There are lots of good books on preparing business plans, as well as complete and affordable software packages, with obvious names like BizPlan Builder, that will guide you through each step and print out a beautiful package in the end. But whichever format you choose, the basic elements of a successful plan remain the same.

### SECTIONS OF THE PLAN

Your project studio business plan should start with an introduction that says, "This is a business plan for a recording studio" and go on to introduce its principals (the chief officers of the company), with a brief biography of each.

Next comes the written outline showing how you'd set up the studio, including a proposed location, an idea of what the studio will look like, a detailed list of the equipment needed and a general overview of how you believe the business will work and grow.

Then comes the Fantasyland section: the cash-flow projection. This is a detailed spreadsheet or chart estimating how much money you think the studio will make and how much it will cost to operate on a month-to-month basis in the first year or two. Included in the spreadsheet should be a complete list of all anticipated expenses and income, broken down into clearly defined categories. You'll also need to include an extended three- to five-year projection.

Finally, you'll need to include a personal financial statement, which is a detailed summation of your net worth, along with copies of your tax returns from the past two or three years.

It can take months to put a business plan together that includes all the proper elements and feels right, too. It did for my partner, Michael Perricone, and me. But we also got a little creative with ours. We felt that what we lacked in financial strength we would have to make up for in imagination, talent and charm. At the time, the two of us lived in rented apartments, drove five-year-old cars and figured that a night out on the town included a drive-through burger and maybe a few

frames at the local Bowl-O-Drome.

So, we filled our business plan with photos, brainy ideas and colorful prose. We even included a musical demo tape. We'd put our ties and jackets on, go to each lender and tell about how our ideas would propel us to the top of the industry.

When we were getting ready to leave each place, I'd say to the loan officer, "You know, we really enjoyed meeting with you today, Mr. Scrooge. Maybe you'd be interested in getting to know a little more about what we really do." And I'd hand him a demo tape with about 15 minutes of the widest possible

range of our best stuff from the past few years. It wasn't easy getting the loan, but everyone loved getting that tape, and a few people liked it enough to try and help us close in on the right lender.

### ELEMENTS OF A BUSINESS PLAN, PAGE BY PAGE

Here's a list of the components of a recording studio business plan and some suggestions on how to give it a little more sizzle.

**1. The Cover and Title Page.** As on a book, the cover simply states the name of the proposed business. You

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can also include an abbreviated description. For example:

## THE JAM FACTORY

### A Business Plan For a Professional Recording Facility

The first page inside is the title page, again stating the name of your company. Below, names, addresses and phone numbers of the principals are listed. It's also wise to list your accountant and attorney's names and phone numbers.

#### 2. Table of Contents.

**3. Introduction.** Brief biographies of the principals and a description of the business. No more than a paragraph or two on each person. Sadly, no one will care about your paper-route Certificate of Merit. Keep it short and relevant.

**4. Financial Package.** A single page that lists your equipment and start-up costs, followed by a list of available sources of capital. Following that, the loan amount you're asking for. Finally, a bottom-line figure with the amount that will be left the day you open for business. That amount is called your *beginning cash* (see chart on opposite pg.).

**5. Startup and Marketing Plan.** This is where you detail exactly how you intend to open your doors and what you'll do to get customers. Here, you reveal the research you've done in the marketplace and how your business will coexist with the competition. You should also discuss your marketing strategy, advertising and specialization.

**6. Available Collateral.** First, a detailed list of any related professional equipment (instruments, electronics, etc.) you already own free and clear. You can list those that are partially paid for, too, but in that case, you should note how much of each is yours and how much belongs to Mastercard. On a separate page, give another detailed list of the equipment you intend to purchase. Because

—FROM PAGE 45, DREAM STUDIOS

his film. He believes that with this gear, you can complete the premix to a film and then port the sound files over to a major studio, where the sound can be mixed to the big screen. He likes to go the rental route for really expensive equipment and often ends up renting effects units (Lexicons) for particular mixes. Note that there are no MIDI devices on this list.

1	Sony TCD-D7 DAT Recorder	\$600
1	Sony RMR-D3 Digital I/O Converter	\$175
1	Sony MDR 7506 Headphones	\$80
1	Audio-Technica AT822 Stereo Mic	\$225
1	4-channel Pro Tools 2.0	\$3,300
1	OSC Deck 2.3	\$350
1	OSC 8-track Tool	\$125
1	Wave Q10 & L1 DSP Software	\$750
1	Disc-to-Disk Software	\$150
1	Quadra 840AV (20/500)	\$3,400
1	20" Radius Intellicolor Monitor	\$2,000
1	Mackie 1604 Mixer	\$850
1	APS 4.0AV 4GB Hard Drive	\$2,700
1	APS SQ 3270 270MB Syquest drive	\$500
1	Kenwood KC-X1 Home THX Controller	\$1,400
1	Kenwood KM-X1 6-ch Power Amplifier (6x100W)	\$1,100
1	Boston Acoustics Home THX Speaker System	\$2,300

the loan or lease you're applying for is to purchase this equipment, it also becomes available collateral in the lending company's eyes.

**7. Cash-Flow Projection.** A 12- to 24-month spreadsheet detailing all projected income and expenses for the first year, listed on a month-to-month basis (see illustration).

**8. Detail of the Cash-Flow Projection.** A description of the listed items on the projection that clearly defines the reason for each item.

**9. Growth Plan.** A forecast that outlines your ideas for continued marketing and growth over the next two to five years, with *reasonable* projections of expected income.

**10. Personal Balance Sheet.** A detailed one-page summation of your net worth. Your accountant should help with this page to make sure everything necessary is included. What, you don't have a personal accountant? Now's the time to get one.

**11. Tax Returns.** Usually the previous three years will suffice. If the business is a partnership, all partners

must include their complete returns.

**12. Cover Letter.** This should include a personalized introduction to the lender and a brief overview of what the business plan is about, along with your phone number and address.

**13. Optional Extras.** These are items that can enhance your package and make it stand out from the rest.

**Pictures** are sure-fire attention-getters. Position yourself in front of a long console or an impressive rack of equipment.

**Market studies** and **comparison charts** show that you've really done your homework and are aware of the local market. Mention three or four competitors by name and show how your facility will compare.

**Full-blown resumes**, including names of clients and projects.

**Brochures** and **ads** from any previous businesses you've been involved in.

**Advertisement mockups** for your new business.

A **cassette tape** is something a banker rarely gets or expects. Sharing your music will set you apart from the crowd. Note: Be careful not to alienate any potential lenders with your late-night, cop-killer rap sessions.

A **videotape** may be even more effective. If you're coming off a commercial record with a professional MTV production, use it. But if it's something your sister shot for TV class, save it for your relatives.

Another approach might be to make a good-quality video of you at work. If you're a working engineer at a busy studio, five minutes of you at the console, taking a directorial role, touring the facility and commenting on its strengths and weaknesses in relation to your vision of your own business, could be compelling. So could a tour of your home setup or a potential location for your proposed facility.

But again, review the material from the standpoint of the banker and ask yourself if this would impress a more conservative first-time viewer, or if you're just coming





## FIRST-YEAR CASH-FLOW PROJECTION

Month	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY
<b>Beginning Cash</b>	<b>53,250</b>	<b>56,300</b>	<b>59,800</b>	<b>65,235</b>	<b>71,810</b>	<b>83,110</b>
<b>INCOME</b>						
Production Team	1,050	1,580	2,125	2,850	2,500	3,500
Studio Time	3,600	3,200	3,150	3,000	3,000	3,000
Video Post	6,200	6,320	6,560	7,000	6,800	7,000
Jingle Record	—	300	1,000	1,000	1,000	300
2nd Shift	—	—	500	625	900	900
Equipment Rent	300	300	300	300	300	300
Tape sales	400	300	300	300	300	300
Prod. Fees	—	—	—	—	5,000	5,000
<b>Totals</b>	<b>11,550</b>	<b>12,000</b>	<b>13,935</b>	<b>15,075</b>	<b>19,800</b>	<b>20,300</b>
<b>EXPENSES</b>						
Rent	3,500	3,500	3,500	3,500	3,500	3,500
Finance Payment	1,600	1,600	1,600	1,600	1,600	1,600
Salaries	2,000	2,000	2,000	2,000	2,000	2,000
Insurance	100	100	100	100	100	100
Telephone	200	200	200	200	200	200
Office/Supplies	50	50	50	50	50	50
Advertising	350	350	350	350	350	350
Attorney/Accounting	150	150	150	150	150	150
Maintenance	300	300	300	300	300	300
Misc.	250	250	250	250	250	250
<b>Total Expenses</b>	<b>8,500</b>	<b>8,500</b>	<b>8,500</b>	<b>8,500</b>	<b>8,500</b>	<b>8,500</b>
<b>Ending Cash</b>	<b>56,300</b>	<b>59,800</b>	<b>65,235</b>	<b>71,810</b>	<b>83,110</b>	<b>94,910</b>

across as a puffed-up pretender. Ask a couple of trusted friends to look at your package and offer some honest feedback.

Finally, **letters of recommendation** from associates and friends add credibility and integrity.

### BUYING INTO RAGING TECHNOLOGY

The key element a potential lender will scrutinize in a business plan is

the loan package section. You'll have to go into minute detail about how you'll be spending the bank's money. But it's hard to know the best way to use your borrowed funds: the technological revolution is as mind-boggling as it is exciting. No sooner does one fabulous new innovation appear than half a dozen improvements sprout up, dotting the marketplace with further enhance-

ments and price-plummeting shake-ups. And you can bet that a whole new approach to the answer that has just been successfully marketed is already on the way.

Deciding what to buy requires thorough research, informed decision-making and, well, just plain courage. So buy with an eye to intelligent upgrading. Make sure the equipment you choose has the kind

of support that will keep it current and usable for a reasonable period of time. Research the availability of software support from the manufacturers. Find out what their plans are for the next year or two. Read the trades to keep up with industry trends. Talk to as many knowledgeable people as you can find. Go to shows and demos.

Find out what products other people are buying, and why. There may be a trend or a particular manufacturer that has found favor in your region of the country. For instance, in L.A., most session keyboardists may use the same sequencing program, making compatibility a snap. It may not be the best overall program, but it's become the standard, thus making it a near necessity.

A key element in setting up a budget room is to take full advantage of the used professional gear market. The beauty of this worldwide bazaar is that there are thousands of used items floating around the planet at bargain prices. Much of this gear is in reasonable to excellent condition.

In most major cities like New York, there are a number of used-equipment consignment dealers who represent current owners and sell their gear at a commission by listing them in direct-mail catalogs or calling established contacts. Often, they'll act as a search service for you if they don't already have the gear you want.

Other ways include looking in the local used-merchandise weekly in your area (or running an "equipment wanted" ad), checking the classifieds in pro publications like *Mix* and *Pro Sound News*, and calling local studios to ask if they have or know of equipment for sale.

Buying used can save you 20% to 80% off the retail price. But be careful out there. If you don't have the technical knowledge to know a good buy from a worthless one, ask someone who does. When you buy used, there are no returns. Give it at least the same consideration you'd exercise in the purchase of a car or, when the numbers warrant, a house.

Remember that buying just one expensive wrong piece could force you into becoming a used equip-

ment dealer yourself, which probably isn't what you had in mind.

If you're assembling a studio for hire, avoid buying esoteric or low-cost, off-brand gear. You may make a great deal on it, but you'll be faced with a much more difficult time in selling your clients on working with you in a less than ideal atmosphere. Ask yourself: Will I be able to get a good price for this when I want to sell it? And: How come I've never even *heard* of an Acme Atomic Reverb Transducer?

#### ANALOG OR DIGITAL

It's amazing to many industry veterans that a few short years ago, a good analog 24-track would set you back about \$35,000 to \$40,000, and



now, a component digital setup with far superior signal-to-noise ratio and dynamic range can be had for a quarter of the cost. That's why, for my money, there's no looking back. Digital multitrack recording keeps getting more sophisticated and cost-effective seemingly every *week* or two. But to you purists out there, my respect and admiration. No one can tell you that digital sounds as compelling as analog, and there's no question that you've got a point.

Your format decisions will, of course, be your own and must depend on your own sonic preferences and the niche you want to carve for yourself. But whatever gear you're after, your choices must be clearly outlined in your plan, and you must be prepared to explain those decisions to any potential lender.

#### AND NOW, A BRIEF COMMERCIAL MESSAGE ABOUT COMPUTERS

A personal computer is the one piece of gear that should be acquired in starting up *any* business. There's simply no better, faster way to plan a project than with a machine that you can use to type, organize, plan and calculate each component of your enterprise, and you can save an enormous amount of time and effort in the process. A computer also gives you MIDI capability.

In the pro studio environment, the Macintosh remains the overwhelming system of choice for the widest variety of MIDI applications. If you buy one at the start, you're that much closer to an integrated system in the end. Whatever system you choose, try to stay in the brand-name domain to take advantage of the large service networks and software availability that major companies offer. If you're new to computing and you know someone who is experienced, put yourself in their hands. Or you could hire a private consultant or take a class that will help you get set up and hone in on your particular focus.

#### BUSINESS EXPENSES

Don't forget that finding equipment is only part of starting up a business. You'll have to plan for a number of other mundane necessities. Here are some you'll need to cover, whether you'll be working out of a rented space or your own garage:

#### Legal and accounting fees

Financial statements,  
dba, etc. . . . . \$1,500

#### Insurance

Annual premium . . . . . \$150

#### Advertising and publicity

First month's print ads  
and opening party . . . . . \$2,500

Logo design . . . . . \$2,000

#### Stationery, forms,

labels, cards. . . . . \$2,000

#### Business plan

Binders, printing,  
postage, etc. . . . . \$300

The prices of these essentials can vary, of course, depending upon what consultants and materials you want to use, and your market, but

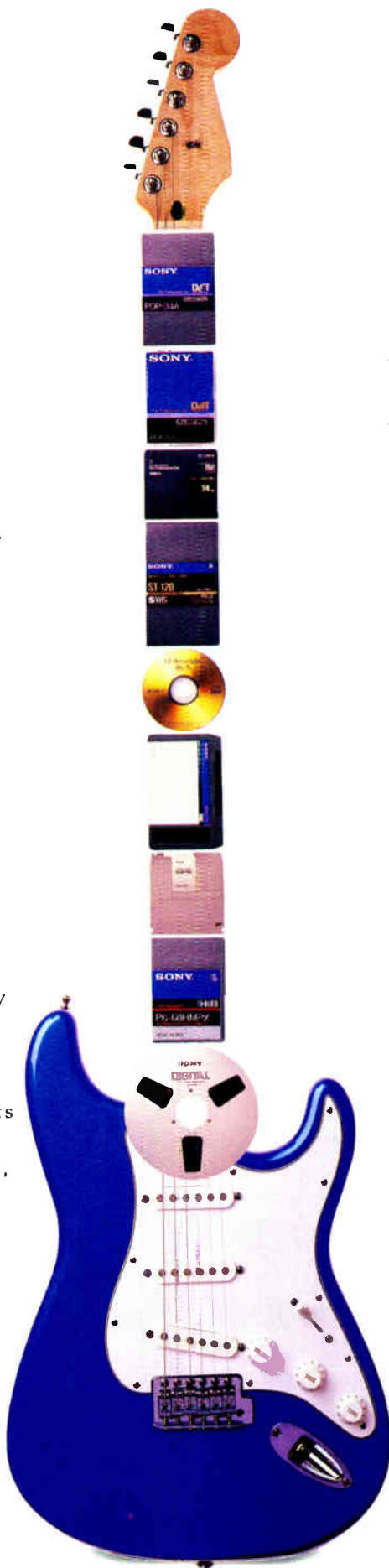
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442 I/O AUDIO INTERFACE

SSD SYNC SMPTE JUMP DRIVER

VSD SYNC SMPTE JUMP DRIVER

888 I/O AUDIO INTERFACE

888 I/O AUDIO INTERFACE

888 I/O AUDIO INTERFACE

882 I/O AUDIO INTERFACE

442 I/O AUDIO INTERFACE

CH 1-2

SYNC MODE

Master Slave Analog Digital

MODE

- Preload
- Generate from scratch
- Generate from Edit
- Generate from Edit

VSD SYNC SMPTE JUMP DRIVER

SYNC SOURCE

VIDEO FORMAT

24P 25P 29.97P 30P

NTSC PAL

888 I/O AUDIO INTERFACE

SYNC MODE

SAMPLE RATE

1 2 FORMAT

1 2 3 4 5 6 7 8

ADDITION AMPLIFY PHASE

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SYNC MODE

SAMPLE RATE

1 2 FORMAT

1 2 3 4 5 6 7 8

ADDITION AMPLIFY PHASE

888 I/O AUDIO INTERFACE

SYNC MODE

SAMPLE RATE

1 2 FORMAT

1 2 3 4 5 6 7 8

ADDITION AMPLIFY PHASE

882 I/O AUDIO INTERFACE

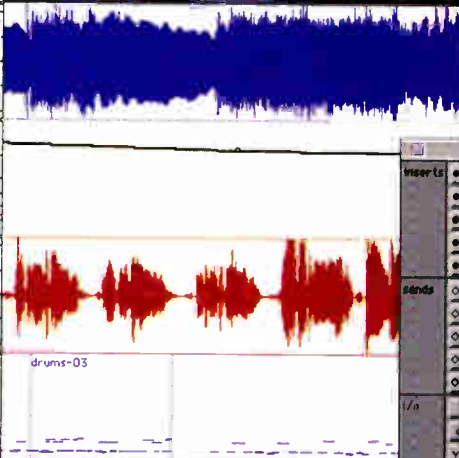
SYNC MODE

SAMPLE RATE

1 2 FORMAT

1 2 3 4 5 6 7 8

ADDITION AMPLIFY PHASE



VO Sub Mtrc Insert B dynamics bypass

output L R

gain 0.0

function compressor linking Stereo Link

ratio 2.50:1

threshold -30.0 dB

release 291 msec

Dynamics 1.164

volume -9.5	volume +6.0	volume -1.5	volume 1.27	volume -2.0	volume -∞
pan <68	<100	100	pan >0c	pan 64	<100
rec auto	auto	rec auto	record	auto	rec auto
solo mute	solo mute	solo mute	solo mute	solo mute	solo mute

INPUT OUTPUT

1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8

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be careful where you decide to economize. Professional legal advice, for example, will be essential, especially if you will be working out of your home. You need to know what local zoning ordinances, noise regulations and business license requirements apply.

And don't assume that your current homeowner's or renter's insurance will sufficiently cover your new gear. Not only does the security of your investment require sufficient coverage, but no lender will want to offer funding to a facility that is not properly insured.

Other costs you may incur include rent and security deposit on a room, as well as utility deposits, if you will not be working out of your home.

#### FINANCING OPTIONS

Okay, you have a plan. Now you need to show it to someone in order to get financing. Statistically, far more new businesses fail within the first few years than succeed. Bankers know this, and therefore are going to be extremely interested in the collateral you have to back up your plans.

If you're not a homeowner, or haven't yet built yourself a nice investment portfolio, the chances are that a commercial bank is going to be reluctant to hand over a cash loan. Without a moneyed co-signer or another investor, most banks just don't seem to have much to offer in the way of those fabled E-Z loan terms.

But don't despair, because up ahead, there's a faint, glimmering light at the end of the tunnel of doom. And its name is...the leasing company. Leasing company reps will look at your needs, and if they agree to fund you, they'll buy whatever equipment you want and then rent it to you.

What a concept! They retain ownership of the equipment. You sign a three- to five-year lease and make monthly payments. At the end of the lease, you have the option to purchase the equipment outright, usually for about 10% of its original value (in addition to all the payments you've been making). Other leases are structured so that your final buy-out is just one dollar.

Leasing is a great move taxwise, too. You get to write off your full payment each month, because the government considers it rent money instead of equipment ownership,

which can only be written off at about 20% per year. So if your lease is for less than five years, your write-offs save you more tax money.

But the best feature about leasing companies is that they are easier to deal with than banks. That's because if anything happens—say, you default on the lease—they can just take possession of the equipment and sell or lease it to someone else.

Leasing companies are also usually smaller, friendlier, and leaner and meaner than banks. The leasing agent whom you deal with may, in fact, be the owner of the leasing

company. This means that all you have to do to get financed is convince one person that you're a good risk. This isn't easy, but it's not nearly as difficult as getting a similar level of bank financing. In this case, the critical connection you need to make may be on a personal level. And that's where all the research and time and effort you put into your business plan pays off.

Naturally, the lease company is going to do what it can to offset the risk it takes by providing you with equipment credit. Because it won't have any history on a startup busi-

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ness, the company may ask you to provide some manner of side collateral. This can take the form of cash deposits, equipment that you own free and clear, or other conventional assurances, like real estate or securities.

The down side of leasing is that the cost of a lease package averages 3% to 8% higher than the cost of a bank loan. Some companies may go as high as 15% more. Their reasoning is that the risks are higher; you wouldn't be coming to them if you could get a deal at a bank. It's like the convenience store on the corner that charges 25 cents more for a quart of milk than the supermarket down the street.

But as your business history grows and your profitability increases, the lease rate you wind up paying will probably decrease. Many companies will reward solid customers with lower rates.

### OUTSIDE ANGELS

Another source of investment is private venture capital. Traditionally, venture capitalists tend to finance manufacturers or service startups that have the potential for high profit in a short period of time—not exactly the profile of a small recording facility. But the recording business does have a glamour all its own, and if you're a motivated businessperson, there's no reason to overlook this potentially rich source.

The first line to a venture capitalist is probably through your banker, lawyer or business adviser, who may know individuals who occasionally invest in lucrative or appealing startups. The second way is to locate a venture capital network, which is a group of individuals who are actively looking for *you*. You can start the search by contacting your Chamber of Commerce or other local entrepreneurial groups. "Angel networks," which are often set up by universities and state agencies, can be a great help. They'll also charge you a fee, usually a few hundred dollars, for their service.

You may also find that there are local venture forums being held in your area. These are meetings in which venture capitalists go head-to-head with entrepreneurs in open discussions. You'll want to bring as much impressive material as possible.

Naturally, there are trade-offs in getting venture funding. Your angel



is most likely going to be someone local who will want to keep an eye on you. He or she also will expect to have a say in the way things are run and, of course, will expect to get a good piece of the business and the profits, perhaps as much as 50%. Keep in mind that when a venture capitalist chooses you, you in turn are choosing a new business partner. It will behoove you to clearly define the roles each of you will play.

#### GETTING AN SBA LOAN

The Small Business Administration of the federal government has been a boon to many small business start-ups. The SBA was set up to help small-business entrepreneurs get a foot into the door of banks that otherwise would be out of reach. An SBA loan guarantees up to about 90% of the loan the bank makes to the business, thus removing the biggest obstacle to qualifying for a start-up.

But there is something of a gauntlet to run before you get the money. The paperwork comes from the government, which means that there's reams of it and that it's slow and cumbersome to complete. It can take three to six months to finish the process. But if you plan ahead, it may be the way to get financed with the fewest strings attached. To get the process started, ask your banker if the bank does SBA loans. A lot of banks turn their nose up, but there are always a few in each city that specialize in it.

#### SPECIALIZED LOAN PROGRAMS

Check to see if your city or state offers any special loan programs. Many states have special agencies and funds targeted toward business start-ups. And many expressly target women and minority groups. Contact local universities, minority organizations, city chambers and city halls for leads. And watch the paper for announcements of functions and meetings that could benefit you in your search.

Still short of funds? Maybe it's time to buddy up.

#### PARTNERSHIP

Partnership is probably the smartest way to enter, enjoy and be successful at business. To illustrate, look at how a "think tank" works. A bunch of people tackling a problem. For several hours or days or months,

they throw ideas back and forth until they finally emerge with solutions. Most problems don't have much chance of survival with so many determined minds hacking away at them!

So, partnership (with the right partner) can be a beautiful thing. You play off each other's strengths and weaknesses and come up with solutions you might never have dreamed up alone. It feels good, because you're connected to someone who wants the same things you do. And, naturally, another potential advantage is that your partner may

have money or assets to add to the equation.

You really *can* do it, from starting with nothing to opening a great setup, perhaps even in a matter of months. It's there for you if you're brave enough, if it's what you really want, and if you're willing to focus your energy and imagination on something you want so badly that you just won't take "no" for an answer. ■

*Jim Mandell is a co-owner of Interlok Studios in L.A. The Studio Business Book is available through the Mix Bookshelf.*

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by Dan Daley

# WHERE DO YOU WANT TO BE IN FIVE YEARS?

**T**here is a cosmological theory called the Strong Anthropic Principle that purports to prove the existence of the universe. The theory is that, while the universe can be proven logically, for it to exist physically, it must have inhabitants to observe and appreciate it. The universe, therefore, exists because ostensibly, you, me and everybody else qualify as observers, and because for various reasons, we do indeed appreciate it.

This arcane bit of existentialism is, in a tongue-in-cheek sort of way, a useful tool for project studio folks to apply to their own universe. Many of the facilities that make up the project

futures. A good five-year plan sets goals but remains flexible. The areas to look at are establishing the individual long-term outlook, prognosticating the turns technology might take in order to better foresee your needs, and anticipating changes in the project studio markets.

#### ESTABLISHING A PLAN

There actually is a five-year-plan template for project studios. It was developed by Dan Pfeifer, an assistant professor at Middle Tennessee State University's recording industry program, and is based on several sources, including standard business

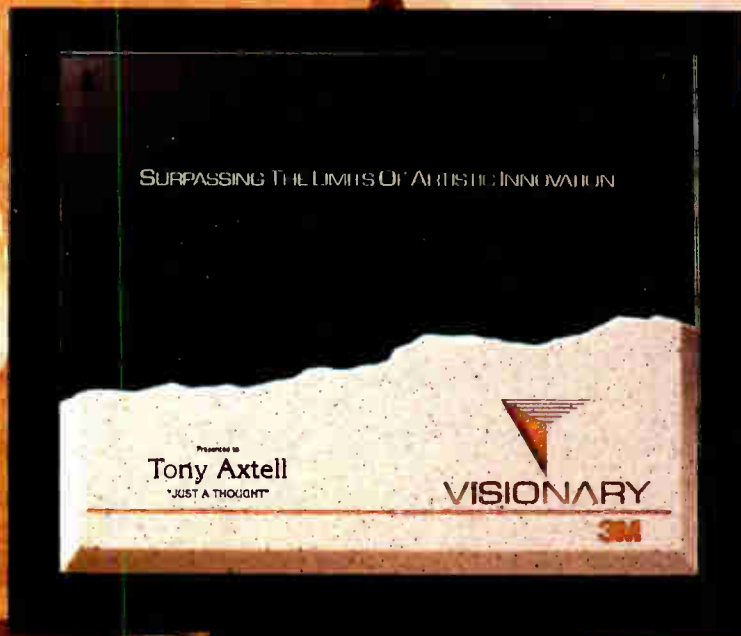
**A FIVE-YEAR PLAN IS THE TOOL USED BY MOST BUSINESSES IN PROJECTING AND CHARTING THE CAPITAL ASPECTS OF THEIR FUTURES. A GOOD FIVE-YEAR PLAN SETS GOALS BUT REMAINS FLEXIBLE.**

universe rose up out of a swiftly changing line of technology that began about a decade-and-a-half ago. This sort of rapid development tends to discourage the contemplation that the projects' transition from novelties to full-fledged businesses might otherwise invite. In other words, take a good look at your universe; where do you want to be in five years?

A five-year plan is the tool used by most businesses in projecting and charting the capital aspects of their

forms available at any office supply store and a paper delivered at a 1987 SPARS symposium by former Motown VP and SPARS president Guy Costa. The plan is far too long to reproduce here, but here's a synopsis. The overall headings provide clues to the major areas of consideration:

- Define the business—nature of services offered.
- Evaluate the marketplace—present/long-term client needs.
- Evaluate the competition—technology, service and clients.



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- Analyze the management—who does what in the organization.
- Analyze the finances—needs and resources.
- Define the objectives—where you want to be in five years.
- Define the strategies—new markets, clients and expansion.
- Prepare a summary.

**WHITHER TECHNOLOGY?**

Good question. Few of us foresaw the dramatic impact that downscaled equipment would have on the professional recording industry in the

first place, so forecasts as far out as five years are iffy at best.

However, there are a few useful conclusions that can be drawn and integrated into a five-year plan. One is that consoles are being replaced rather quickly now, as compared to their life cycles in larger studios; this is caused partly by the modularity of recording systems and the increasing upward mobility of users. The response has been to buy as much console as you can afford when replacing the current one, not just as much as you need. And keep a close eye on the used market—fast turnover means a lot of equipment

available with relatively low mileage and a great cost-effectiveness ratio.

Modular digital multitrack systems allow studios to customize storage for projects and permit the simultaneous operation of multiple projects. With a spare deck, facilities can minimize down time for those moments of maintenance and malfunction. The downside is that the more components in a system, the more opportunities there are for breakdown. Looking at the type of projects that a studio has been doing during the past 18 months could provide the best clues for system purchases.

Some of Costa's technology points to consider:

- Is your product/service considered state-of-the-art?
- Are you able to stay on top of the technology curve?
- Can you support your client's technology requirements?
- Is the competition as technically astute as you are?
- Do you have any proprietary technology?

The one major capital investment and five-year-plan component that hasn't been addressed consistently in project studios has been facility design. I've written several columns on this subject over the past few years, and they've drawn enough of a response to make clear the need for planning. The major designers are still out of economic reach for most project studio owners, but some acousticians are providing modified and less-costly consultations. Budget for design in a five-year plan, whether it's 20 bucks for a book or a thousand for a faxed consultation.

The rest of equipment choices remain based on personal taste and client requirements. Be aware that the latter is gaining more weight with project studio clients. Clients are reading the same magazines more and more and are aware of what's available. An informal technology poll of regular customers might also prove valuable in assessing future moves. And it makes the clients feel that their input is important.

**CHANGING MARKETS**

The only thing certain about change at this point is that it will be both faster and more invasive. Five years is still a reasonable term to use in long-range planning, despite the fact that within that same frame we saw

—CONTINUED ON PAGE 191

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**PINNACLE MICRO**  
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by Paul Potyten

# BEYOND STEREO

## NEW DEVELOPMENTS IN 3-D AUDIO TECHNOLOGY SHOWN AT AES

# A

few short years ago, it was the sole domain of research scientists, and its acknowledgment in the pro audio community was limited to the presentation of highly technical and arcane AES papers. But this year's AES show saw the arrival of significant products that incorporate three-dimensional audio technology, generally considered to be the audio gateway to virtual reality.

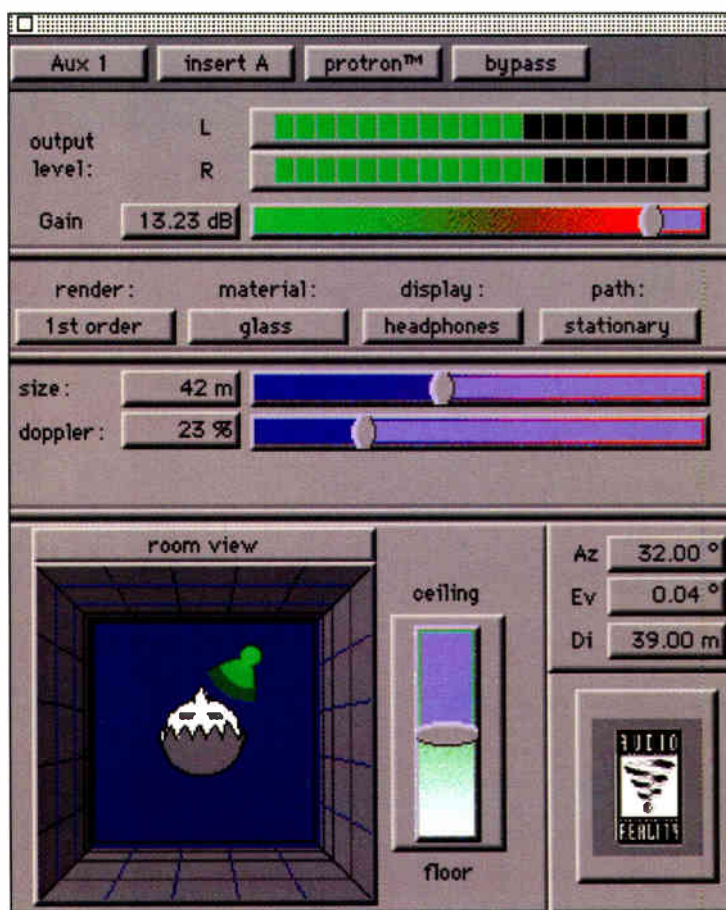
As DSP processing power has become more affordable, more and more people—from software developers and multimedia producers, to record company executives and film producers—are beginning to wake up to the potential of 3-D audio. (For more background, see "The Evolution of 3-D Audio," by Durand Begault, *Mix*, October 1993.) Unfortunately, the term seems to have achieved buzzword status and has come to mean different things to different people.

Spatial audio can be looked at in terms of two different types of systems: First, there are those that create an enhanced sense of spaciousness, from either headphones, stereo loudspeakers or multichannels—Dolby Stereo Digital, DTS, IMAX and custom configurations, for example. Second, there are those systems designed to place individual sound sources at predictable locations in three-dimensional space. An extension of the latter is auralization, which Mendell Kleiner of the Chalmers Acoustics Group describes as "the process of rendering audible, by physical or mathematical modeling, a soundfield of a source in a space in such a way as to simu-

late the binaural listening experience at a given position in the modeled space." There was evidence of both systems at the show.

One of the more impressive demonstrations of the first example was offered by Level Control Systems (Los Angeles) and Meyer Sound (Berkeley, Calif.). *Gate to the Mind's Eye* is a computer-animated video from Miramar Images, BMG Video and Giant Records, with a soundtrack from Thomas Dolby. For the ten-minute demo of *Gate*, Dolby's soundtrack was remixed from sepa-

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rate stereo music tracks and stereo sound effects tracks to eight tracks on a Tascam DA-88, slaved to a 3/4-inch video deck. Meyer MSL-2As, 650-R2 subwoofers and UPL-1-powered reinforcement loudspeakers were placed strategically in the 25x40-foot room. The LCS Cue Control software for Macintosh and LC-16 hardware were used to automate

considering technology. It was the foundation for the Convolvotron, a NASA-funded first-generation product for rendering real-time, interactive 3-D audio. The technology uses HRT filters to accurately display sounds anywhere around a listener—a technique that has been verified by psychoacoustic researchers. (See sidebar.) The output display modes are intended to be headphones, multimedia speakers or near-field speakers. Ac-

audio product out of it. ProTron is the result."

ProTron does some heavy-duty DSP, requiring an entire 56000 DSP to generate a stereo output in real time. "We're doing very accurate spreading and propagation losses to compensate for air absorption at a certain frequency and humidity," says Tanner. "We're calculating those continuously as you drag the speaker around." Multiple ProTrons can run simultaneously, limited only by the power of Digidesign's TDM and DSP Farm architecture. Here are some of its most significant features:

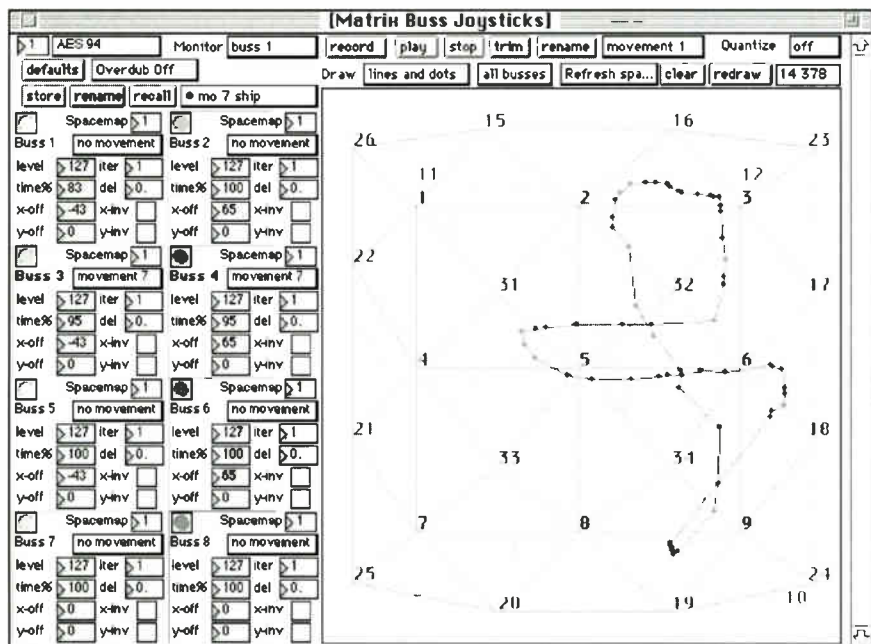
- True RMS returning meters—whatever is on the screen is a true RMS value at that point.
- Gain-controlled output.
- Direct-path rendering without reflections—essentially simulating an anechoic chamber.
- The ability to turn first-order reflections on and off. (Version 2.0 will render second-order and late-field reflections.) With reflections on, you get an accurate rendering with the specified material. Materials include carpet, fiberglass, glass, marble, cellulose, velour and plywood.
- Continuously variable room size, from approximately one meter to 100 meters. (In this version, the x, y and z dimensions are not independently variable.) The listener is positioned at the center of the room, and the source moves around.

- Real-time rendering at the specified sample rate, up to 50 kHz.
- Doppler shift from 0% to 100%, relative to the velocity of the source.
- All parameters are continuously variable in real time.

CRE hopes to include a path editor in the first shipping version. If not, it will be in Version 1.1, which will be available in the first quarter of 1995 at a suggested retail price of \$995.

According to Tanner, "When you have a reverb unit in parallel with ProTron, you have a complete room-renderer, because the reverb takes care of late reflections, which are relatively static as a function of source position."

While the ProTron is designed to process mono audio into a binaural 3-D space, you can process stereo files to achieve bizarre effects. In fact, Tanner believes that this technology is going to change the way we mix. "At the AES show, I connected a reverb unit with a cathedral algorithm in series with the ProTron and moved that source around," he says. "So, the re-



Level Control Systems' Cue Control subcue window showing the movement of a stereo sound effect on buses 3 and 4

level and pan to eight outputs. The result was a visually and sonically breathtaking experience. LCS systems are currently in use on the sets of *Starlight Express* and *Cirque du Soleil* in Las Vegas, and the *Flintstones* theme park at Universal Studios in Los Angeles, to name a few.

The most exciting aspect of the blossoming 3-D audio technology was taking place at the Digidesign booth. Pro Tools III, with its built-in TDM architecture, has encouraged many third parties to develop TDM plug-in software. Among those on hand were QSound Labs (Calgary, Alberta), which demonstrated its QSystem/TDM audio localization plug-in; Arboretum Systems Inc. (San Francisco), which showed Hyperprism TDM, a plug-in that provides a wide variety of real-time DSP effects; and Crystal River Engineering (Palo Alto, Calif.), which unveiled its ProTron AudioReality Plug-In.

AudioReality is what CRE calls its real-time, interactive 3-D-audio-ren-

dering to Ted Tanner, senior DSP engineer of the professional audio group at CRE, the original technology ran on TI C20 or C25 DSP chips that were on home-brewed, PC-based audio cards. It has since been ported to the Motorola 56000 chip and optimized to work with PC-based applications using a customized Multisound card from Turtle Beach Systems.

Tanner's interest in spatialization goes back to his graduate days at the University of Miami under Ken Pohlmann. He participated in this year's AES Workshop on 3-D Stereo, along with experts from Roland, QSound Labs, SRS Labs and other pioneers in the field. Before coming to Crystal River last July, Tanner was one of the main software architects on the Digidesign TDM project, having written DVerb and some of the starter plug-ins. He immediately signed CRE up as a third-party developer. "My charter," Tanner says, "was to optimize the current technology even more to make a pro-



verb would be moving around in space and the RT60 would be trailing off and Doppler-shifted. Well, that doesn't occur anywhere in real life! Then I ran that signal into a small room, so there was this localized ball of reverberance moving around in a small room. The concept—and the effect—was mind-bending. That's just one of the more bizarre creative applications of this technology.

"You can definitely hear the vertical aspect as well," Tanner adds. "You don't have to worry about phase coherence on the source, and if I want to mix down for regular mono TV, it doesn't collapse. One thing that sets true modeling apart from other enhancement processes is that it's transparent. It's not an effect. In fact, you really don't notice it at first because it's so immersive—it's like you're listening to something in the real world. Many of the other so-called 3-D processes are more like stereo expansion effects. They typically take a stereo mix and make it sound more expansive by adding a little bit of reverberance, some low-end EQ and some phase shift. But it really doesn't do anything as far as localizing."

Roland RSS-10



### Roland RSS-10 Sound Space Processor

Tanner is trying to organize an auralization subcommittee in the AES because he feels there is a need to standardize the way we look at auralization: "You need psycho-acousticians, architectural acoustic professionals, like Peter D'Antonio, as well as DSP-hackers. I'd like to see a clearer distinction made between 'enhanced stereo,' 'auralization' and true '3-D audio.'"

Spatial Sound Inc. (Fairfax, Calif.) was showing its SSP-300 Cinema Spatial Sound Processor. The module is essentially a multichannel panner for audio post-production that supports Dolby Stereo, Dolby Stereo Digital, DTS, Sony's SDDS, IMAX and HDTV. The company's proprietary algorithm-based Spatial Sound Processing provides continuous sound positioning over an entire sound field, with lateral and front-rear panning.

A new version of Circle Surround™

from RSP Technologies (Rochester Hills, Mich.) was also on the show floor. A complete Circle Surround system consists of an encoder, decoder (either the standard or RSP's new High Performance Decoder), and a Circle Surround Controller. Also new was Azimuth Soundfield PC automation software, developed by RSP and Audio Dimensions UK. The \$4,500 package offers dynamic automation of up to eight individual channels of audio using an encoder, decoder and controller with a joystick remote. The Circle Surround System is said to be designed specifically for music production. It has been created for use with four-, five- or six-speaker systems and is compatible with mono, stereo and theater-style surround processing.

Spatializer Audio Laboratories and Desper Products Inc. (Los Angeles), the company's U.S. subsidiary, unveiled Digital Spatializer 3-D. Digital

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Spatializer (see "Field Test," *Mix*, March 1994) features software-driven parameters, reference-quality metering and 24-bit processing. It is designed to provide precise control of expanded stereo imaging and realistic stereo synthesis from mono sources. Also shown was Pro Spatializer 5.3 Cinema software, which offers MIDI sequencer control of Spatializer parameters. All joystick moves may be recorded, edited and played back

### CRE's Version of Virtual Audio Reality

Tucked away in a far corner of the Moscone Center at AES was the Crystal River Engineering booth. I had to look for it, but it was worth the visit. CRE's engineers had modeled a virtual environment that could be experienced with goggles and headphones. A simple hand-held controller let me navigate a real-time-rendered visual and audio landscape in three dimensions. As you moved through the virtual space, you could view objects that were also moving independently. Each had its own sound source that moved with it. A polygon pulsed with the sound of a bass guitar riff. A drum kit was heard floating in the space behind me; I wheeled around and heard them in front of me as a new object appeared. I moved right through the object and literally right *through* the sound. As I continued forward, the drum kit sound melted into the sonic ambience behind me. For those predisposed to violence, you could even shoot at the objects. Shooting at some simply toggled their sound off and on. Others exploded on the screen, complete with the appropriate 3-D sonic effects. It was a compelling demonstration—not a competition; no wagering, please—of the power of spatial audio. And it was big fun.

—Paul Potyen

using MIDI continuous controllers. In addition up to 100 snapshots of Spatializer system settings can be recorded and recalled.

L.A.'s Roland Corp. announced its RSS-10 Roland Sound Space Processor, a 2-channel system that is the descendant of its original spatial technology (see "Field Test," December 1991). The single-rackspace RSS-10 is said to offer azimuth, elevation and distance control, including dynamic digital processing of reflections, delays and Doppler effect. The resulting signal can be played through a normal two-speaker system. Up to 16 units may be linked for a total of 32 channels of 3-D audio.

The RSS-10 also comes with two types of controlling software, for either Macintosh or Windows platforms. The first allows the user to statically position up to 32 channels of audio within a three-dimensional space. The second software package allows for control of dynamic effects, such as Doppler shift, flanging and movement of sources in the space. Source distance is up to 655 meters; room size is adjustable from one to 100 meters; reverb time can be varied from 0.1 to 40 seconds.

And last, but not least, Lake DSP (Maroubra, Australia) was showing its specialized hardware for realizing auralization—the acoustical simulation of virtual spaces. Its FDP 1 *plus* Digital Audio Convolution Processor is described as a system for real-time digital audio convolution applications. Unlike the TDM plug-ins and the Roland systems, which focus their spatial processing only on early reflections, the Lake hardware, combined with Windows-based CAD software, is capable of emulating more than four seconds of room impulse response in terms of both early and late reflections. The package is designed for acoustic modeling applications.

Another new product from Lake is the Huron Digital Audio Convolution Workstation. It is designed to handle applications in virtual acoustic room modeling, room measurement, head tracking and animated convolution. Multiple DSPs are used to handle up to 256 channels of 24-bit, 48kHz audio. You don't want to know how much this thing costs.

Special thanks to Durand Begault for help on this article. ■

*Paul Potyen maintains a virtual presence at Mix.*

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World Radio History

by Dan Daley

# BRITISH PRODUCERS A WORLD APART

## RE-PRO MEMBERS TALK ABOUT THEM AND US



Left to right Peter Filleul, Robin Millar, and Rupert Hine

PHOTO: ILLUSTRATIONS

PHOTO: DAN DALEY

**A**ir Lyndhurst Studios is off a main road in the Hampstead district of London. The 1880 church retains its Victorian exterior except for a few modifications, such as a glass-covered atrium between buildings that takes maximum advantage of what passes in London for sunlight. Inside, though, the conversion is complete, from house of worship to house of music.

One of the rooms inside the church, up either the narrow stairs or the more modern lift, is a private restaurant with a daily fare matching

the best of Mayfair or Belgravia, made that much better by not having to deal with the bloody tourists. In the dining room sit Robin Millar of the Association of Professional Recording Services; Peter Filleul, head of its Re-Pro division; and Re-Pro charter member and noted producer Rupert Hine.

This being Friday, the menu is heavily weighted toward fish; this being 1994, the agenda is centered around an increasingly global indus-

—CONTINUED ON PAGE 71

## Facility Spotlight

# STUDIO ZORRINO



Two views of the control room



PHOTOS MICHAEL BOCANDE

Studio Zorrino, in Saint-Ouen, France, near Paris, was completed last year and is home to one of France's most popular recording engineers: owner and founder Didier Lozahic.

Lozahic began his career 17 years ago as an assistant to veteran engineer Dominique Blanc-Francard at Studio Aquarium in Paris. Lozahic then worked freelance at French facilities such as Studio Ferber and Plus XXX, and later internationally at a number of high-profile studios, including the Townhouse in London, Air Montserrat in the Caribbean and Unique Recording in New York.

"I was looking for a place where I could settle and concentrate on my work," Lozahic says. "At first, my idea was to create a kind of big home studio, but it turned into a rather big commercial facility."

One of Lozahic's priorities at the outset was to construct a large recording area for acoustic sessions. Christian Malcurt, a French architectural/acoustical designer whose previous work includes Plus XXX

Studios (*Mix*, February 1994), Le Voyageur II mobile studio (*Mix*, June 1990), Studio 8 at IRCAM, Studio du Manoir, and Eric Serra's private studio (Xplorer), was hired to transform a former warehouse into a well-appointed recording facility.

The 538-square-foot control room features LEDE® acoustics and Malcurt's custom-made diffusors. It houses a secondhand 48-input Neve V1 console from Air Montserrat with a Necam 96 automation system and a separate patchbay, flush-mounted in the acoustical treatment on the right wall. "I was looking for an old Neve that had some history," Lozahic explains. "As luck would have it, today I own a mythical console that had such a wonderful life in the past." (A mythical console for a mythical studio: The name Zorrino comes from a character in "The Sun Temple" series of "Tintin" comic strips.)

Behind the desk is a synth table with racks of outboard equipment from Aphex, EMT, Eventide, Lexicon, Neve, Roland, TC Electronic and Yamaha. The monitoring sys-

tem includes three Genelec 1025A and two custom sub-bass main monitors. The near-fields are Quested Q108s and Yamaha NS-10s. A Mitsubishi X-850 32-track PID-format digital recorder with Apogee filters resides in a separate air-conditioned machine room. A wide variety of keyboards and MIDI gear on the facility's Apple Macintosh IIx workstation are also available.

Studio Zorrino's 1,076-square-foot recording area, with a live-sounding isolation booth, is capable of accommodating 50 musicians. This room's acoustic treatment includes a reverberant wooden surface on two walls and absorbers on the other two walls.

Next to the studio, on the ground floor, is an artists' lounge with a kitchen and bar. Upstairs, there is another 646-square-foot lounge that has a decidedly tropical decor.

Recent sessions at Studio Zorrino include Eric Serra mixing the score for *The Professional*, Kassav, Jocelyne Beroard and Phil Barney.

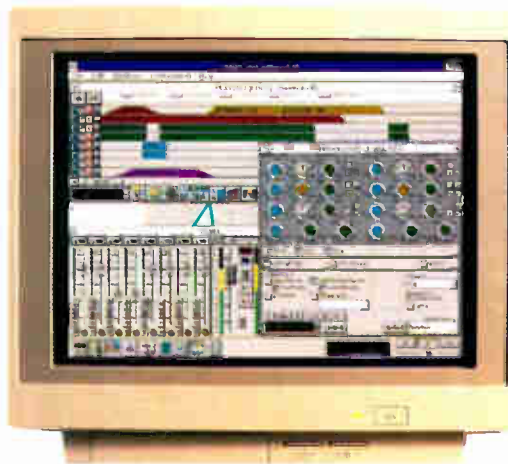
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## Facility Spotlight

# FEEDBACK STUDIOS

Mix learned about Aarhus, Denmark's Feedback Studios from Danish producer Ken Jacobsen, who has become quite a fan of this two-studio facility. Jacobsen has visited Feedback several times for his work with Danish progressive metal band Unleashed Power and says, "Where other studios are very big and can compete by having all equipment, Feedback competes with a comfortable atmosphere."

According to Feedback manager Henrik Kjaersgaard, that competition is pretty fierce in Denmark. "The music business is in a very hard time right now," he says. "It is very small. You have a country of only about 5 million people, but we have done about 20 projects this year. Things are beginning to improve."

Feedback was started 22 years ago by The Gnags, Danish rockers who have recorded 20 albums in their native country since the '60s. The facility is situated in a 100-year-old home in a residential neighborhood, where Jacobsen says the atmosphere is very

friendly. "Nobody complains. Noise is never an issue because there is a good relationship with the neighbors. And Denmark does not have as strict noise regulations as you have [in the U.S.]" The studios, designed by the owners, are built into the ground floor of the house; upstairs are accommodations for clients: two bedrooms, a kitchen and a game room that Jacobsen enthusiastically says includes "video games, pinball, even Foosball. The staff makes you feel right at home."

Studio 1 is built around a custom 56-channel Calrec A-8000 console with AMS mix automation. The room also offers recorders from Otari, Sony and Aiwa; Genelec, JBL, Yamaha, Auratone and B&O monitors; mics from Sanken, Neumann, AKG, B&K, Shure and Electro-Voice; and a wide selection of effects devices.

Studio 2 features an Amek 2500 36-channel console, tape machines from Otari, Studer, Sony and Aiwa, speakers by Dynaudio, JBL, Yamaha, Auratone and B&O, and mics from the same makers that supplied Studio 1.

According to Jacobsen, "Everyone else [in Denmark] is all-digital. Feedback is the only studio that is geared for analog. They are dedicated to analog. You know how you have a trend in the U.S. where studios compete by having the best vintage gear? Feedback is like those U.S. facilities."

Feedback also retains its own technical/maintenance staff, and Jacobsen says they pride themselves on minimizing downtime. Feedback's client roster boasts a long list of European acts, such as The Gnags, Unleashed Power, Cut N' Move, Nice Device, Michael Learns to Rock and Thomas Helmig. The studio also has been involved in a limited amount of TV commercial work, which Kjaersgaard hopes to expand. "The next thing we want to do is get a bigger hard disk system and do more audio-for-video work," he says. "That seems like the market that is growing. But still there is only so much work for each studio. In Denmark, we have only two TV channels."

—Barbara Schultz



The control room and studio of Feedback's Studio 1

—FROM PAGE 68, BRITISH PRODUCERS

try, one in which record producers will be facing new technological and budgetary challenges. Re-Pro, formerly the British Record Producers Guild, has reinvented itself in the

past two years, seeking to address market changes and to broaden its appeal to a new class of producer. Chided by some as an old-boy network—with an elite membership that includes producers such as Hine,

Hugh Padgham, Gus Dudgeon and Alan Parsons—the name change signifies a divorce from its national origins and a shift toward the future.

The elimination of "British" from the handle also reflects the acknowl-

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edged need to bring American producers into the fold. Yet, those Americans are perceived as the same sort of cowboys that horrified and fascinated the penny-dreadful Victorian crowd 100 years ago. In a sense, little has changed; British producers still regard their American counterparts as brash at best and avaricious at worst, with an accent more on the deal and less on the music. At the same time, they are duly respectful of American technical prowess and numbers. The British system of paying royalties already allows for compensation to artists and record companies from broadcast performances; under the U.S. system, now being challenged in Congress by the Recording Industry Association of America, only composers and publishers are paid. Re-Pro members want compensation extended to producers, and they want to do so in concert with their American cousins.

Some producers resist the idea of an organization like Re-Pro on a philosophical basis, others on a practical one. American producer John Boylan, who was a VP of A&R at Epic Records from 1975 to 1984 and produced Boston, Little River Band and, more recently, Nelson and the music for *The Simpsons*, said, "There's no need to organize [producers] here. The reason for organization is solidarity, especially for negotiation. But everyone knows that a record producer is a hired gun in competition with every other one on the planet. If an organization set fees, the ones at the top end would suffer, and I'm at the top end. It's not to the advantage of successful producers to organize. If you have a good attorney, you won't get screwed. There are reasons—such as exchange of technical information, setting of standards and camaraderie—to organize, but not for economic reasons."

Producer Russ Titelman, currently a VP at Warners, is softer on the issue. "There's a DGA for directors, why not one for producers?" he said. "My first record was Little Feat's debut album. My lawyer at the time was Steve Jacoby, who went on to found Jacoby & Meyers, which pioneered television advertising for lawyers. He first brought up the question of why producers didn't organize and how a base percentage across the board would be a good



thing. The trend toward producers having agents provides an organization in an ad hoc sort of way."

Millar, who has produced Sade and Big Country; Filleul, a television and film composer/producer; and

down. It appears that the initial reactions were based on economics.

**Millar:** Re-Pro didn't start out to have anything to do with economics. We suffered in this country in the way that producers in all countries

er relationship. You never knew why you didn't do the next record. The tendency was to point a finger at another producer for getting it. The first thing we did was an honest admission of each other's fears and anxieties. [The first meeting in 1986] was a real bolt out of the blue to hear people of this status talk about their problems and insecurities. It was an amazing meeting. I was in awe. It was Gus Dudgeon, me, Alan Parsons, Hugh Padgham and Colin Firson. Gus started it by asking why do your records sound better on the radio than mine.

**Mix:** Are you making Re-Pro slicker for marketing purposes?

**Filleul:** Yes, exactly. That's why we changed the name from BRPG to Re-Pro—to broaden it.

**Millar:** What persists in America and doesn't surprise me is an atmosphere of cold, calculated, unfriendly competition amongst producers and engineers. There is no place for that in Re-Pro; it's actively discouraged. There are so many of us in it now that the tide has turned in Britain, and I think American producers would be much happier people if

*We* suffered in this country in the way that producers in all countries suffer. Working in isolation and with an atmosphere of suspicion based on one another's work. This was exacerbated by the turnover in the artist/producer relationship. —Robin Millar

Hine, best known for his work with Howard Jones and Tina Turner, tackled these and other issues over lunch and port.

**Mix:** Many American producers are unfamiliar with the idea of a producers' guild. John Boylan said that any organization that attempted to address rates would bring the average

suffer. Working in isolation and with an atmosphere of suspicion based on one another's work, along with the nature of the business, meant that unless you were one of the chosen few like Rupert or Hugh Padgham, you wouldn't get a sustained career with one artist over the course of six or so albums. This was exacerbated by the turnover in the artist/producer

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they could join instead of thinking it's a horrible idea. Record producers getting together would provide a support group.

**Mix:** Is there a cultural barrier to the idea?

**Millar:** No. I think that's normal for the States, and we were the exception to that. There was a lot of suspicion, there still is in Britain outside of Re-Pro, but the constant reward is the people who tell me after a year that they feel like part of the family.

**Mix:** What are the benefits, tangible or intangible?

**Hine:** They're becoming much more tangible. The idea of being helpful to others. I've always been very happy to share my experiences and ideas with others. I don't feel the competition that Robin was referring to here in Britain. The more tangible things are that it provides a forum for a lot of producers to express opinions to record companies. Where an individual might be scared of expressing himself, fearing future work loss, here we can say it in one voice with one cause. You can make more points more strongly.

**Mix:** Would you characterize the British producer community as more

collegial than in the U.S.?

**Hine:** I find that in America, engineers and producers are much more guarded—to the point where someone is almost obsessive, like covering the console so no one can see the EQ. That doesn't happen in England on any level. People are much keener to share.

**Filleul:** It's cultural as well because of the commercial aspect. [Americans] run their lives with the expectation that there's going to be a deal involved. They're much more protective of their business positions, not only in record production but in other professions.

**Millar:** I think there is a kind of cynical, slightly negative anticompetitiveness in the English people, a sort of surly, grudging attitude toward somebody doing well. What doesn't happen in England is an "I'm gonna get the next guy" sort of thing. I haven't seen that in 20 years here. Getting the job off someone else. A sense of *noblesse oblige* and manner prevails here. An English producer would be much more willing to step aside if he hears that someone else had high expectations of getting a job that he was going for. At least, the other producer would contact him and let him know about it.

**Mix:** Is there an element of the old-school network? And is there an apprentice program in Re-Pro?

**Millar:** When I joined, there were very strict rules about what you had to have to be a member of the BRPG. You had to have a number of singles to become an associate member. As you became more successful, you would be encouraged to become a full member, which brought other benefits. In 1992, we decided to change all this and expand the varieties of people who could become involved. We recognized that people working in areas like TV were in the audio realm. We could offer great networking opportunities. We also determined in that time to encourage very young people who were engineers, who aspire to be producers, to benefit from the experience of the older colleagues.

**Mix:** How did you define "producer"?

**Filleul:** [Reading from the Re-Pro guidebook] "An audio producer is a person appointed to arrange and coordinate all aspects of the sound recording process...including the choice of studio, material, the hiring of session musicians...and the inter-

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pretation of creative ideas."

**Mix:** Is there still a minimum to get in?

**Filleul:** It's been much easier since we got a two-tier system. That allows you to have access to a fair proportion of our organized events, but you're not allowed to vote. We have an elected directorate of 12 people, 42 full members and 120 associates.

**Millar:** We've doubled our membership in 14 months. We're the one division of APRS that's expanding.

**Mix:** How do you apply the self-described altruistic nature of this organization to an America that you describe as overly competitive and borderline avaricious?

**Millar:** It's difficult because the whole notion of the U.S. is based on individual rights within a community. It's easier in a country like England where individuals have duties that are as important as rights. One of the most important things we do is genuinely improve everything we can about how well young producers make records and how good their opportunities are, teach them the skills and also the really boring

stuff—that songs have to have beginnings and ends, remember to label things, etc. We know you come from a band and are creative and all, but you've got responsibilities and these are what they are. And in return, we try to promote your best in-

*We're getting closer to issues. Which is what Re-Pro wants to stress rather than mic placement.*

—Robin Millar

terests in the widest possible sense, and that will include economics from time to time.

Since we've been holding public forums, the artists' managers at the highest level, including Simply Red, Dire Straits and others, have joined together into an international feder-

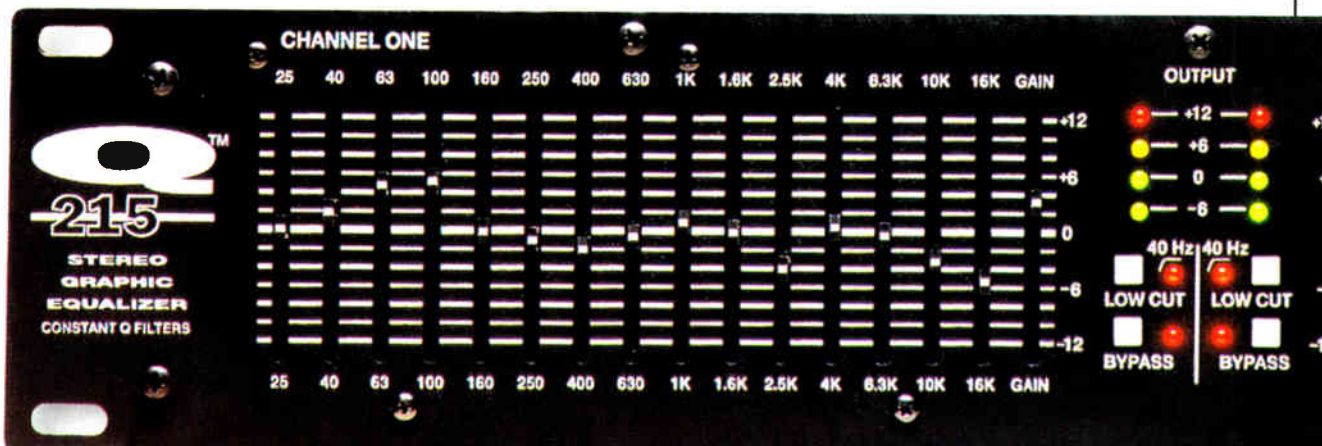
ation of managers [The International Managers Forum]. All the big managers in the UK are in, and it's a carbon copy of Re-Pro and modeled on and inspired by Re-Pro. The 26 major studios in London have joined together to form the Studio Accord to meet regularly to discuss mutual problems, and that was modeled and started by Re-Pro. We even get A&R people and managing directors from radio stations and try to point out to them that we all love music and that this isn't a war or a competition.

**Mix:** How reflective is this of a music industry that has become more corporate, that would rather bet on the reissue of a 14-year-old Eagles record than spend money on a new act?

**Millar:** Record companies are less interested in developing new acts and are largely controlled by multinational companies that have profit as the major impetus, although they claim music as their major purpose. As a reaction to that, those who are creating the product inevitably wake up and say we are the ones who are doing this, we're being exploited sometimes, we're not being consulted or asked about what we want in

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the development of the industry.

**Mix:** What are the intentions of Re-Pro as far the U.S. is concerned?

**Millar:** We'd like a visible presence at AES. We'd like to be able to hold seminars and invite U.S. producers and have explained to them the advantage of the networking and problems of future royalties, something we've been focusing on.

**Filleul:** The AES is more of a technology demonstration. Ever since we started, we've tried to address technological developments to music from a sensible point of view, saying to manufacturers and studios, "We have enough people at our disposal that if you talk to them, you'll get it right." Now the major UK manufacturers all consult us in the course of product development. We are the interface between them and the industry. We spend as much time looking toward the record companies, who are our paymasters. We're here to represent the interests of record producers and engineers. We can't control what PolyGram is going to do, but what we can do is make sure that any producer is aware first-hand of what those changes will be and

how they'll be affected by them.

**Mix:** APRS is a very comprehensive organization. In the U.S. we have SPARS, RIAA, etc., and there's a big difference in structures. What are your expectations in the U.S.?

**Millar:** You mentioned the RIAA. I have a colleague who returned from a seminar there recently. They have become a mover in the attempt to get a performance rights bill. They have produced a document that alerts producers to the fact that once an income stream is in place, that 50% of the money is to be allocated to performance. We'd like American producers to consider the lobbying of that. A record producer actually delivers a performance. The basic job of a record producer is a creative job, therefore they should participate in performance income. We can help them recognize the routes they should take and the problems they could find. It's possibly the most important thing for them to focus on.

**Filleul:** Since 1987, we've been trying to get record companies and producers and artists into the same room. My advice to U.S. record producers and engineers is that they

should think about that carefully. They're in an ideal position to act as brokers and mediators.

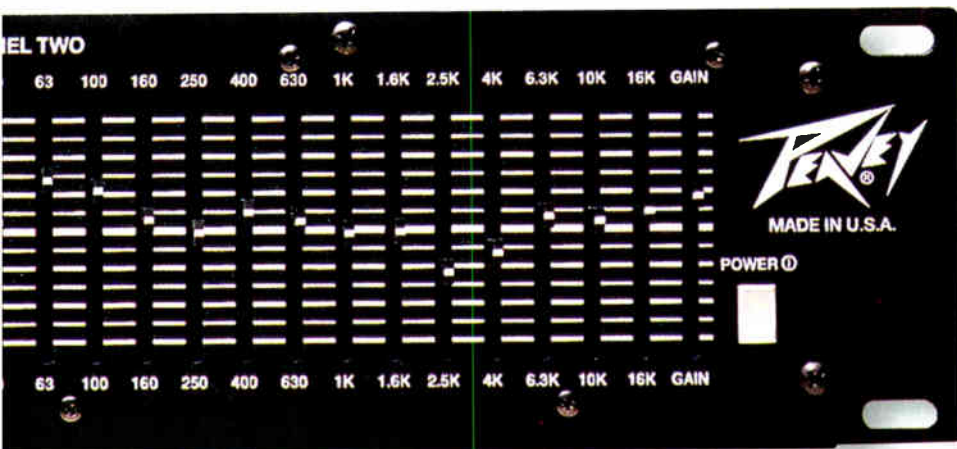
**Mix:** Is there a cultural gap in other ways?

**Hine:** American audio magazines and producers seem to focus on what mics on what drum kit and not on realizing that the same techniques would produce a different sound day to day. Never have I been asked about the psychology of production. Or about drugs in the studio and recording people when they're on them.

**Millar:** We're getting closer to issues. Which is what Re-Pro wants to stress rather than mic placement. How do you present that to an American audience? It might be difficult, because in my experience, American producers know their shit. In terms of the craft, a U.S. rookie engineer six months into working in a major studio knows more than a lot of top-flight English record producers. I'm not putting English record producers down. The truth is that we do make different sorts of records. There is a real cultural difference, which perhaps technical magazines don't understand, which is the human grease that makes someone

EQs using inferior gyrator circuitry. **AND** since frequencies needing cut/boost are usually higher or lower than a frequency band's center, the constant Q is set to cover the immediate frequencies on either side. **AND** that's not all... **CHECK OUT THESE FEATURES:** 2/3 octave dual independent 15-band EQ channels • Constant Q filters on standard ISO centers • 10 Hz low cut switch with LED indicator, bypass switch with LED indicator, and overall gain control on each channel • 45 mm sliders with full-length dust shielding • 20 Hz to 20 kHz bandwidth • ±12 dB cut/boost • Dual 4-step multicolor LED output indicators

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World Radio History  
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English. Where [a producer] puts a mic on a particular day may depend as much on his mood as anything else.

American producers are isolated but also obsessive and hard-working. The music is also ghettoized—they have to relate what they are to what they do. My view is that actors make better soldiers than soldiers make actors. The important thing about making a good movie about Vietnam is not that you're a Vietnam vet but that you're a good film director. And that perhaps is a more English slant to the whole thing. Flaubert said, "Be ordinary and bourgeois in your life and violent and imaginative

*All the producers in this country just are nutty about making music, and the last thing any of them think about is money.*

—Robin Millar

in your work." We're not as obsessive in the same way, therefore we're not as knowledgeable in the same way, so it may be hard to take 15 to 20 top U.S. producers and talk the way we been talking.

**Mix:** It makes me realize that I've been asking very American questions and getting very British answers.

**Millar:** And wondering why we're taking so long to answer questions. Americans will walk into a shop and say how much is the vase in the window. And a British shopkeeper would say, "Do you believe that? He walked right up and asked the price without asking about the weather!"

**Mix:** What are the biggest issues facing producers?

**Millar:** One is the tax on blank media and its distribution.

**Mix:** Does the UK participate in the Athens Agreement?

**Millar:** Yes, we do. But the way that the EC is structured, the British government is able to decide it is not in favor of enacting certain provisions of

it. We don't know how that's going to turn out. There are three countries in the EC that have not decided: Luxembourg, Ireland and the UK.

**Mix:** Several record companies, like MCA, have already started their own interactive divisions. Does Re-Pro have a plan for this?

**Millar:** It's a very British response. All the producers in this country just are nutty about making music, and the last thing any of them think about is money, except for a few in the dance remix game who didn't come out of music. Otherwise, they're not nutty about money. Before we address what is the mechanism, we have to make them more aware.

**Mix:** But is there a plan?

**Filleul:** There is, but it's sensitive. There is, in Europe, a view toward creating a new source of remuneration from the performance of samples. And all of the people involved are in the process of establishing a mechanism and discussing appropriate apportionment of income. But that becomes a political endeavor. It's controlled principally by the record companies, and they wish to retain control of income.

**Mix:** Do you have political lobbies to press your views?

**Filleul:** We have access to it but not the kind of funds that the labels do. There is a structure developing, but it's sensitive and the principals don't wish to show their cards. But we expect some kind of consensus by the end of the year. Whatever arrangement is coming has to be acceptable to government. If anything is thwarting us, it's the record companies' reluctance to talk to us.

**Mix:** So you feel like you've had measurable success over the years?

**Hine:** When you think about it, producers' royalties for CDs were once 50 percent of what they were for vinyl. They've worked their way up since then. It's been a battle. There has been progress, but there will have to be more as new technologies change this business. ■

## BITS AND PIECES

### EUROPE

A DDA QII console was supplied to the Zurich Opera House for performances of the Hansjürgen von Bose opera *Medea*. DDA's Swiss distributor is Dr. W.A. Gunter...D&R sent its first

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FEBRUARY 1995, MIX 79

two Merlin mixing and post-production consoles to Affolter Recording Studios in Holland and Perfect Sound Studios in Austria. Two of Holland's national broadcast companies, NOB and KRO, and the country's RTL4-TV installed D&R Axion sound reinforcement consoles...The Grooveyard/De-Film Studios in Copenhagen hosted The Overlords for production of the band's fourth album, *All the Naked People*. The work was done on the facility's 32-channel Amek Hendrix with Supertrue automation. Other featured equipment used for the project includes Lyrec, Akai, Tascam, Fostex and Panasonic tape machines; monitors from JBL, Yamaha, AB Musik and Roland; and Pro Tools and Sound Tools...Belgian producer/composer Philip Martens, of Sterman & Cook, acquired a 40-channel Soundtracs Jade console from Brussels-based distributor ASC. Martens' recent credits include techno-dance band 2 Unlimited's songs "Workaholic," "Tribal Dance" and "Maximum Overdrive"...Sony Broadcast & Professional Europe opened a new branch in

Prague. Sony representatives report that the post-Cold War Czech Republic has seen the development of three more Czech TV stations and as many as 25 new private FM radio stations...JBL Pro Europe has a new Italian distributor: Audio Equipment Srl of Monza, which is near Milan. Audio Equipment also distributes Soundcraft, Spirit, AKG, BSS, Lexicon, Rivera and DOD products...

**UK**

The University of Surrey acquired a Soundtracs Megas II Stage sound reinforcement console for its Campus AV Live Sound PA course. The three-day class is run by Victor Rush of The PA Company. P&O Exhibition Services purchased four Soundtracs Solo live consoles for use in Earls Court, the Olympia and for P&O's Brompton Suite conferencing facility...Abbey Road acquired three Focusrite Red 5 power amps for its control room monitors, as well as three of the company's ISA 215 mic preamps and three Red 3 compressor/limiters...Moles Studios in Bath installed a 64-channel automation package Optifile Tetra with local status control and op-

tional remote control. The unit was supplied by The Home Services of Teddington, Middlesex...The Eden Court Theater and Conference Center in Inverness, Scotland, installed a 32-channel Soundcraft Vienna II. The venue's 800-seat multipurpose/conference room regularly hosts visiting theater, opera and ballet companies. The console was supplied and installed by The Warehouse. CineLingual, a London film-dubbing studio, took delivery of a Soundcraft DC2000 console, provided by Interact Systems. Recent projects at this 26-year-old facility include work on the British films *Staggered* and *Decadence* and episodes of *The South Bank Show*...Westpoint Studios (London) is the new facility run by Respect Production Ltd. RPL is a recording production company co-owned by Gota Yashiki, a member of Simply Red whose production credits include Bomb the Bass and Soul II Soul. Westpoint was designed by Recording Architecture and is equipped with an SSL 4000 G Plus console...CTS Studios, a four-studio complex in Wembley, London, ordered a Neve Capricorn digital console...

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**CANADA**

Comfort Sound Recording, Toronto, was acquired by Lee Sand from previous owner Doug McClement. Sand plans to update the 24-track analog facility, adding a new 7-foot Steinway grand piano and bringing in digital equipment from her former studio, Ivory Keys Productions. McClement has retained his 24-track mobile studio and plans to bring post-production work to Comfort and make himself available to Sand as a freelance engineer...**Digital Music Studios** (Toronto) installed a 48-channel Raindirk Symphony 6 console fitted with 24 LNI and 24 LNIP modules and Optifile automation...**Airwaves Sound Design** (Vancouver) purchased a 56-channel DDA QMR console with patchbay for use in a new recording suite designed for standard and Dolby Surround mixing. Airwaves is a two-studio facility specializing in post-production for feature films, radio and TV commercials, CD-ROM production and corporate audio-visual work...**Lydian Sound** is a new 3,000-square-foot music recording facility in Ontario. This studio was designed largely by owners Stuart and Alison Steinhart and features Canada's first DDA Profile console with Optifile automation...**Mushroom Studios** (Vancouver) recently hosted sessions with The Odds for the band's self-produced release on Warner Music Canada. The project was engineered by Susan Rogers and her assistant, Blair Calibaba. Other recent work at Mushroom includes Raffi for his latest Troubadour Records release, Bananaphone (engineered by Rolf Hennemann and assistant Pete Sonsiak) and BMG recording artist John Bottomley with producer Colin Linden and engineer John Whynot... Toronto's Harris Institute for the Arts, which specializes in music industry education, is celebrating its fifth anniversary with the opening of its new 14,000-square-foot facility. Courses at Harris Institute are taught on a part-time basis by industry professionals, including Jim Burgess of Saved by Technology, Tim Rooney (former president of PolyGram Records), and film/TV producer/director Peter Rowe. ■

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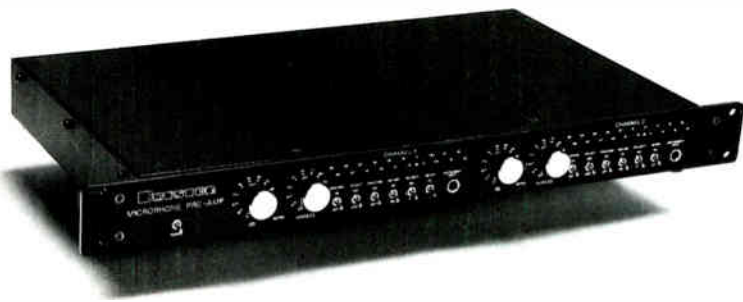
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MIDI control of studio functions like mixing, processing, automation, synchronizing and effects triggering hasn't required any major modification of the MIDI spec. Designers of systems to perform these functions use standard commands like notes, controllers and program changes to operate equipment that has little to do with music. One effect of this is that many studio-control programs that use MIDI disguise the fact: The only front end a user sees in programs like Project Manager for the Yamaha DMC-1000, JL Cooper's MAGI software, or Mackie Designs' OTTOMix, consists of the console controls themselves, such as faders, sends, mutes and masters, with no sign of the underlying command structure.

However, a lot of studios need to use a common source—a computer—to handle automation and to play electronic musical instruments, and for them, a dedicated MIDI-opaque program won't do the trick. But can a sequencer that handles music well do an equally good job with studio functions? The answer is "yes," if you know how to match your sequencer and your studio.

by Paul D. Lehrman

## *Using Sequencers*

## *For Automating Mixes*

## *And Triggering Effects*

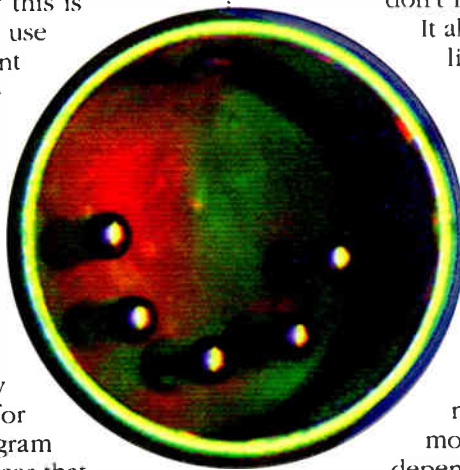
### **SETTING UP THE STUDIO**

First things first: If you are using a sequencer for both automation and music, make sure the two are served by different MIDI data streams. This ensures that bursts of data on one, such as a multifader move, don't interfere with the timing of the other.

It also prevents speaker-blowing mistakes like a velocity-127 Note On destined for a synth being interpreted by a mixer as a command to slam the fader all the way up.

The best way to achieve this is with a multiport MIDI interface, like Opcode's Studio 5 or Mark of the Unicorn's MIDI Time Piece or MIDI Express. If it's possible, dedicate one MIDI cable to console automation and a second one to effects control, leaving the others for music. This will also give you a lot more channels to work with, making independent control of different devices easier. Even if you have only a simple two-port system, try to arrange your equipment so that the data load is spread out between the two cables.

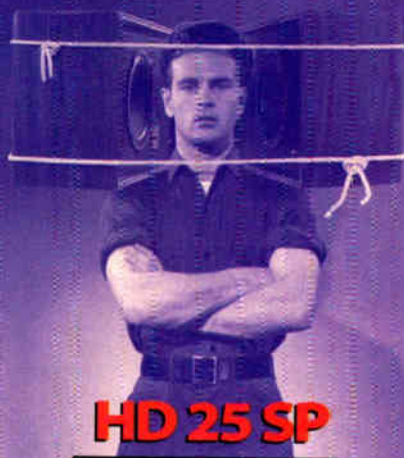
Sometimes, you'll find yourself syncing multiple sequencers—perhaps a computer sequencer and a hardware sequencer or drum machine—to a single



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SMPTTE timecode source. In this case, you should use only one SMPTTE-to-MIDI Time Code converter and distribute the MIDI Time Code around the studio. If each sequencer does its own converting, differences in round-off errors from one device to another can cause timing fluctuations, and the systems may periodically drift from each other, resulting in flanging or chorusing. An even better idea is to have only one of the sequencers respond to MIDI Time Code; it can generate MIDI Clocks and Song Position Pointers for the other devices to follow. This way, any conversion error will affect the whole system equally.

Many sequencers have some kind of onscreen faders for visually manipulating MIDI parameters, and these are very useful for console automation. Faders that only address MIDI Volume (Controller #7) on individual MIDI channels, however, though good for controlling synths directly, are not the first choice for console automation. Look for onscreen faders that can generate any kind of controller command or even pitchbend or aftertouch.

With even the most flexible of programs, however, moving a group of faders with a mouse is not a very efficient way to mix. A hardware fader box that generates MIDI commands can be a big help. It doesn't have to be anything elaborate. There are plenty of low-cost units on the market, and even an old keyboard or two with lots of wheels and sliders is better than nothing. The box should be programmed to send the kind of MIDI data your automation system responds to, but if that's not possible, some sequencers offer real-time translation of incoming MIDI data, so you can change whatever the fader box sends into whatever your mixer needs. Alternatively, many automation systems let you change the type of data that they respond to, although you may not find this the easiest of tasks.

Screen-based faders are self-nulling (they automatically move to show their current values), but few hardware controllers are. Some controllers have blinking or colored lights that let you know when a fader's physical position corresponds to its current value. These can be convenient but are not essential, particularly if you keep your wits about you and only work on small sections

of a mix at a time. The ultimate in convenience are MIDI boxes with moving faders, or continuous rotary or ribbon controls with built-in indicator lights showing current values. These can get very expensive, though, especially if you need to automate a lot of channels.

## WORKING WITH SOUND EFFECTS

More and more sound designers are discovering that triggering sampled sound effects with a MIDI sequencer can be far faster, more flexible and more creative than laying effects to multitrack tape. Sampler memory, like computer memory, is getting cheaper all the time, and so the many hoops that sampler users once had to jump through to squeeze their sounds into tiny amounts of RAM are no longer an issue. But using a small set of sounds to create large soundscapes is still an excellent way to get sounds to work together smoothly.

For example, a single thunderclap sample can be played on a keyboard at different pitches, simultaneously or arpeggiated, which is a quick way to create an entire maelstrom. Once in the sequencer, each individual event can be retimed, pitch-changed, balanced, and faded in and out with MIDI Volume or some other controller. Samplers lend themselves to natural-sounding fades, so in many cases, a judiciously placed note-off command is all you need at the end of an effect. The number of simultaneously occurring sound events is limited only by the number of voices in the samplers. With the advent of internal sampler cards like Digidesign's Sample Cell, that number can be very high indeed.

Playing effects to picture from a keyboard allows for a great deal of spontaneity in sound design. Foot pedals, sliders and aftertouch can allow nuances to be added to the sound that would be difficult or impossible to do after the fact, or on tape, or even a DAW. Many samplers allow you to switch in real time between backward and forward playback and looping, which can be wonderful for building up ambient textures quickly and smoothly.

## USING CONTROLLER AND PROGRAM CHANGE COMMANDS

Some MIDI automation systems respond to program changes and some to controller commands. The

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Now, we've done it again. The PCM-80 is the next generation of effects processing. Based on our renowned PCM-70, it features the latest versions of several favorite effects from its predecessor. But there the similarity ends.

The PCM-80 is based on a new hardware platform featuring the very latest in proprietary digital signal processing. It's a true-stereo processor with balanced analog I/O as well as digital interfacing - you can even mix the two sets of inputs together. Its 24-bit digital bus ensures the finest resolution within the PCM-80's multiple-DSP architecture.

Onto this powerful platform, we built brand-new algorithms offering a virtually unlimited palette of sounds - some based on your favorite PCM-70 programs, plus many entirely new effects. There's an immense range of chorusing, panning and delay-based programs which can be combined with Lexicon's famous reverberation for startling, other-worldly sounds. There are even dynamic spatialization effects.

Perhaps the most impressive feature of the new PCM-80 is its unique Dynamic Patching™ matrix, which takes the PCM-80 into new sonic realms. Dynamic Patching provides incredibly powerful, synthesizer-like control over your effects. It maps data from external and internal controllers such as footswitches, envelope generators, MIDI controllers, tempo and LFO's - even the input signal itself - to any effect parameter. With up to 10 patches per effect, and an amazing eight steps per patch, the control possibilities become almost unlimited.

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There's more to know about the PCM-80, which we can't tell you here. Experience it at your authorized Lexicon dealer. It's everything you expected - and more.



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best respond to both: program changes for overall "scene" setting, in which every parameter is updated; and controllers for adjusting individual levels and other parameters within a scene. Program changes are much more efficient and easier to keep track of, but some systems respond to them at a fixed speed, which may be too fast or too slow for your application. Others have variable response, so that each program change can have its own update speed, and sometimes the response time can even be changed on-the-fly.

Effects devices, too, can often respond to both kinds of information. But with effects, you have to be even more careful. Sending a program change to a reverb unit that switches it from a large hall to a gated reverse barrel is likely to cause an audible glitch in the sound. In the worst case, there will be a horrible grinding sound as the parameters all re-shuffle. In the best, the reverb output will mute until the audio lingering in memory clears out and the new effect can take over. You'll have to do some experimenting to find out which kinds of changes work smoothly and which need some breathing space before and after they're executed. If the device has a reverb-clearing function, you might try manually emptying out the reverb memory before switching programs, which might make a smoother or quicker transition than a program change alone.

Often, most of the effect you might think needs a program change can be achieved with a simple parameter change, and the potential for artifacts is much less. In multi-effects boxes, for example, you can have two effects in a program and fade down one effect while fading up the other with two controller commands. This isn't always safe: Though a reverb's RT60 can often be changed smoothly over a wide range, a long digital delay with feedback may produce all sorts of stray noises if you change the delay time too fast. Many effects units can interpolate controller commands: If you send a command to reset a parameter a long way from its present value, the device will fill in the in-between values automatically, thus minimizing glitches. Another advantage of this feature is that it lets you keep your data streams lean and

mean—always a worthy goal in any MIDI system.

Most sequencers have controller- and program-change "chasing." When you start a sequence somewhere in the middle, the sequencer looks backward from your starting point to see if there are any controller- or program-change commands that would have been executed had you started at the beginning. If it finds any, it takes the most recent ones and transmits them before it starts playing. This ensures that wherever you start in the sequence, the settings of program numbers and controllers will be correct for where

you are. It's important when playing synthesizers (you don't want a flute where there's supposed to be a tuba), and it's crucial when dealing with effects and mix automation: If the wrong console snapshots or effects programs were to be called up each time you started a tune in the middle, the automation would be worthless. If you are trying to use a sequencer for automation that doesn't have this feature, get a different one. And if it does have it, make sure it's turned on.

A supplement to program and controller chasing offered by some sequencers is note chasing. If a note

The image shows a rack of audio equipment, including a TEC 1994 NOMINI unit. Overlaid on the equipment are several promotional materials: a 'CLEAN UP YOUR CODE!' brochure, a 'Please pass the Talkback' sign, and a circular badge that reads 'Introducing the NEW SR-15+ DISTRIPALYZER. Analyzes, Cleans and Distributes Code—now with built-in status report!'.

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is supposed to be already sounding at the point where you start playing the sequence, then this feature plays the note as soon as you start. If you are using notes for individual fader movements or for effects settings, this is very important. If, however, you are using them to trigger samplers, it can be a mixed blessing. If the sample being triggered is a steady-state sound, there's no problem, but if it is a sound that changes over time, whether it's a one-shot or a loop, then the chances are good it will start in the wrong place. A note-on command always plays a sample starting from its beginning, and if the initial note-on was supposed to occur before the current starting point, then the triggered sample will not sync correctly with the rest of the track. If this is a problem, disable note chasing.

Sequencers that include graphic controller editing show the movement of controllers as lines or dots. A highly useful adjunct to this is a "controller history" feature. When you are looking at a portion of the sequence that doesn't include any controller data, you can still view the current settings of the controllers, based on their most recent values. The display shows the most recent controller value as a flat line, often in a different color or shade than the normal controller display, so you don't think it's a string of (constant) controller data. You might think of it as a visual analog of the chasing function. Do keep in mind that once a controller value is set, you don't have to send any more commands for the same value—drawing a straight line in a controller window accomplishes nothing and can clutter up the MIDI stream.

#### **WORKING WITH TIMECODE**

Digidesign's "Q-Sheet" was the first MIDI sequencer to offer a completely SMPTE-based front end. Unfortunately, it was also the last. For placing events in SMPTE format, whether for mixing, processing, or effects triggering, most sequencers do not provide the optimum interface. If you're not working with sequenced music, what good is it to know measures and beats? One solution is to set the sequencer's tempo to 60 bpm, and the meter (time signature) to 1/4. Now each measure is exactly one second long, and you can place events in real time a little more eas-

ily (provided you can divide by 60 in your head real fast). Variations on this theme are: set the meter to 10/4 so that each measure is ten seconds long; set the tempo to 120 bpm and the meter either to 2/4 or 2/8 so that each beat is half a second; or set the meter to 3/8 and the tempo to 180 beats per eighth note, so that each eighth note is ten frames.

If you're working with vertical timecode (VITC), make sure your sequencer can interpret it correctly. Some sequencers that read MIDI Time Code look only at the initial incoming frame number, and as long as valid code keeps coming in, they will play merrily along, paying no attention to subsequent frame numbers. This won't work with VITC. When a tape is stopped, VITC readers send out the same frame number over and over. Unless the sequencer realizes this and waits for the proper sequence of frames, you'll have runaway automation on your hands. With VITC, you can look at a still frame's number and drop a note or other event into the sequence at exactly that point. Ideally, the sequencer should make this function automatic, using a "wait for note" mode or something similar, rather than forcing you to type in the whole frame number or try to place the event on the screen by hand. What would be nice would be a sequencer that lets you mark in and out points for a cue from VITC, and then automatically insert the appropriate note-on and duration. I don't know of any programs currently available that do this, however.

#### **BEGINNING THE SEQUENCE**

Some sequencers don't let you hear count-off measures when they are locked to timecode. As soon as they get a frame number, they start right in. If you need to hear clicks before a track starts, insert two bars of drum machine beats (sidestick or claves) as the first two bars of the sequence and move the starting time of the sequence back accordingly. Of course, this will only work when you are playing the sequence from the top. If you need it to work under all circumstances, turn on the sequencer's built-in metronome and simply allow yourself more pre-roll time.

If you are using custom sets of synth voices, effects programs or mix snapshots, you might try including them in the sequence, so they

are always easily accessible when you are in session. Do this by downloading with a universal patch librarian, all of the data into a single file; or else by setting up a sequencer that accepts system-exclusive data in record, and manually commanding the units to dump all of their memory, one by one. Take the resulting file (if it was created with a librarian, first convert it to a MIDI file) and paste it at the beginning of your sequence, on a track of its own. Insert lots of time between the sys-ex data and the start of the main sequence—figure out how long it takes to do all the dumps, and then at least double that figure. When you start the session, run the sequence from the beginning so that all the synths and processors are loaded. After that first pass, you can mute or shut off the track containing the sys-ex data and turn it back on again at the next session.

#### **WITHIN THE SEQUENCE**

Quantization makes brilliant musical technicians out of some who otherwise couldn't play "Happy Birthday" on a kazoo, but when it comes to mix automation, it's nobody's friend. Quantization essentially causes every MIDI event within a defined time frame to occur simultaneously, but since MIDI is a serial protocol, "simultaneously" is actually impossible. Instead, the events literally pile up on each other and are spat out one at a time. If there is a lot of data being quantized, the timing errors that result can be quite significant.

Rhythm tracks in a dance tune might benefit from quantization, but it doesn't do much for mix automation. If a fader has to open up to play a new track, it's usually best to do so a few milliseconds before the track starts. Similarly, fade-outs rarely need to be exactly on a beat. So do yourself a favor and leave those automation controllers and program changes unquantized.

Another favor you can do yourself is to keep in mind that controller and program changes on a sequencer track affect not only the device being addressed by that track but every device that shares the same MIDI channel. For example, say you have a bunch of samples in a keyboard's lowest octave on one track and another bunch mapped to the highest octave on another track. If you put in a nice MIDI Volume



fade on the first track and then try to play something on the second track, you won't hear anything (assuming the samples are all on the same channel). On a sample in the lowest octave of a keyboard with another sample in the keyboard's top octave, you won't hear anything. You have to cancel the fade with another Volume command. Similarly, a sustain pedal used to keep one ambience loop going will affect every other sample you play that happens to be on the same channel. Be careful.

**WORKING WITH  
MULTIPLE APPLICATIONS  
(LIKE HARD DISK AUDIO)**

The marriage of hard disk audio and MIDI, although now well-established, is still finding its own rules. One major issue is figuring out, when running multiple applications such as a sequencer and a hard disk program, which applications should run in the foreground and in the background. The problem gets more complicated when you're addressing internal sound cards like Sample Cell, synchronizing to SMPTE/MIDI Time

Code, or playing QuickTime movies, all of which are becoming common tools in the production studio. You have to know your applications, and sometimes what you have to know doesn't make a whole lot of sense.

For example, if you want Opcode's Vision sequencer to chase SMPTE/MTC while it is running as a background application to a hard disk audio or video program, you have to set OMS, Opcode's internal data-managing software, to OMS Only mode. However, Sonic Solutions' Sonic System is not OMS-compatible, so you can't use it in the foreground. Mark of the Unicorn's Performer has a similar problem with that company's FreeMIDI operating system. Most sequencers can talk to a Sample Cell card using Apple's data-managing software, MIDI Manager, but that program can't deal with non-moving timecode, which means you can't use it with VITC. If a sequencer developer wants users to be able to work with Sample Cell in a video post situation, he therefore has to write a specific software driver that addresses the

card while completely bypassing MIDI Manager.

**WE CAN WORK IT OUT**

These are some of the issues that MIDI-oriented mixers and sound designers have to deal with. They're no more or no less infuriating than the INITs, hard disks, memory caches, sync tones, frame rates and other nonsense that professional production people have to wrestle constantly. If you remember that MIDI was not originally considered capable of doing all of this stuff, and that in some ways we are forcing a new functionality on the spec, the fact that it works as well as it does is amazing. But difficult as it may be to set up, the rewards of working with a smoothly operating single-protocol sequencing and production system are worth it. Now let's see if we can convince some of those manufacturers to write software that makes it all easy. ■

*Paul D. Lehrman served three terms as an executive director of the MIDI Manufacturers Association. He is co-author of MIDI for the Professional.*

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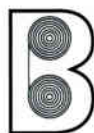
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# TECHNOLOGY SPOTLIGHT:

## SSL AXIOM ALL-DIGITAL PRODUCTION SYSTEM

Just over two-and-a-half years ago, Solid State Logic unveiled the Scenaria post-production mixing system. Although it had been obvious to many industry observers that SSL was actively developing an all-digital system, Scenaria's final user format took many of us by surprise. During recent months, the rumor mill again became active, with speculation concerning what form the firm's eagerly awaited all-digital console would take. At the recent AES convention in San Francisco, the world got its first glimpse of the new Axiom digital production system. From a cursory glance, Axiom appears remarkably conservative in design and user interface. However, as I discovered during extended sessions with the new device, Axiom is an extremely powerful, innovative and responsive system.

In essence, SSL has retained the familiarity of an analog console control surface and added an integral hard disk recorder. In this way, anyone used to working with an SL-4000, 6000 or 8000 Series console with Studio Computer could walk up to Axiom and be up and running in just a couple of minutes. However, unlike other digitally controlled analog or all-digital designs that offer a high degree of assignability, SSL has decided to adopt the philosophy of "one control per function; one function per control." The result is a panel layout that is extremely easy to follow: no "layers" or EQ assignment panels to call

by Mel Lambert

up to change system parameters and one that very closely mimics an analog console. But the similarity ends there: Axiom combines a degree of digital signal processing and recording functionality I have never experienced.

All user controls are totally resettable and feature circular LED displays around the skirt to show current settings of each knob. Color schemes and channel strip layouts closely mimic that of existing SSL analog consoles.

Key to the Axiom concept, SSL stresses, is a computer-controlled resource management system, which provides access to input/output options and DiskTrack hard disk audio storage/editing. In this way, all input sources to—and output designations from—Axiom can be cross-assigned to any physical channel strip. The Axiom main frame accepts between 48- and 96-channel strips in

blocks of eight. In addition, upon system boot, all of the available disk storage capacity, which physically takes the form of a disk drive per eight channels of user control, are pooled and assigned as one track per channel strip. In this way, each mixer channel can replay a hard disk track, and sources are available for multichannel hard disk recording. (The user can also upload and download from hard disk to an external multitrack, if necessary.) And, being disk-based, the recording can



**The Axiom Digital Production System**

capacity is available concurrently, which means that you can be simultaneously recording *and* playing back from the same track. Each disk drive per 8-channel input section provides a total of three track-hours of record/replay capacity, which is dynamically allocatable.

"Resource management must be a high priority with any developer of sophisticated studio systems of the future," comments Colin Pringle, SSL's marketing director. "Inputs and outputs are expensive, yet may be redundant for much of the time. The 'ideal' must be a situation where recording and editing are integrated into a *single* system, and that single system may be a shared resource, maintained centrally by the studio. Already, studios are used to working with tielines to provide flexibility between recording spaces and control rooms. The resource management capabilities inherent in SSL's DiskTrack system enable this philosophy to be extended to its logical conclusion."

### DISKTRACK RANDOM-ACCESS RECORDING

While large-capacity hard-disk storage and replay are nothing new for broadcast and post-production systems, the incorporation of DiskTrack within Axiom represents a first for music production. The advantages are obvious: instant access to any part of the program material eliminates spooling time and enables storage of multiple takes for later recall. Editing of different takes is also feasible, eliminating the requirement for an external editor. Axiom provides up to 95 channels of nondestructive record/replay from hard disk. Concurrent offline archiving of audio data reduces housekeeping overheads and helps reduce inload/offload turnaround between projects.

By replacing a tape-based multitrack, DiskTrack adds the advantages of an instant access, nonlinear working environment, including nondestructive drop-ins/outs and the ability to move drop-in points even after a recording has been made. Axiom uses a buffer to hold the last several seconds of material before it's commanded to enter Record mode, allowing the actual timecode-referenced drop-in point to be extended as necessary. Ingenuity personified!

"As SSL is using the very latest concurrent access hard-disk technology," explains SSL's director of engineering, Phil Hill, "the potential to maximize recording resources has never been greater. All tracks can now be in simultaneous record

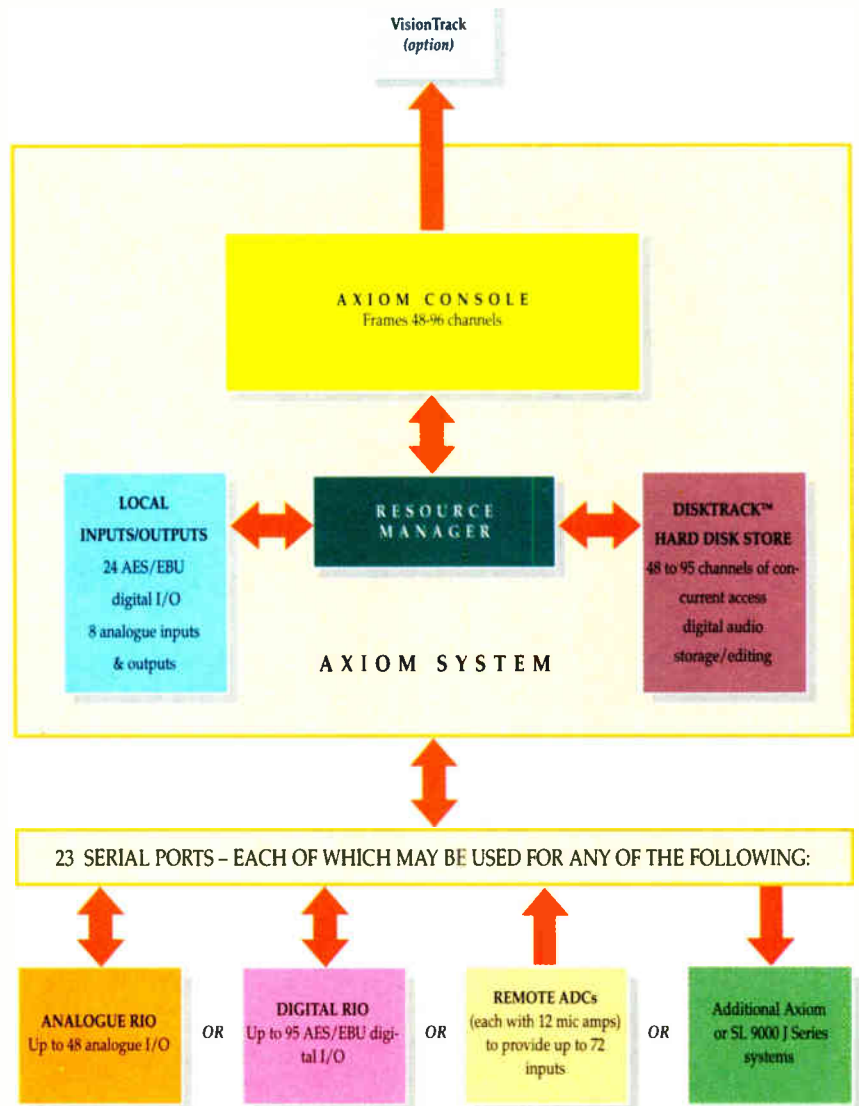
*and* play, effectively doubling the number of available tracks. Also, concurrent offline back-up/restore ensures that a current project is being backed up while you're working."

A "Free Play" setting allows audio that has been recorded at a time code location of 0:00:00:00 to be replayed instantly by simply opening the corresponding channel fader. This feature should prove very handy for looping solos and background vocals during music sessions, for example, or during post-production as an effects playback track.

### FLEXIBLE INPUT/OUTPUT OPTIONS

Axiom provides a comprehensive range of input/output options that can be specified according to a facility's specific requirements, thereby eliminating the need for redundant I/O capacity. For example, a typical recording configuration might consist of a 48-channel console; 48 hard disk tracks; 56 analog I/Os (of which 48 would be local to the console); 24 AES-format I/Os; and 24 remote mic preamps with integral analog-to-digital converters. (Analog and digital I/Os can be expanded through addi-

### AXIOM SYSTEM SIGNAL FLOW



tional analog Remote Input/Output stations, or RIOs; mic preamps/ADCs are also expandable in blocks of 12.)

And one or more Axiom systems can share audio storage and I/O resources, thereby reducing the cost of multiroom configurations. By way of an example, the Axiom Resource Manager can be used to share resources with the firm's new SL-9000 J Series analog boards. (Axiom can also import SL-9000 J Series fader automation data.)

Each channel strip provides dedicated controls for a 4-band parametric digital EQ section; eight aux-

iliary sends; a digital dynamics section offering gating, expansion, compression and limiting; digital effects processing, including reverb, delay and ambience generation; plus full panning between LCRSS (left, center, right and split-surround) outputs. All signal processing applied during recording or overdubbing can be saved as snapshots or dynamically automated without affecting the recorded signal. The EQ section provides four identical bands that can be set to highpass, lowpass, high-shelf or low-shelf profiles, a deep notch, or to one of four fully parametric set-

*SSL has retained the familiarity of an analog console control surface and added an integral hard disk recorder.*

tings. All bands function between 5 Hz and 20 kHz.

The 3-band dynamics section allows concurrent gating/compression, as well as side-chain linking, side-chain pre/post-EQ, and ability to copy settings between channels. Each dynamics section features a side-chain advance (up to 1,000 samples of available delay) for feed-forward operation. A dedicated input meter and channel compress meter are also provided to monitor the dynamic section's actions on a channel signal.

Axiom's signal processing capabilities comprise a bank of 24 internal reverb processors and 24 internal delay processors that are assigned on a "first-come, first-served" basis; these are the Axiom's only assignable user-control resources. Axiom is shipped with 32 factory presets of DDL, echo, reverb and related settings; up to 32 derived programs can be stored in dedicated user memories. Adjustable parameters include early reflections, dry-path contribution, delay-path contribution, room size, RT60 and recombination filter. Operation of both reverbs and delays is click-free, enabling settings to be manually or automatically adjusted during a mix. Delay time is adjustable in 156 nS steps. Four preset buttons provide rapid access to favorite effects settings.

Input/output resources, such as mic preamps, can be located more than 500 feet from the Axiom processor rack, and connected via a simple coaxial connection. As each signal is digitized at its source, gain and other system parameters are implemented remotely, signal degradation can be dramatically reduced. And being all-digital, input channels are time-domain-aligned



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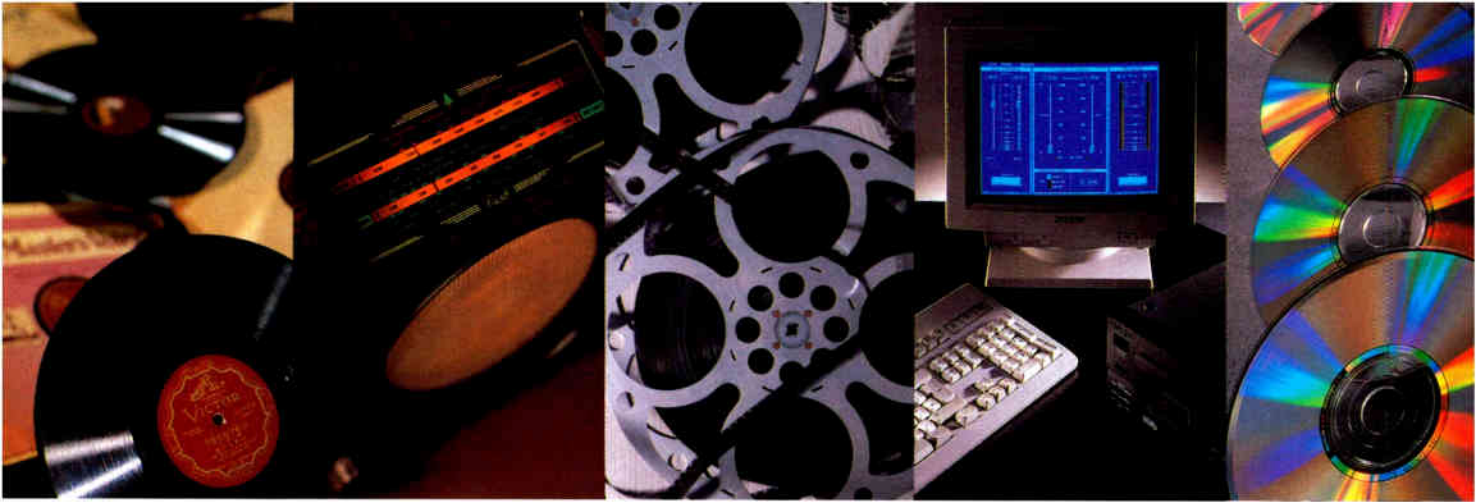
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and phase-coherent, regardless of processing changes. A proprietary A-to-D topology was developed specifically for Axiom and offers a quoted -104.5 dB (CCIR-weighted) noise floor. All internal mixing and signal processing within Axiom is to greater than 24-bit precision; Axiom features user-selectable 16/20-bit recording to hard disk.

All channels feature individual record-ready buttons, together with stereo AFL/PFL, cut, solo, plus a servo-controlled, motorized fader; six group faders are also provided. An LED "scribble strip" displays the track assignment, preserving the designated channel title even if the user decides to reassign the source to another section of the console.

A total of 32 Small Universal Bus sub-outputs are provided for mix-minus/mix-plus applications. SSL's Bay SubMix system allows eight submixes to be created per bank of eight channels. In this way, a large number of discrete submixes—up to 96 on a full mainframe Axiom—may be created for use as auxiliary sends, musician foldback, clean feeds, etc.

The main LCRSS mix can be partitioned to form up to four separate Mix Stems, which can then be summed and mixed to form a multi-channel Master Mix output. Each Mix Stem and the Master Mix is software assignable to user-selectable digital or analog hardware ports, or to a hard disk track, as required.

#### AUTOMATION DATA AND PROJECT FILES

Sessions carried out on Axiom can be saved as a Project File that holds data relating to both internal system settings and external routing. A typical Project File includes multitrack digital audio; I/O routing configuration and settings; output bus structure, control-panel setups; dynamic automation data; EQ, dynamics and effects settings; pan data; macro settings; patchbay configuration; file notes. All automation data can be freely edited using Axiom's built-in VDU, which displays time-dependent fader levels and other system data.

A bank of identical source/routing selection panels duplicated across the control surface work in conjunction with a central CRT display that enables audio source and signal path to be viewed directly from the console. For rapid changes in configura-

tion between projects, Axiom provides user-definable reset memories, in addition to macro functions and total dynamic automation. Integral serial machine control for up to four external VTR/ATR transports is also provided. (SSL's optional VisionTrack random-access digital video system totally eliminates tape spooling or lock-up delay and adds the creative advantage of non-destructive video recording and editing.)

A total of 64 reset memories allow an entire Axiom console to be instantly reconfigured. Stored parameters include output bus structure, internal signal flow, gain, pan, equalization,

dynamics, internal DSP (reverbs/delays), sends/returns, and patchbay configuration. In addition, all system parameters are dynamically automated to the sub-frame.

All in all, SSL's new Axiom Digital Production System is a remarkable achievement, and one that I predict will set the industry back on its heels. Check it out yourself; it's an E-ticket ride!

*Former editor of Recording Engineer-Producer magazine Mel Lambert currently heads up Media&Marketing, a consulting service for pro-audio firms and facilities.*

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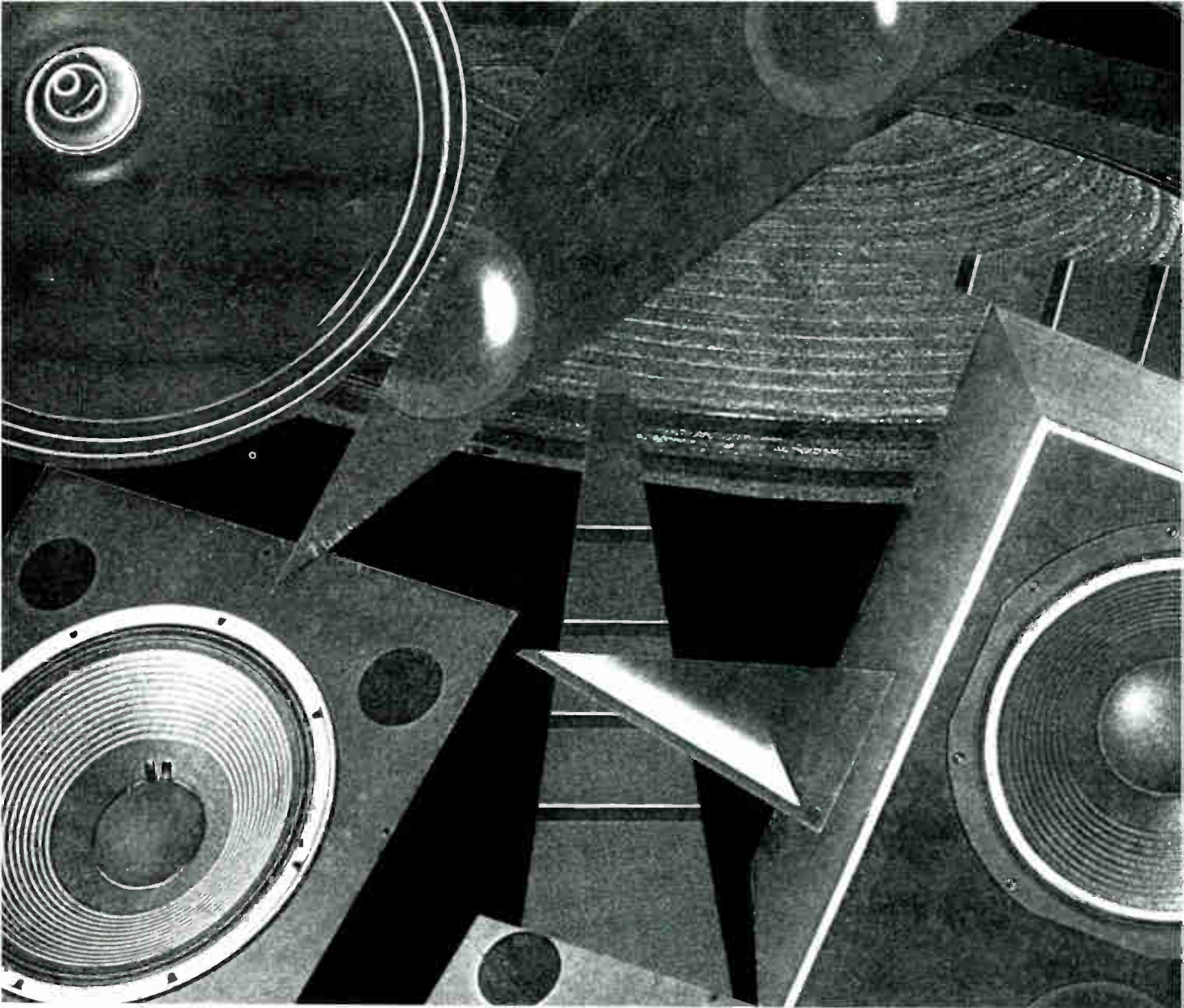
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**Y**ou need new studio monitors. I know that, because you're reading this article. And admitting that there's a problem is the first step in finding a solution. A curious phenomenon concerning studio monitors is that they never *quite* make it to the top of the shopping list. Somehow, in the quest for assembling the ultimate recording rig, you sidestepped the issue of getting some decent monitors. There's always some cool processor, effects box, recorder, keyboard, drum box, guitar strap, microphone or leather couch that you just couldn't live without, and like all natural creatures, we put off the necessities in

favor of the luxuries.

There's nothing exciting, glamorous or sexy about quality studio monitors. Leave the exaggerated bass and overstretched high frequencies to the big stereo store chains. If you're looking for monitors that have a "warm sound" or "massive bass" or a little extra "sizzle" in the highs, then you may be fooling yourself into thinking your music is better than it really is. For example, if you're working on a monitoring system with an artificially boosted bass response, then the mixes might sound great on that system, but when played on speakers with accurate reproduction, that

**How to find  
an accurate  
monitoring  
reference  
that you  
can trust.**





# CHOOSING STUDIO MONITORS

by George Petersen

ILLUSTRATION: LINDA GOUGH

huge low-frequency response will be lacking. Your mixes will never be right when your monitors are lying to you.

As an analogy, let's say you gained 20 pounds over the holidays, and it's noticeable when you see yourself in the bathroom mirror. A fool would blame the mirror and correct the problem by installing a funhouse mirror that always reflected a svelte image.

And so it is with studio monitors. The whole point of a studio monitor is to provide a realistic picture of what's on tape or coming from the console. If the signal you're monitoring has low-frequency prob-

lems—i.e., air-conditioner rumble, breath pops, wind noise or mysterious oscillations—it's nice to know that such flaws exist *before* you mix, or at least before you hear the product being broadcast to (or bought by) millions of listeners.

There are two separate and highly distinct schools of thought regarding studio monitors. The first is to mix on the ultimate, a high-powered system with absolute flat frequency response from 20 to 30k Hz. The other approach is to mix on garbage speakers, with the idea being no matter what your audience listens on, it will surely sound better than what was heard on those terrible control room

speakers. Both of these methods have their merits; however, what's best for most people is a compromise representing a little of both.

It's important to hear your creations on decent monitors that provide a reasonably truthful picture of what's coming off the tape. At least this way you have a reference or starting point from which adjustments can be made during the mix. At the same time, the garbage-monitor theory does offer the advantage of hearing your mixes (preliminary or final) on something that might resemble what many consumers are listening to.

In days past, this was presumed

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to be some kind of two-way bookshelf speaker, usually with an 8-inch woofer, half-inch dome tweeter and the ubiquitous single-capacitor crossover at 5 kHz. But these days, consumers are listening on every type of system, ranging from cheap portable Walkmans to massive CD boomboxes; home hi-fi systems can be anything from tabletop units to \$100,000 audiophile setups; and automobile systems vary from 6x9-inch mono dashmounts to 140dB SPL cruisers. Mixing for television is getting tougher; the assumption that audiences

**Finding the right studio monitors is no easy task, and there are dozens of compact near-field speakers available in prices from several hundred to several thousand dollars. Before you spend money on monitors, do a little homework.**

have 3-inch mono speakers is fast disappearing with the rise of stereo TVs and the home theater market.

The playback medium for film mixing is getting somewhat more predictable, thanks to the virtual demise of the drive-in market (remember those horrible 5-inch speakers?) and the fact that most mono theaters at least had an Altec A7 behind the screen. However, these days, film mixers also have to consider the secondary market and need to be reasonably sure that their voluptuous multichannel surround mixes will translate when eventually played on cable, videocassette or broadcast television.

To make matters worse, you never know where your mixes will end up: MTV picks up a hot single that's played over television sets; a film mix turns into a CD-ROM (i.e., *A Hard Day's Night*) and comes out of 2-inch computer speakers; this list

goes on and on.

In short, the idea of mixing for some preconceived notion about the end-user's system will get you into trouble fast. This brings us back to the need for accurate monitoring. You should, of course, double-check your mixes on headphones, boom boxes, mono TV speakers and the like, but the bottom line is that you need an accurate monitoring reference that you trust.

#### **DETERMINE YOUR NEEDS**

This is the hard part. Finding the *right* studio monitors is no easy task, and there are dozens of compact near-field speakers available in prices from several hundred to several thousand dollars. But how much should you pay? The answer is to get the best monitors you can. This is not an area where you should try to save a few extra bucks—the quality of your audio creations is dependent on the quality of your playback system.

Some needs will be easy to determine. The physical layout of your studio may limit the size of your monitors; independent engineers who travel to different studios may want reference monitors that travel well. Or you may have specific requirements, such as magnetically shielded speakers that reduce the visual distortion that occurs when large magnetic fields (i.e., speakers) are placed near computer or video displays.

The room/speaker interface is also important. Most small studio monitors are near-field types and are designed for listening at distances of approximately one meter. By placing the speakers in this close (or near) field, the proportion of direct sound reaching the listener is much greater than the amount of reflected sound returning from the rest of the room. This near-field effect reduces (but does not eliminate) the acoustical signature of the listening environment, thus increasing the degree of monitoring accuracy. Therefore, monitors designed for near-field listening are designed with their individual components tightly spaced—or co-axially mounted—so the sounds emanating from the various drivers reach the listener's ears simultaneously.

Studio monitors that combine smaller speakers with a separate subwoofer system are increasing in popularity, the obvious advantage being the compact size of the main

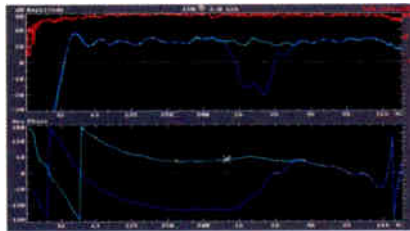
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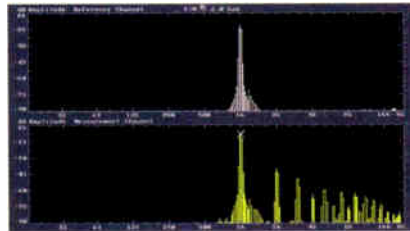
is vital to the success of every sound system. Polarity reversals can cause unequalizable holes in your system response and endanger your components. By viewing the system's phase response with SIM, an operator can quickly spot, and correct, unwanted polarity reversals.



Speaker response vs. same speaker with polarity reversal.  
Top: Amplitude response. Bottom: Phase response

### Harmonic distortion

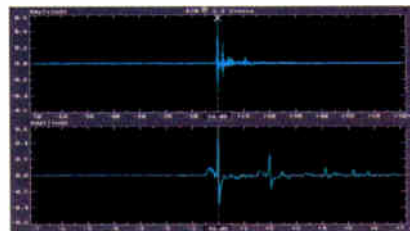
adds unwanted spectral coloration to your audio signal, and once introduced, is almost impossible to remove. Whether caused by component degradation or by gain structure mismanagement, SIM can detect and measure distortion in any system component, allowing an operator to quickly focus on and minimize the sources of distortion in the system.



Harmonic distortion in a loudspeaker.  
Top: Input spectrum 1 kHz tone  
Bottom: Output spectrum 1 kHz tone with distortion

### Measuring delay times

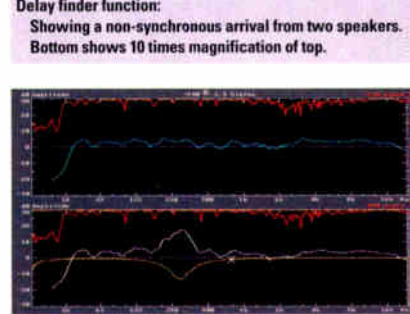
is impossible with most audio analyzers. More often than not, delay times end up being set through trial and error, and a whole lot of running around. SIM can measure the time offset between speakers and give you the delay times you need *within ±.02ms*. Moreover, the whole process typically takes less than 5 seconds.



Delay finder function:  
Showing a non-synchronous arrival from two speakers.  
Bottom shows 10 times magnification of top.

### System Equalization

can be a painstaking, and often frustrating, process. With SIM however, you can view the peaks and dips in your speaker system's response from 8 Hz to 22 kHz with *1/24th octave resolution*. By measuring and displaying the response of the speaker system and the equalizer simultaneously, SIM can quickly and accurately get you to your desired system response.



Complementary Equalization  
Top: Resulting system response. Bottom: un-equalized speaker response (white) and EQ response (orange).

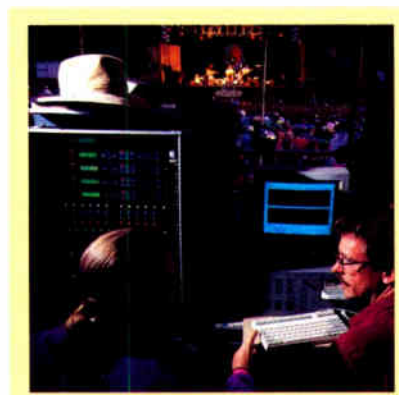
### And once the show begins...

changes in temperature, humidity and audience presence can effect the response of your system. Only SIM has the ability to monitor system response *during the actual performance*, allowing you to compensate for the dynamic effects of your system's changing environment.

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speakers (which is ideal in cramped quarters). While low frequencies are inherently less directional than mids and highs, some engineers find the spatial separation of the subwoofer systems to be disorienting. It's a matter of personal taste and the geometry of the listening space—you'll have to listen for yourself to decide what's best for you.

Another growing trend is the use of powered speakers. These range from monitors whose amplifier section is mainly a convenience factor to monitors with multiple amplifiers that are chosen to match the characteristics of the individual speaker components. Such monitors are certainly more expensive than their nonpowered cousins, but they're worth looking into, especially if your amplification system is also ready for an upgrade.

Before you spend money on monitors, do a little homework. Ask other engineers what they're using; read reviews in magazines; check out the lively audio forums on PAN, CompuServe or AOL; make inquiries at trade shows; talk to other users at local AES, SMPTE or NARAS meetings; and, yes, even look at advertisements. However, be wary of celebrity endorsements: I once read an interview with an engineer (whose work I greatly admire) who talked about his favorite monitors, an obscure German brand. Thinking that these were the secret to his awesome mixes, I borrowed a pair. After mixing on them for two weeks, I still wasn't used to them; I finally gave up and went back to my regular monitors. The moral here is that choosing monitors is a highly personal decision, and what's right for someone else may not be right for you.

### THE DREADED AUDITION

When I first discussed this article with *Mix* publisher Hillel Resner, he joked that when auditioning monitors in a retail environment, the first thing you need to do is yell "Everybody shut up!" After a laugh, it occurred to me that he was right—not about the yelling part. It's impossible to evaluate the nuances of competing monitors if there's someone checking out guitar amps ten feet away.

And before you go shopping, bring some reference material—CDs that you're familiar with and/or tapes of some of your own favorite

—CONTINUED ON PAGE 194

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World Radio History

by George Petersen

# DYNAUDIO ACOUSTICS BBC

## LS5/12A MONITORS AND CHORD SPA 1016 DA POWER AMP

**H**ere in the states, DynaudioAcoustics is not exactly a household word. However, founded by studio and monitor designer Andy Munro of London and Danish driver manufacturer Dynaudio A/S, DynaudioAcoustics has been delivering high-performance monitoring systems to the European studio community since 1990. Now that these monitors are available through Audio Exchange International (AXI) of Boston, we are seeing more DynaudioAcoustics systems in North American installations.

DynaudioAcoustics manufactures a wide variety of studio monitors, ranging from the budget-conscious BM speakers (a broadcast and project studio line priced from \$949/pair) to its M Series, designed for control room applications. Its flagship product, the M4(4), priced at \$35,550, is a

four-way active system with eight drivers and five amps for 10,000 watt/118dB performance. Serious stuff.

The idea of the BBC LS5/12A began some time ago. The R&D department at the British Broadcasting Company began working on a design of a new standard reference monitor for use in their facilities. The design parameters included video shielding, extended bass response, minimal aural coloration, consistent reproduction, power handling exceeding 96 dB and a sound that's compatible with real-life consumer listening environments. The final product used Dynaudio LF and HF elements; this marked the first time the BBC had committed itself exclusively to a single manufacturer for the components of its standard monitor. Later, DynaudioAcoustics licensed the design from the "Beeb" and now markets the monitors commercially as its model LS5/12A.

Priced at \$1,799/pair, the LS5/12As are a compact (12x7x8-inch) and lightweight (16 pounds each) two-way system with a 1-inch, ferrofluid-cooled, soft-dome tweeter and a 5-inch, low/mid driver. The woofer cone is made of magnesium silicate-impregnated polypropylene, a high-strength/low-mass combination for optimal transient response. The drivers are arranged symmetrically (*non-mirror-imaged*), and the speakers can be used horizontally or vertically.

The monitors are available in either black or British racing green finishes. I tested the latter, and I'm not sure



# International Gazette

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*"I immediately started doing things I never was able to do with my other processors"*

KIM BULLARD

The Studio 5000 takes its predecessor, the amazing DHP-55, a step further. With new features and programs crafted by studio pros, the Studio 5000 is sure to stir your creative urges. Here's what the people who make their living in the studio have to say about it.

### Excellent Pitch Shifting

John Ross, President of LA's Digital Sound and Picture needs quality pitch shifting for Foley without the artifacts of competitor's products: "... the 5000 sounds natural, just like 2 inch tape at half speed. We require high quality products for simple applications. The Studio 5000 fits in very well indeed." Digital Sound and Picture is an advanced facility using a Lan-based digital audio network and multiple digital audio workstations.

### Sweeten Mixes, Add Depth

Five time Emmy award winning composer and producer Dominic Messinger says the Studio 5000 "makes the normal exotic." He uses it to sweeten mixes by using the regenerative pitch shifting Mix Imager programs. On drums he adds depth with detuning and dynamic filtering effects.



*"It's like getting a whole new set of presets for your instrument"*

DOMINIC MESSINGER,  
5 TIME EMMY AWARD-  
WINNER, COMPOSER  
& PRODUCER

### Creative Control

Clif Brigden, engineer for Thomas Dolby uses the Studio 5000 on Dolby's upcoming album and interactive video projects. "It sounds wicked right out of the box but lets you get to and change every parameter to make your own unique noises."

### Leading Edge Special Effects

The Studio 5000 adds a futuristic edge to new animated series 'Phantom 2040'. Producer/composer Gerald O'Brien explains: "The 5000's Lush Chord Shifting algorithm is used on the main theme vocals

*"It will be an indispensable product for musicians and engineers."*

DHP-55 review  
SOUND AND  
RECORDING  
MAGAZINE,  
JAPAN

while guitar and bass tracks get cabinet emulation and special effects. The robot voices are created using combinations of pitch shifting, flange and chorus." Gerald has scored over 22 shows including the successful



*"Imagine what music will sound like in 40 years - that's what we're working to create."*

GERALD O'BRIEN

Cobra series. His songwriting clients include Manhattan Transfer, Hall and Oates and Deborah Harry.

### Guitar Effects

"They asked for a Jimi Hendrix type cue to go with a 60's acid experience... I quickly called up the Voodoo Wah program... and they loved it!" Larry Brown, TV composer, producer and Emmy winner uses the Studio 5000 to closely emulate guitars with his synthesizers.

### Fast

"I have to write a lot of music in a short period of time and the Studio 5000 really helps me to achieve that" says Kim Bullard, writer, producer and session musician. He's using the Studio 5000 to help create the soundtrack for the upcoming film, 'Taxandria.'



*"Sounds so deep, I'm still looking for the bottom."*

CLIF BRIGDEN,  
ENGINEER FOR  
THOMAS DOLBY

### Record Quality

The Studio 5000 gives Kim Bullard the detailed sound he demands. "A soundtrack album is also part of the Taxandria project so the cues have to be record quality" he says.

Call us at 1-800-449-8818 and we'll send you more information on the Studio 5000 and how you can get more harmony in your world.

**DigiTech**

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whether the green paint affected performance, but they sure looked cool. Perhaps a more practical touch is the metal mesh screen that protects the dome tweeter. As most near-field speakers tend to get moved around a bit, the metal guards offer substantial protection from the dreaded "squashed dome syndrome."

The LS5/12A is designed to operate as a stand-alone, full-range monitor with a stated frequency response of 50 to 20k Hz, -3 dB. For those users requiring additional bass, DynaudioAcoustics offers the ABES (Ac-

tive Bass Extension System), a self-powered subwoofer with internal crossover and 300-watt amplifier, which extends system LF performance down to 35 Hz. Additionally, three LS5/12As can be used as full-range LCR monitors with an ABES covering the sub-bass channel.

On the rear panel is a 2-inch diameter port, which at first seems too large for a 12x7-inch baffle. The port's relatively large size was selected to minimize port noise (wheezing and whistling), which otherwise would result when large volumes of air exit from a small enclosure. On the LS5/12A, this approach provides an

effective solution to the problem.

The rear panel also includes four gold-plated binding posts, with removable gold-plated links for bi-wiring applications. The posts are large and handle up to 12-gauge wire, fork lugs or single banana connectors but are spaced too widely (about three inches too widely) for dual banana connectors, which are commonly used with most other small reference speakers. The passive crossover is a second-order (12 dB/octave) design, with high-quality parts: air core inductors, polypropylene capacitors and heavy copper cladding on the printed circuit boards to reduce resistance. No tweeter adjustment or attenuator is provided (or required).

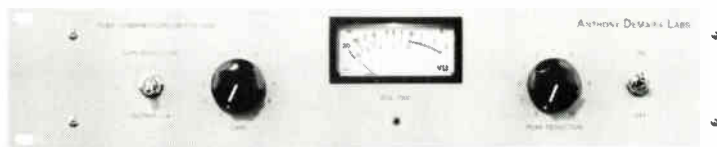
The most noticeable characteristic about the LS5/12As is the fact that the monitors have a low sensitivity (82 dB 1w/1m) and require a fair amount of power. To reach their maximum continuous sound pressure level at 108 dB, you'll need 400 watts of power. In fact, to ensure safe headroom (with plenty of margin for unclipped signals) DynaudioAcoustics says the maximum recommended amplification for the LS5/12As is 1,000 watts. As for me, the LS5/12As reached a healthy 105 dB at 200 watts, which, given my usual close-field monitoring levels (80-90 dB), left me a comfortable 15 to 25 dB margin for headroom. If you're the type who really likes loud monitoring, you'd be advised to look into some of DynaudioAcoustics' larger models, such as the PPM3 "Mini-Main" monitors (\$3,199/pair), which are capable of SPLs exceeding 120 dB.

Despite the diminutive size of the LS5/12A's 16-pound enclosures, my overall impression of these speakers was that I was listening to much larger monitors. The LF reproduction was full and didn't begin to drop off until below 80 Hz (it's 3 dB down at 50 Hz). It never seemed boomy or "boxy" at all. I didn't have the chance to try DynaudioAcoustics' ABES subwoofer, but coupled with a Bag End ELF system, the net effect of the LS5/12As in the mid-field (approximately seven feet away) provided just the right combination of clarity and power for LRS or LCRS mixing.

In the near-field, the LS5/12As (with or without the subs) on radio mixes and pop music mixing/track-

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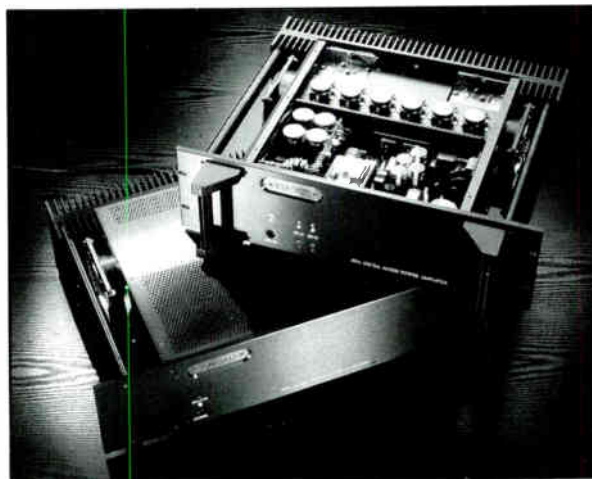
ing were smooth and nonfatiguing, even after extended periods of working. The high-frequency reproduction was accurate, with no trace of brittleness, and mixes translated well to other systems and media. The speakers have internal magnetic shielding, and I could place them as close as two inches alongside video or computer displays before any picture distortion was noticeable.

With the introduction of the LS5/

#### THE CHORD SPA 1016 DA

DynaudioAcoustics also distributes Chord amplifiers and wanted me to check out the Chord SPA 1016 DA amplifier, which is priced at \$3,799. Rated 300 watts/channel continuous into a 4-ohm load, and capable of delivering 600 w/ch of transient (burst) power, the SPA 1016 DA has a total of 16 high-voltage MOSFET devices used in a "sliding bias" Class A/B design. A switched-mode power supply uses a "dynamic coupling" approach, whereby the positive and negative rails remain in equilibrium without regard to the power demands of transient signals. At typical listening levels, the amp operates at Class A, with Class B operation introduced only in demanding situations.

The SPA 1016 DA is housed in a three-rackspace chassis weighing in at approximately 40 pounds. Inputs are electronically balanced, gold-plated XLRs; outputs are on two sets of binding posts with castellated hold-downs. Cooling is normally via convection (massive heat sinks surround the sides and rear of the amp) and two large, no-nonsense fans kick in whenever the heat sink temperature exceeds 158° (F). The amp's front panel is simple, with status LED, power switch and power on/off LED. The latter is a bi-color device that glows green when the amp is powered up and red when the power switch is in the off position. The amp is extremely quiet, so don't expect to



hear any hiss emanating from your monitors when the SPA 1016 DA is on. I suppose that the idea behind the red LED is to remind the user that the unit is actually off, and not merely quietly idling.

12As, DynaudioAcoustics offers a compact, reliable reference monitor that is equally suited to the broadcast facility, post suite, mobile recorder or studio environment. And thanks to the BBC for sharing one of its secrets with the world.

DynaudioAcoustics and Chord products are distributed in North America by AXI, 357 Liberty Street, Rockland, MA 02370; (617) 982-2626. ■

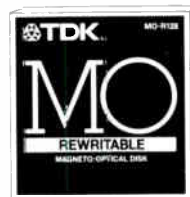
I began my listening tests by disconnecting the dual banana plugs from the near-field speakers at my studio and hooking up the LS5/12As to the SPA 1016 DA. I have no problem with the castellated lugs on the amp, but the two sets of binding post outputs on each amp channel are spaced rather closely, so inserting speaker wires into the holes on the sides of the posts can be dicey. However, the second set of binding posts is sure to be appreciated by bi-wiring enthusiasts.

I also drove the LS5/12As using several other amplifiers (besides the Chord SPA 1216 DA) and found that while the general *character* of the monitors did not change, the speakers do require a good quality, high-power amplifier for optimal performance. The Chord SPA 1216 DA is an excellent choice and though not inexpensive at \$3,799, certainly ranks among the best amps I've heard, at any price.

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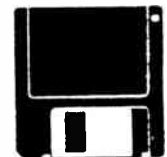
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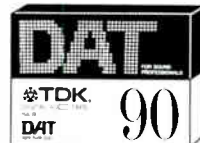


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by George Petersen

# CAIG ProGold

## CONDITIONING TREATMENT

**L**et's face the facts. We all live and die by the quality of our connections, whether it's that new A&R contact at a hot record label or the insistence on the finest cabling for mics, snakes and patch cords. Connections make the pro audio industry what it is.

Unfortunately, along the way, connections become clouded. The average life span of A&R jobs seems to be about four months, and the world of electrical connections is no less harsh, with dust, dirt, smoke, crud and airborne pollutants mounting a continuous assault on wires, plugs, jacks and interconnects.

You can't buy your way into a chart-topping record deal, but you can do something about cleaning up electrical connections. CAIG Laboratories has been supplying chemicals/cleaners to the audio, computer, communications and electronics industries since 1956, and one of the company's specialties is contact enhancers and nonabrasive solvents/cleaners for removing oxidation, corrosion and contaminants.

CAIG's newest product is ProGold conditioning treatment, which not only deoxidizes and cleans surface contamination but also has the unique ability to penetrate plated surfaces and physically bond with the molecules of the base metal.

Due to its high conductivity and imperviousness to oxidation, gold plating is frequently used for electronic connectors. After a number of continual insertions or reconnections, however, the plating may wear thin and expose the base metal, which can corrode and increase the contact resistance of the connection. This is particularly problematic with edge card

connectors, as the plating tends to be fairly thin and porous. Additionally, any oxidation or corrosion that forms in cracks or holes in the plating eventually may form under the plating, which can separate it from the base. Of course, once the gold plating



flakes off, the oxidation problem becomes worse, and given the pricey nature of audio processing cards, it's not a very pleasant scenario.

ProGold is available in pen, syringe, wipe, bottle, needle and environmentally safe aerosols, as well as 118-milliliter to 8-gallon bulk containers for manufacturing or other quantity-users. I'm glad CAIG didn't send any 8-gallon pails of the stuff, but I had the opportunity to test the spray, wipe and pen forms.

I began my testing by using the G100 (100% concentration) spray to treat the five-way binding post inputs on my studio monitors. I make it a habit to check, clean and tighten these connectors at least once a year, so they weren't overly gunked up or oxidized. However, the nickel plating on the dual-banana-plug input posts could certainly have been cleaner, and improving conductivity in this

—CONTINUED ON PAGE 194

# "OBVIOUSLY, THESE GUYS ARE SERIOUS ABOUT AUDIO."

—D&R ORION REVIEW, MIX MAGAZINE

IF YOU WEREN'T AWARE OF HOW POPULAR D&R CONSOLES have become, we understand. After all, we're not very good at making a lot of noise.

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It also takes attention to a spec few console manufacturers are willing to discuss. We're talking phase coherency—which we tackle head-on by meticulously phase correlating each

and every audio stage in every module in every console we craft. The result? Virtually no audible phase shift.

Is all our trouble worth it? Yes. You see, if we settled for "industry standard" phase specs, your music and audio could suffer up to 300% more phase shift. So thanks to our trouble your D&R will deliver sonic ecstasy. Not sonic smear.

Like the magazine said, we're serious. True, maybe we'd have to settle for industry standard performance if we stopped handcrafting consoles, and started assembling them. But we assure you that's another phase we won't be going through.



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by George Petersen



# HHB PDR 1000

## PORTADAT

**P**ortable recorders for professional use lead rough lives. These beasts get tossed, sloshed, beat up, slammed down, frozen, baked and drenched and somehow are expected to deliver dependable performance, days in and nights out. There are numerous portable DAT recorders on the market, but only a handful have the combination of reliability and specialized features that pros need. The PortaDAT line of recorders from London's HHB Communications is among that select few.

PortaDAT is available in standard (PDR 1000) and timecode versions (PDR 1000TC). Both models share similar 4-motor transport, 4-head recording and audio functions, the only difference between the two being a piggyback timecode chassis that attaches to the bottom of the PDR 1000TC. The units are powered by a rechargeable Nickel Metal Hydride battery pack, which offers up to two hours of DC operation, yet are free of the "memory effect" problems associated with NiCad battery designs.

Standard accessories include an AC adapter/charging unit with two battery charge bays, one rechargeable battery pack, a DAT cassette (HHB's own brand, of course) and a sturdy nylon carry case with detachable strap. The case is thoughtfully constructed, with

a large front pouch for accessories, accessible side and rear panels for getting to the connectors or changing batteries without removing the case, and a clear rain flap that allows the operator to see the LCD status display and record controls at a glance.

Inputs and outputs are extensive, with balanced analog mic/line inputs on female XLRs, analog line outputs on RCA jacks, two XLRs for AES/EBU digital I/O, coaxial S/PDIF digital I/O on two RCA jacks, a 4-pin XLR for powering the deck from the AC adapter or other 12VDC source, 1/4-inch headphone output and a multipin jack for an optional remote control.

One of the PortaDAT's strongest features is the availability of switches that provide full control of setup parameters to the operator. For example, separate switching on each analog input channel includes selection of line or mic sources (with flat response or 100Hz [-6dB/octave] low-cut filter on the mic input) and defeatable -30dB attenuators. Although some input parameters (+48VDC phantom powering and record limiter) must be selected globally to affect both channels, I like the fact that PortaDAT offers the choice of most record parameters separately. If I want a line input on the left channel (perhaps coming from a wireless receiver) and an at-

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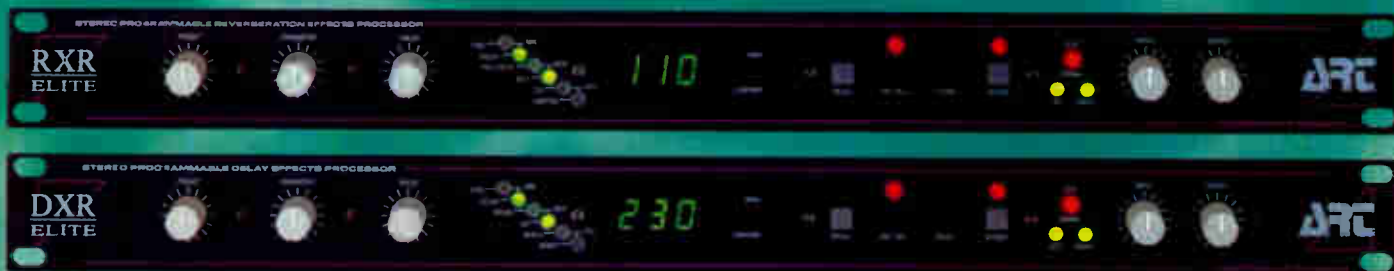
Sure, you can pay big bucks to get professional sounding tracks at a swanky, expensive studio. Or you can just stay home and add the dbx 266 compressor/ limiter /gate to your set-up. Not only do you get classic dbx compression but you also get AutoDynamic™ Attack and Release controls that allow you to produce voicing that extends from slow leveling to aggressive peak limiting. And with the expander/gate, you can tighten flabby drums, change the characteristics of an instrument, even cut out unwanted noise faster than a weed wacker. So for around 300 bucks, you can improve your sonic landscape to create tracks so clean, so polished, so downtown, that no one will believe you did the work in a garage.

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The DXR Elite and DXR Delays offer Time-based effects including Chorus and Flanging. Incorporating a variable band-pass filter, effects ranging from old analog tape loops to 23-tap multi-tap delays are created with astonishing resolution. Used as stereo or independent dual mono processors, the DXRs are powerful production tools.

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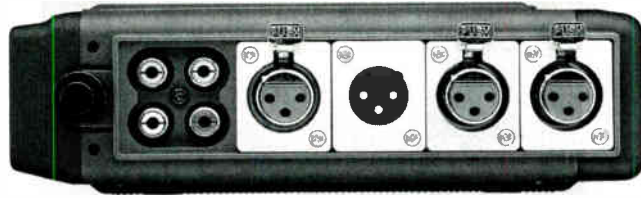
tenuated, highpass-filtered mic signal on the right, so be it. The separate mic attenuator switching is also useful for recording dual mono signals with the attenuator kicked in on one channel (to handle any unexpected hot signals, such as gunshots or explosions), while the other side is set for "normal" recording.

PortaDAT has an outer and an inner cassette door, which, when combined with the case, affords three protective layers to keep dust and dirt out of the transport. And hidden under the first door are a bank of switches for selecting analog or digital input sources, 32/44.1/48kHz sampling rates, S/PDIF or AES/EBU digital format, and clock/calendar set buttons.

On the top panel are ID start/end/search/renumber/erase switches (start IDs can be automatically written or triggered from a small button on the front panel), along with the tape transport control keys, power switch and a key hold function. The latter lever locks the transport keys to prevent inadvertent shutoffs during sessions. Next to the tape door is a 2-inch mono speaker, which is disconnected whenever the headphones are plugged in.

Once the machine is set up the way you want it, you rarely need to access any controls other than those on the top panel. A clever design touch is a volume control that pops out when you want to adjust headphone level, then recesses to avoid accidentally changing settings. Most prominent on the front panel is the sizable backlit LCD status readout, which displays recording levels, program numbers, battery life, time (this is switchable between absolute time, p-time, remaining time and a resettable "counter"), transport status and various warning messages (end of tape, no tape loaded, hold, etc.). Also on the top panel are large "record" and "pause" keys (each with LED indicators), an ID write button, concentric record level controls with a locking switch to keep them in place, and a tape/source monitor switch. The tape/source switch is important, as the PortaDAT is a 4-head machine: When you're out in the field, it's nice to be able to make sure that what you're hearing is actually going onto the tape.

Before venturing out in the wilds with PortaDAT, I checked the charge on the battery. Before charging the battery, I used the "refresh" feature on the charger, which is a switch that drains the battery completely before the charging cycle occurs. This reduces the chance that the batteries will



Analog and digital ports are easily accessed.

fall victim to the "memory effect." For those unfamiliar with the term, the memory effect occurs when rechargeable batteries are recharged after only being partially drained. Eventually, the batteries become accustomed to receiving only a partial charge, and later, when they are fully drained, the memory effect sets in and the batteries refuse to take a full charge.

A few comments about PortaDAT powering. I liked the choice of a 4-pin XLR for external DC: It's a robust connector that's accepted by pro users everywhere. Although the deck is powered by 6-volt rechargeable cells, the external DC input is 12 volts, which is handy, especially with the proliferation of 12VDC sources available, such as car/motorcycle batteries, gel-cel packs, camera belts, etc. Unfortunately, there is no provision for powering the deck via dry cells—i.e., "D" or "C" batteries—so you need to plan carefully if you're doing a lot of field work. The charger cannot power the deck while it's charging a battery. And only one battery can be charged at a time. On the plus side, the battery charges fairly quickly (about two hours), and there is a small red marking on the end of the battery to indicate full power.

HNB says the battery lasts for two hours. They weren't kidding. In the field, I was recording from two (phantom-powered) condenser mics, and the recording made the two-hour mark exactly. Recording using the backlighting on the display reduced this time somewhat. (The PDR 1000TC timecode version is said to be operable for up to 1.5-hours from a single battery.) Anyone considering this deck should also add another (or a couple) rechargeable battery to

complete the outfit.

In the field, I was comfortable with the PDR 1000. The unit weighs in at slightly more than four pounds (with battery), which was no problem, even after hours of work. The case has enough room for a couple of mics, spare tapes and a spare battery, and the recorder controls felt as though they were in the right spot when the deck was slung over my left shoulder. Although the placement of the headphone jack is somewhat inconvenient (it's under the strap pin on the left side), the 12.5mW/channel output of the headphone amp was adequate, and I liked the pop-up level control.

Back at the studio, I had the opportunity to see how the PDR 1000 fared. The mic preamps are clean-sounding and well-designed: I was quite pleased with the audio quality. With its -6dB/octave slope, the 100Hz bass roll-off filter is fairly gentle and better suited to handling breath noise from a location commentator than handling 140 mph gales picked up by a shotgun mic. The action of the PDR 1000's limiter circuit won't tempt me to throw away the UREIs in my rack, but it is fine for a built-in feature on a portable machine and could even save the day under difficult field conditions.

In the digital realm, the PDR 1000's Sony ADCs and DACs were respectable, providing reproduction that was quite close to the source material. The AES and S/PDIF ports provided glitch-free, reliable transfers into (and out of) other digital recorders, outboard gear and workstations. It's nice to use a portable machine that has *real* digital connectors, rather than a jumble of multipin connectors and adapters found on many consumer decks.

Overall, HNB has done an excellent job with its PDR 1000. At \$4,595 (\$6,995 for the PDR 1000TC), this is a professional tool that offers the features, audio quality and rugged construction that serious users require. If you're ready to move up to something that's a cut above the fragile, consumer "hand-me-down" recorders, then the PDR 1000 is worth looking into.

Distributed in North America by Independent Audio, 295 Forest Avenue, Suite 121, Portland, ME 04101; (207) 773-2424. ■

# NEW PRODUCTS

## QUESTED HQ410Q

New from Quested (distributed by Audio Independence of Mayomanie, WI) are the HQ410Q multi-format studio monitors. The HQ410Q can be configured as a passive 3-way, 2-way active (with passive crossover on the MF/HF section) or as a fully active 3-way system. Each monitor has four high-excursion woofers, a 3-inch soft dome mid and 1½-inch soft dome tweeter. Dimensions are identical to the UREI 813, and the speakers can be mounted horizontally or vertically.

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## RSP SATURATOR

Designed to provide "warmth" for digital recording, the RSP Technologies (Rochester Hills, MI) Saturator is a dual-channel, two-space unit based on 12AX7 vacuum tubes. It uses proprietary circuitry to create the classic saturation curves of hot signal-level analog recordings, while keeping the benefits of the digital medium. Each channel features drive and output controls to optimize character vs. gain staging, and the VU meters are switchable between saturation and output. Inputs and outputs are XLR/¼-inch. Retail: \$699.

Circle #227 on Reader Service Card



## AKG C690L BOUNDARY LAYER MICROPHONE

AKG (Northridge, CA) has debuted the palm-sized C690L boundary layer condenser microphone. Designed for sound reinforcement or speech recording, the mic is virtually invisible when placed on tables, lecterns, pulpits or theatrical stage sets. The hypercardioid pattern captures voices from two to five feet and is said to provide strong gain-before-feedback performance. Signal-to-noise ratio is better than 67 dB, with frequency response of 60 Hz to 20 kHz.

Circle #228 on Reader Service Card

## RPG PILLOBAFFLE

RPG Diffusor Systems Inc. (Upper Marlboro, MD) now offers PilloBaffle, a new affordable, hanging, sound-absorbent baffle that provides uniform broad-bandwidth absorption for less than \$4/sabin. Available in seven colors, PilloBaffles can be hung in a daisy-chain array from the ceiling or spaced from a wall with standard hardware.

Circle #229 on Reader Service Card

## HÖF AUDIO DYNAMIC MASTER

New from Höf Audio (Teaneck, NJ) is the Dynamic Master, an automated, professional stereo dynamic processing unit that includes compression, leveling, limiting, peak and expansion—all usable simultaneously



## HAFLER P-1500 AND P-3000 TRANS-NOVA AMPS

Hafler (Tempe, AZ) is kicking off 1995 with the introduction of three amplifiers. Featuring soft start, thermal sensing, LED monitoring and other specialized protection circuits, the amps have current sensors to replace fuses. The P-1500 provides 75 watts/channel at 8 ohms, while the

for the processing of complex program material. The servo-balanced I/O allows the user to do digital live recordings with 0 dB of headroom while maintaining the attack transients.

Circle #230 on Reader Service Card

P-3000 yields 150 W/ch. Both lateral MOSFET output devices use the standard trans-nova amplifier topology and come in 3.25-inch rackmount cases. List price is \$549 for the 1500 and \$799 for the 3000.

Circle #231 on Reader Service Card



**SYMETRIX DYNA-SQUEEZE**

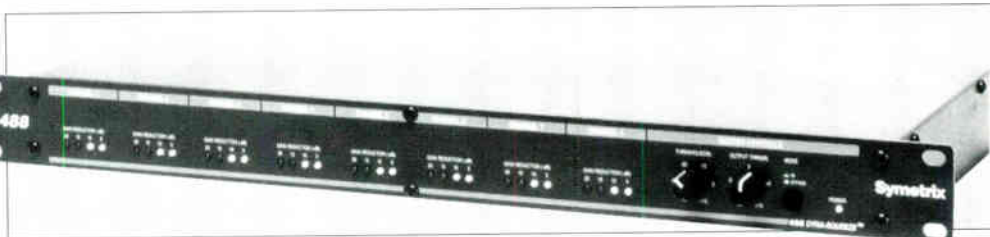
Symetrix Inc. (Lynnwood, WA) announced the 488 DYNA-Squeeze, an 8-channel compressor for use with digital recorders. The unit allows users to optimize recording levels and "push" more information into the recorder's dynamic acceptance window, while providing eight channels of level-matching interface (+4 dBu to -10 dBu). This single-rackspace unit retails for \$579.

Circle #232 on Reader Service Card

**DIGITAL AUDIO LABS V8**

The V8 by Digital Audio Labs (Plymouth, MN) is an 8-track digital audio workstation for the PC. With two onboard Motorola DSP chips, the V8 records and plays up to eight channels of audio. Up to six more DSPs can be added. Projected price for the base unit is \$1,495.

Circle #233 on Reader Service Card



**MACKIE ULTRAMIX PRO**

Ultramix Pro from Mackie Designs (Woodinville, WA) is a Macintosh-based, automated-mixing software program for the company's two MIDI-based automation hardware modules (OTTO-1604 and OTTO-34, for 8-bus consoles). Supporting up to 136 channels of automation, the software includes all the features of the previous software (OTTOMix 2.02) but with greatly enhanced speed and flexibility. In addition to complete control of level and mute functions, it offers simultaneous playback of Standard MIDI Files. Suggested price is under \$500.

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**SOFTSPICE DIGITAL AUDIO EDITOR**

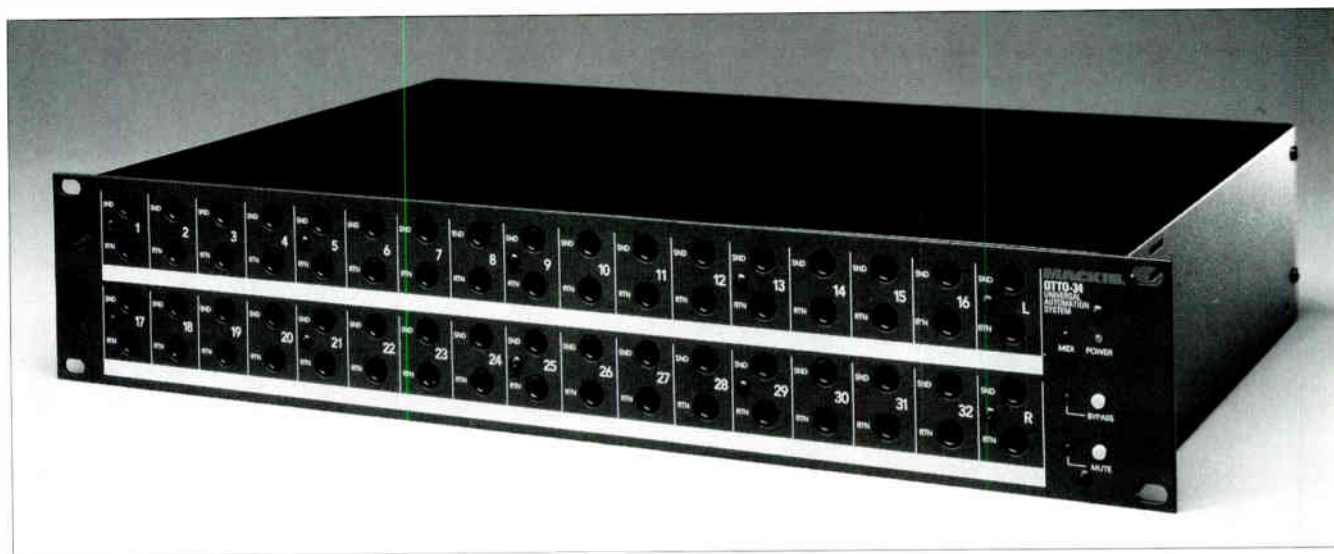
Digital Expressions Inc. (Bellevue, WA) announced new pricing for its SoftSplice Digital Audio Editor and Version 1.2 of the SoftSplice editing software for the Macintosh. SoftSplice hardware and software is now priced at \$1,985 for the professional 4-track portable editing system on a Macintosh. A unique system in that it connects to the computer via SCSI for easy installation, SoftSplice also has an optional 18-bit stereo A/D-D/A converter for \$995. Version 1.2 includes new editing tools and enhanced SMPTE timecode support.

Circle #235 on Reader Service Card

**MARANTZ COMMERCIAL CD PLAYER**

Marantz Professional Products (Aurora, IL) announced the PMD320, a high-grade compact disc player with fader start (broadcast installations can start CD playback by raising console faders), pitch control (for soundtrack applications), 1-bit oversampling D/A converters, and an RC-5 control bus on the rear panel for remote control. A second model, the PMD321, includes all of the above features, with +4dBu balanced XLR outputs. The units retail for \$399 and \$499, respectively.

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**KURZWEIL K2500R  
"PRODUCTION  
STATION"**

Kurzweil Music Systems (Rockvale, TN) introduced the K2500R, a new generation of synthesizer/sampler based around a 33MHz 68040 processor. Featuring true 48-note polyphony, 60 internal DSP functions, a large illuminated display, 28 MB of internal ROM sounds, sample RAM expansion to 128 MB, a full-function 32-track sequencer, and dual SCSI ports, the unit also includes digital connection with the Alesis ADAT and Tascam DA-88. The K2500R has eight analog outputs to go with stereo out and full digital I/O (AES/EBU and S/PDIF).

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**CHAMELEON AMPLIFIERS**

A full line of Chameleon Power Amplifiers, manufactured by Malcolm Hill Associates (Kent, England) and delivering up to 2,200 watts, is now available for distribution in the U.S. by Klay Anderson Audio (Salt Lake City, UT). There are currently nine models of Chameleons available: six dual-channel units and three mono units.

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**ART EIGHT GATE**

Applied Research & Technology (Rochester, NY) introduced the Eight Gate, a digitally controlled, analog, 8-channel noise gate providing true octal dynamics processing. Housed in a steel single-rackspace chassis, the unit provides complete control over each channel's HP/LP key filter, threshold, attack, release and range. Parameter values for each channel are stored in memory and may be downloaded or imported, while the LCD and LED displays provide information on parameter value, channel, signal presence and level. Linking and copying of parameters is supported.

Circle #239 on Reader Service Card

**RAMSA WS-A35  
SPEAKERS**

The new Ramsa (Los Angeles) WS-A35 two-way reference monitors offer balance and natural sound reproduction for a variety of studio applications. Using a spherical waveguide design to get a smooth and accurate sound in the mid- and high frequencies, the WS-A35s have magnetic shielding and strong power-handling capabilities. Suggested retail is \$350.

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**HOT OFF THE SHELF**

**Outboard Gear Sheets** by Outboard Gear Sheets is a quick way to jot down settings and hook up for nonautomated equipment (310) 459-3569...**The Color Scribe 6000** by CAI prints high-resolution color graphics directly on the surface of CDs, for PC and Mac (408) 254-0395...**The DAT Technical Service Handbook** provides practical hands-on instruction on the alignment, servicing and repair of DAT machines (619) 438-3911...UK consultant firm SYPHA has published **The Nonlinear Buy-**

**ers Guide.** Over 150 non-linear video online and offline systems and accessories are featured. (818) 992-4481...**The Analog Keyboard Bass Sampling CD** by React has 91 tracks of vintage keyboard bass sounds. (310) 550-0233...**Wohler Technologies** has introduced the **LVDIG-1**, an AES/EBU digital metering module. (415) 589-5676...**Max Technologies** has **high-tech speaker stands** for 8-bus owners. (305) 669-1330...**Mackie** introduced the **LM-3204**, a 16 stereo line input mixer. (800) 898-3211. ■





# Matica™ Power Amplifiers Are Audio Machines

roducing the Alesis Matica™ 500 and Matica™ 900 High Speed Wide Bandwidth Dual Channel Power Amplifiers. The first amplifiers to offer accuracy, precision and refinement with the performance of brute force audio machines. These are terms not often associated with professional audio amplifiers. At this isn't the first time Alesis has rewritten the rules.

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In the studio, the Matica amplifiers handle the most critical reference monitoring situations. To accurately reproduce every nuance of today's digital recording, your amplifier must be able to keep up with the fastest audio transients. This ability is called slew rate. Matica's slew rate is a blazing 80 volts/micro-second and the frequency response is flat out to 80 kHz. For crystal-clear definition of high frequency detail without phase and amplitude distortion...a must for a great mix. The wideband noise is better than 103 dB below full output, A-weighted, and the typical midband distortion is better than .009%, making Matica an incredible amplifier for *any* recording studio application. Especially yours.

## PRECISION

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## REFINEMENT

Matica amps employ balanced, 1/4" gold-plated TRS/XLR connectors and, for permanent installations, barrier strip inputs. Outputs are on five-way binding posts that accept heavy-gauge speaker wire and banana plugs. A recessed rear

panel switch allows you to select stereo or bridged mono modes. Matica also features the new aLink™ Amplifier Interface, a 25-pin rear panel jack that is a platform for system level accessories from Alesis and 3rd party manufacturers. Future aLink interfaces will expand Matica's capabilities by allowing you to control levels, interface crossovers and signal processors, and monitor protection circuitry from a remote location. Finally, Matica's CoolSync™ (Patent Pending) Thermal Management System combines a whisper-quiet, dynamically controlled, brushless DC fan with a massive extruded aluminum heat sink to keep the operating temperature under control. CoolSync eliminates thermal cycling, which hinders both output power at low impedances and long-term reliability of other amplifiers.

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World Radio History



by Mark Frink

## ERIC CLAPTON MANY GUITARS, SAME OLD BLUES

With the first blues album in history to hit the charts at Number One, Eric Clapton has suddenly decided to go back to the bars. When I arrived in San Francisco for the 97th AES last November, *Mix* photographer and Bay Area music scene veteran Steve Jennings asked if I would be covering the Clapton show at the Fillmore. Having worked as system engineer back in '86 on a couple of Clapton's memorable club shows at the Citi Club (now called Avalon, across from Fenway Park in Boston) and at the old Ritz downtown in NYC, I knew that this was an event not to be missed.

Veteran concert sound engineer Robert Collins mixes front



of house for Clapton. "The clubs are everybody's training ground," Collins says. "After a very successful arena tour, Eric has been looking forward to this club series." Arriving at the club an hour before doors, I found a line of ticket-holders around the block. Collins had to come out to the side door and walk me in because of the incredible pressure on the guest list. The room was set up with tables and chairs, cabaret-style, cutting the normal capacity of around 1,200 in half.

Collins mixes Clapton on a Midas XL3. For effects, he uses a Lexicon 224 on vocals and guitar to get that classic sound. "I chose it over a 480 because it's a reverb, not a processor," Collins explains. There is also an Eventide H3000S set on Bright Room, and a Lexicon PCM-70 set to Brass Plate is used on the horn section and very lightly on the acoustic guitars. Inserts include a Summit tube compressor, seven dbx 160As and two Drawmer DS-201 dual gates. I remarked on the straightforward processing used for the show, and Collins simply replied, "It's the blues."

Kerry Loomis mixes monitors on a one-of-a-kind Midas CS-100 console, which was custom-built for Concert Sound and has 48

Right: Eric Clapton;  
below left: Robert Collins



PHOTOS: STEVE JENNINGS

inputs into 24 mixes and ten VCAs. The rig has Klark-Teknik graphics and crossovers and uses LabGruppen amplifiers to power the three-way Concert Sound monitors, which are JBL-loaded with 18-, 8- and 2-inch drivers.

On Andy Newmark's drum kit, there's a Beyer M-88 in the kick, Shure SM57s on the snare top and bottom, EV N/DYM 408s on the toms, AKG 414s for overheads and a 460 on the hi-hat. Newmark also plays a washboard on one song, which is miked with an AKG 535, one of Collins' favorite microphones. Shure SM-7s are used on the "Kick Back Horns" (trumpet, baritone and tenor sax). Andy Fairweather Low plays guitar, and both his and Clapton's various acoustic guitars are miked with an AKG 460 with a CK63 capsule on an "elbow." No direct boxes are used in the main mix, although in arenas, Loomis uses a DI for the monitors.

—CONTINUED ON PAGE 127



Lyle Lovett

PHOTOS: STEVE JENNINGS



FOH John Richards

**LYLE LOVETT'S  
LARGE BAND ROAD RIG**

Sound services for Lyle Lovett's much-publicized recent tour were once again provided by Concert Production from Murfreesboro, Tenn., located about 30 miles south of Nashville. This modest company should not be underestimated. The engineers take great pride in their work and are some of the nicest guys you'll meet.

We caught up with the tour at the Paramount in Oakland, a beautiful theater with a capacity of about 4,200. Lovett was understandably camera-shy and reported being stalked by photographers from several tabloids. He remembered our own Steve Jennings from a meeting four years earlier, confirming his reputation for never forgetting a name.

Concert Production owner and chief engineer John "J.R." Richards mixes on a Yamaha PM-4000 console with a Lexicon PCM-70, an LXP-15 and a Yamaha REV7. Inserts were a dbx 160XT compressor for the main vocal and a 166 on each of Lovett's two acoustic guitar inputs. "Drive" and processing for Concert Production's proprietary three-way main speaker system is a BSS FCS-960 stereo equalizer, a pair of dbx 160x compressors and a Yamaha D-2040 digital crossover. The two-box system has double-18 sub-

woofers, loaded with Gauss 4883-XR speakers and powered with Carver 2400 amps. The mid-high boxes each have two horn-loaded Gauss 4280 12-inch drivers and a Gauss 4000 high-frequency driver, powered with Carver 1200 and 600 amps. CP makes its own speaker enclosures.

Rick Martini performs the monitor chores on a Ramsa desk with a BSS FCS-960 and eight dbx 1531P equalizers. The CP-600 floor monitors are each loaded with two EV 12s with a JBL 2445 high-frequency driver. The percussion, string and horn players each have a smaller wedge, loaded with one 12 and a JBL 2425. The monitor system

is powered with Crown MT 1000 amps and uses BSS FDS-310 crossovers. "Third man" on the crew is Rodney Dawson.

Lovett uses a Shure Beta 87 vocal microphone, as do background singers Willie James Green, Sweet-Pea Adamson, Harry Bowens and Francine Reed. The drum kit is miked with a Sennheiser 421 on kick, a Beta 57 on snare and on the congas, and SM98s on the toms. Cymbals are miked with

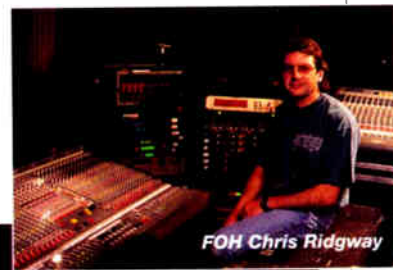
SM81 condensers, as are the violins. Cellos use EV 408s. On the horns, there's a 421 for tenor sax and Beta 57s for 'bone and trumpet.

—Mark Frink

**CAPTURING THE CHRISSIE  
HYNDE VOCAL**

The Pretenders brought their ultracool, crowd-pleasing show to San Francisco's Warfield Theatre for two sold-out nights last November in support of their '94

—CONTINUED ON PAGE 128



FOH Chris Ridgway



Chrissie Hynde

PHOTOS: STEVE JENNINGS

# SUCCESS HAS ITS REWARDS..



With an incredible history, a hot new album and recent world tour, Lou Gramm, lead vocalist for Foreigner, doesn't take anything for granted. When it comes to microphones, Lou doesn't buy into the "me-too" attitude. "Experience gave me the confidence to look beyond 'hype'. I use the mic that really does the job night after night! My N/D757B outperforms everything else. It has incredible power, smooth condenser-like response and it handles stage abuse like no other microphone on the market. When Foreigner starts rocking, I need something I can count on!"

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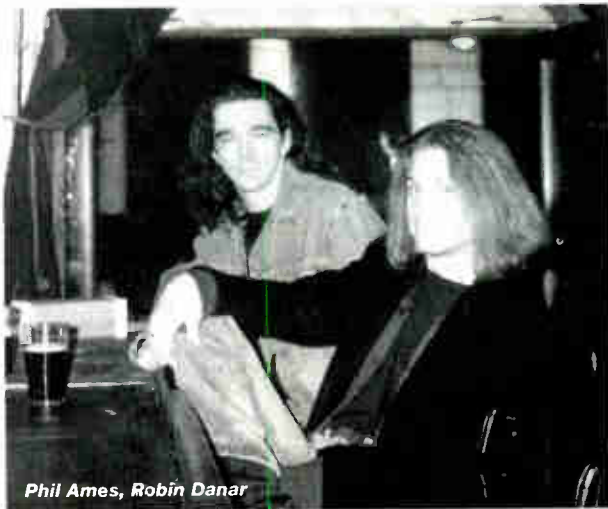


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by Mark Frink

# NEW YORK'S MERCURY LOUNGE



Phil Ames, Robin Danar

The Mercury Lounge in the East Village opened just a year ago but has built a rep as one of the best little live music clubs in the Big Apple. A former tombstone salesroom, it has a capacity of about 200. When proprietor Michael Swier put this club together, he hired Jim Falconer to handle the acoustics. Falconer first had the ceiling isolated and insulated and filled the stage with four tons of sand. Booked by Delsner-trained Theresa Chambers, the room has established a reputation as a place to see new bands and to be seen.

Since hosting a private party for Pearl Jam last April, a variety of artists, such as They Might Be Giants, Bikini Kill, Nick Cave and Richard Butler have performed. The music room in the rear is 45x30 with a 30x10-foot stage. The clear sightlines from everywhere in the room are not all that common in New York. The front room is separated from the music room in the rear by sound-sealed glass doors and heavy, red-velvet curtains; the 30-foot wooden bar is quiet enough for conversation during soundchecks. There is a

stereo feed from the mixing board in back, and in the early/late hours, bartenders handle their own program music. The bar area in the front has no cover charge, and celeb-spotters have reported seeing Drew Barrymore, Bruce Willis, Debbie Harry and Woody Harrelson, to mention a few.

Philip Ames, production manager and chief audio engineer at the Mercury since May, settled in New York after 11 years touring-managing bands such as Swervedriver and PJ Harvey. "I quit touring after realizing that I hadn't been in my home in London for more than five months over the last five years," Ames says.

Ames is assisted by touring and studio veteran Robin Danar, who has been mixing occasionally at Mercury since June. After 15 years of live mixing for artists such as Suzanne Vega, Laurie Anderson, The B-52's, The Church and the Blue Nile, Danar had been devoting his energies to studio production and artist development. "I missed live mix-

—CONTINUED ON PAGE 127

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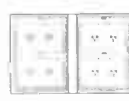
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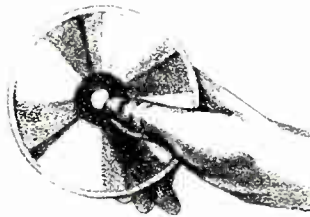
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**LIVE SOUND**

I'll wager you already have a good idea whether you'll be mixing on one of these soon or not.

Senior design engineer Carl Cornell was showing Whirlwind's new series of Mass connectors with crimp-type, replaceable pins and sockets. These new connectors are compatible with existing fixed-pin, solder-type Mass connectors and use the same in-line and panel-mount housings. The insertion-or-extraction tool is color-coded, with a red end for insertion and a white end for extraction. Within the hard-plastic pin block, metal retainer clips snap into the wide shoulder area machined into each contact to eliminate the possibility of contacts "backing out." Crimping contacts onto 22 or 24 gauge stranded wire is accomplished using a standard crimping tool.

TC Electronic (Westlake Village, Calif.) was showing the new ATAC remote for full control of up to ten M-5000 units. Listing at \$1,775, it has a bright 240x60-dot LCD and an interface similar to the M-5000's front panel. The ATAC measures 8x7 inches and weighs 2.5 pounds. Eight soft function keys not found on the M-5000 are assignable as quick patch-change keys, parameter change keys or "nudge" keys. A new version, called the M-5000-

level upgrades for the pro recording industry, had its mic preamp cards and summing amp cards that sell for \$50 and \$75, with slew rates of over 15 and 20 volts per microsecond, respec-



**John Hardy M-1**

tively. I couldn't help wondering how easy it might be to take a couple of critical modules from a PM-3000 just to the right of the control section and mod them along with the main stereo summing bus. AU's Richard Luxemburg said that they had not done a 3000 yet, but thought it might be cost-effective compared to some of the expensive outboard mic preamps being sold. With the majority of 3000s approaching their second decade or third owner, it would certainly give some sound companies a leg up on the competition.

Technical Audio Devices (Long Beach, Calif.) was showing its line of speaker components, including the TD 4002 (list price \$935) 2-inch exit compression driver. The 4002 uses the same five-slit phase plug and beryllium diaphragm as the more expensive TD 4001 but takes advantage of a smaller, lighter-weight neodymium rather than alnico magnet, and it's assembled in the U.S. The company is no longer producing the speaker systems that previously made it competitive with other manu-

facturers that have used TAD components in their designs. Contrary to rumors this past year, TAD components are available and in stock. Several speaker designers have recently used the 4002 in applications where larger



**TAD 4002**

X, will be available this month, offering savings by omitting the front-panel display and controls.

Audio Upgrades of Van Nuys, Calif., supplier of component-



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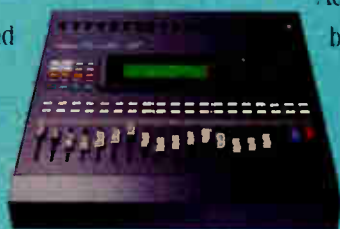
For the cost of a low-priced analog mixer, you can now get a digital one that has instant recall of all console settings.

ProMix 01 also has motorized faders and is capable of dynamic automation.

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As if that wasn't enough, ProMix also has two internal digital effect processors. Three assignable stereo compressors. Superb three-band parametric EQ on each channel.

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## AND CONDENSED IT.

And when it comes to complex mixes, fader grouping lets you control multiple channel levels from a single fader. There also happens to be a stereo "pair" function that allows changes in the left channel (such as EQ and gain) to be automatically mirrored in the right channel.

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**YAMAHA**  
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components would not fit, removing the short 1.5-inch to 2-inch throat adapter by taking out the three Allen-headed bolts. TAD is a division of Pioneer Electronics Service under the umbrella of Pioneer North America and is no longer a part of Pioneer New Media Technologies.

John Hardy's (Evanston, Ill.) brand-new M-1 "Personal" mic preamp is a single-channel version of the world-famous 4-channel M-1 chassis, which has been chopped down to about 8 inches square, 1.75 inches high and holds only one mic pre along with the requisite AC power supply. In all other respects, it is identical to the M-1, using the same JT-16-B transformer and 990A discrete op-amp. As a single-channel device, it can be placed extremely close to the microphone, even at the base of the mic stand, to drive long mic lines found in remote and live applications. It's also small

enough for performing artists who care about their sound to carry with them. Hardy said it would cost "under \$1,000." I would guess that's in the neighborhood of \$999.99, eh? ■

*Sound reinforcement editor Mark Frink can be reached at 4050 Admiral Way #305, West Seattle, WA 98116; BBS: (206) 933-8478.*

## QUICKTIP

Want to give your mixes new zip? Try inserting an Aural Exciter™ on a separate stereo effects subgroup, then return your effects to the mix by assigning them to that group. The Exciter acts as a processor on all your effects assigned to the stereo group, and you can vary the amount of processing with the Mix control on the unit. Because your effects are used to enhance particular

inputs, you can achieve that enhancement at lower levels, avoiding excessive amounts of echo and confusion.

This is particularly helpful in live sound, where there may already be high levels of reverb and early reflections in the room, but you may still want to bring out the "tails" on your reverbs and enhance the chorusing, flanging, early reflections, etc. without dominating the mix. Any effects that sound better without any processing can be returned directly to the stereo mix, bypassing the FX process subgroup.

For a different approach, try using a processor on a couple of different reverbs by putting one of each of its channels (or inserting) on the sends to a couple of different reverbs—you won't have to use up your subgroups. Breathe new life into your mixes, and remember—it doesn't matter how good the snare sounds if you can't understand the words. ■

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**beyerdynamic**

—FROM PAGE 119. CLUB OF THE MONTH  
ing a bit, even though I didn't want to tour. Mercury's a fun place to do it, and they're very sound-oriented," Danar explains. "It's a perfect gig for me. I'm always out in the clubs looking for new artists to take into the studio, and they all pass through here, as well as the A&R and publishing communities."

Mercury's mixing console is a Mackie 32x8, with a Yamaha REV7, an SPX90, an Alesis QuadraVerb and a Zoom 9120 digital processor for effects. Inserts include a Drawmer DS-201 dual gate, three dbx 160x compressors and three dbx 166 stereo compressor/gates. The main speakers are four EAW JF-200i, which each have a 12- and a 2-inch driver, and two SB-250 double-15 subs, all powered by a Crown Macrotech 2400 and a 3600. The main EQ is a Klark-Teknik stereo graphic. There are three EV 1202 floor monitors and a 1502 on four separate monitor mixes run pre-fader from the Mackie, using two Yamaha Q-2031 stereo graphics and powered with two Crown Microtech 1200 amps. The microphone complement includes an EV RE-20 and Shure SM81s, SM57s, Beta 57s and Beta 58s.

For recording, there are two Alesis ADATs, a Sony DAT recorder, a Sony dual-cassette deck, Yamaha NS-10 speakers and Sony headphones. "I'm constantly surprised at the quality of the live-to-2-track mixes we get on everything from full-ahead bands to acoustic solo acts," Ames says. "The possibilities of the ADAT are astonishing. Several 'Live from the Mercury Lounge' CDs and tapes have already come out: *Go to Blazes* and *Dan Zanes/Mitchell Froom*, among them. Now we're getting into live multitrack recording and mixing, which has always been my favorite. I'm currently opening a production space that will have both 24-track analog and ADAT formats, so I'll be compatible with the club. It should be the best of both worlds." ■

—FROM PAGE 116 ERIC CLAPTON

Collins uses two BSS FCS-926 Varicurve equalizers as inserts for the two acoustic channels. This allows him to conserve channels on the console by establishing a preset for each of the many acoustic guitars that the two players use, running the console channels flat so that the EQ can be used as a "go to" for quick corrections. The electric guitars are played through Fender Twins for that "dirty guitar" sound, and they are miked with Sennheiser MD-509s, which

"gives me a little bit of grunge," according to Collins. Jerry Portnoy plays harmonica using a 58, and his Fender is miked with a 509.

The Fillmore has four Meyer MSL-3 cabinets flown per side. "Many clubs have a modern hi-fi sound, and that's not what we're after on this show," Collins says. After the three San Francisco shows, Clapton played dates at the House of Blues clubs in L.A. and New Orleans, and then at Buddy Guy's Legends Club in Chicago and New York's Irving

—CONTINUED ON PAGE 130

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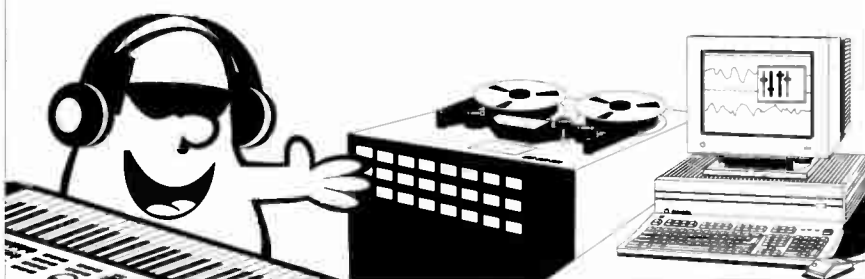


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### LIVE SOUND

—FROM PAGE 117, PRETENDERS release, *Last of the Independents*. Equipment for the band's six-week American tour was provided by Delicate Productions (Camarillo, Calif.), with supplemental gear called in for their Chicago date from dB Audio (Spokane, Wash.). The Pretenders' set included mainly hits from the band's 14 years of recordings (and many personnel configurations), from "Kid," to "Middle of the Road," to their most recent "I'll Stand by You."

Front-of-house mixer Chris Ridgway's live mixes of Pretenders classics bear a striking (and deliberate) resemblance to the band's recordings. "When I first started buying their records, the thing that I liked right off the top was Chris Thomas' production," Ridgway explains. "And I had so much respect for his work anyway. He actually came to a show when we were in Portsmouth [England] recently and was very complimentary, and so I was thrilled by that. He did all their earlier stuff. [Those recordings] are really exciting, and there's not too much production going on."

Delicate provided the tour with an S2 Martin system. Ridgway uses a 40-channel Midas XL3 console with an additional 16-channel XL3; Delicate monitor mixer Brad Johnson uses a 40-channel Midas XL3. Chrissie Hynde's vocals are miked with a Shure Beta 87 radio mic; Ridgway adds a BSS 901 dynamic equalizer: "It's got four bands on it, and you can expand or compress them," he says. "That's a major tool that's inserted on her voice, with a BSS 402 compressor limiter."

The most challenging aspect of the Warfield shows, for Ridgway, was mixing from the balcony, which he says was required by the venue management. "What happens is that you're between the flown system and the ground, so you're effectively in a hole, and it's very uncomfortable to mix in it. So, what you have to do is leave that position, run up some steps, get someone to run downstairs

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### LIVE SOUND

and hope that you're getting something that equates between the two. You can't remove what you don't like or add what you think is missing, because, otherwise, you'll destroy both. You're in a bad mix position, but you make the best of it." Ridgway added EQ to a number of areas to adjust the sound for the different parts of the hall.

"My thing is vocal quality," Ridgway asserts. "That is the Number One priority. If you tell me her voice sounded good, then that's the first thing, because everything has to fit around her. That's the Number One instrument."

—Barbara Schultz

—FROM PAGE 127, ERIC CLAPTON

Plaza, before returning to London for this month's Royal Albert Hall series.

Clapton started the set acoustically and sitting down, a la *Unplugged*, playing "Motherless Child" and a "selection of songs that made me want to play the guitar when I was young." Three songs later, he introduced "Kidman" as his "favorite song," and when he gave a nod to Muddy Waters, with "Standin' Round Cryin'," he had the place rocking. When Clapton switched to his trademark white Strat for "Hoochie Coochie Man," I realized that he had played a different guitar for nearly every song, which he continued to do throughout the set. He ended the two-dozen-song set with "Ain't Nobody's Business" and then came back with "Sweet Home Chicago" for the encore. Clapton has never played better, but don't worry if you missed it, an HBO film (not video) crew was present, preserving the show for posterity.

Concert Sound's managing director Mick Anderson was also on hand for the show and told me they have moved to a new warehouse. The address is Park Avenue Industrial Estate, Unit C, Sundon Park Road, Luton, Bedfordshire, England LU3 3BP. ■



# 5,000,000 WATTS



### [ Be Sure to Read The Fine Print ]

Now that we've got your attention, we'd like to point out a small, disturbing fact about amp specifications you may not have noticed—the fine print. Like the headline example above, many amp manufacturers will toss out impressive looking numbers for power or low distortion—*until you read their fine print*. Then you'll find weasel-words like "subject to manufacturing tolerances" or "typical" specifications. In fact, some of the fine print allows the actual performance of an am-

plifier to differ as much as 20% from the printed specs! At Crown, we don't play games with specifications. We don't have to. When you buy a Crown, you get more than great specs, you get the best, most accurate sound in the business. You get guaranteed performance, with complete, meaningful specifications that are backed by a Three Year No-Fault Full Warranty. We *guarantee* that your amp will meet or exceed every original specification for three full years. (Be sure to read the fine print in

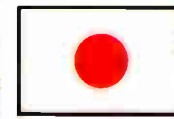
their warranties to discover all the items and conditions they *don't* cover.)

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# PROBLEMS AND PITFALLS OF INTERNATIONAL TOURING

***(OR, TRAVELING ON THE RED-EYE SPECIAL)***

**By Dinky  
Dawson**

**T**here are two levels of international touring: the top of the line and the Red Eye Special. As its name implies, top of the line is the most professional, world-class level and is very specialized—just about everything is compartmentalized, and each cog has its unique function. The WOMAD tour is a good example. Yet even at the top of the line, road personnel will still encounter Bureaucratic, Unaccommodating Technical Torture (BUTT, for short). The Red Eye Special is not immune to BUTT either; it's just that it's distributed and experienced differently: Fewer roadies experience more hassle. My last tour with Inner Circle was on the Red Eye Special. Let's get on the Red Eye Special!

## **BUREAUCRATIC (AND MAYBE UNACCOMMODATING)**

The beginning: how you start; your first encounter with Customs. Let's say the entire tour to Europe has been booked through one promoter, who has subcontracted venues in various countries through local pro-

**From obtaining**

**work permits**

**to learning about**

**power requirements,**

**foreign travel**

**demands that live**

**sound engineers stay**

**on their toes.**

moters. Before leaving the U.S., the primary promoter must obtain for all tour personnel work permits and visas for each country, and carnets if you are taking any equipment out of the country. If you are working with different promoters in each country, each promoter must procure these items for each country. In either case, it's a lot of paperwork and can take a lot of time: a good month if there are no hitches. It sounds a lot simpler than it is.

### **WORK PERMITS**

The paperwork for a work permit begins with your passport; usually, a copy of the first page of your passport is required. The promoter will also need a description of your job with the group. This is where it gets tricky and where a knowledgeable, experienced promoter is helpful. Because of varying laws, sometimes technical staff may not be allowed into a foreign country. (You think we're the only country with strong union lobbyists? Read on.) There-

fore, even if you are the sound engineer upon whom the band depends, you may have to be classified as a musician. Some governments seem to think that while artists provide unique services (that is, no one else can perform them the same way), technical support staff services can be accomplished by anyone, and if, say, a sound engineer were allowed into their country, a native sound engineer would lose work.

The promoter circumvents the governmental agencies by suggesting he is using local crews at each venue. So, although you find yourself nightly behind the mixing console or tuning the lead guitarist's axe, your official, governmental title is musician. Once, one of my engineers entered a country as a circus clown. Honest!

Chances are, you'll never see the work permit. The promoter holds it and usually has someone else deal with local customs officials. Customs will be notified where the band is playing and what their fee is, so Mr. Taxman (for country and local taxes) gets his cut. (Most crew members are paid by the band in U.S. dollars, so the only taxman we're dealing with is Uncle Sam.)

### **VISAS**

As with work permits, visas are arranged by the promoter with immigration officials. They require not only copies of your passport information and a description of your job (which will match your job description on the work permit), but also round-trip airline tickets and two or three passport-type photos (sizes vary with the particular country), along with communication with the country's embassy. A special visa form, including information regarding your nationality, date and place of birth, criminal record (if any),



name

and address of the firm you're working for (the band), the purpose of your trip, length of stay, hotels you'll stay in, and a guarantor/reference in each foreign country (i.e., the promoter) will be processed by the embassy.

Visas are obtained before entering a foreign country, attached or stamped into your passport, and finally, stamped when you arrive in/depart from the country. They are only valid for a specific time period. Last year, while working with Inner Circle, a Jamaican reggae band, I learned how exasperating immigration officials can be. Since most of Europe formed bonds in the Common Market, one would think travel through the various borders would be simplified, and for the most part, it is—one passport, one visa. However, as we were preparing to leave Germany, we learned that Spain recognized U.S. and British passports and visas, but Jamaicans and Bahamians were another matter. We found ourselves waking the Spanish ambassador in Hamburg early on a Saturday morning, pleading our case. After giving him CDs, autographed photos and guest passes for the show in Madrid, the visas were stamped and certified. Swag works! Another time, in Tokyo, I found my-

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self in the Australian embassy with paperwork for a last-minute tour for Inner Circle in Australia.

Of course, all of this costs money, which the promoter usually handles. However, sometimes you'll find yourself getting reimbursed from the band for unexpected fees and travel taxes—airport fees (\$75 in Trinidad!), health certificates and immunization fees (Costa Rica), etc.

#### CARNET

This piece of paper can be a blessing or a curse. Processed prior to the actual tour, it is used when entering/departing foreign countries. It lists, for the benefit of Customs, every item (excluding personal items) associated with the tour, so governments can be assured that proper import/export taxes have been paid—protectionism at a bureaucratic level. (It should be noted that even personal items, such as CD players, tape decks, cameras, shavers, etc., which may be of foreign origin, should be documented as purchased in the U.S. to expedite going through Customs and allay any doubts border officials may have regarding the origin of the item.)

Carnets register your equipment, listing the item, serial number, value, weight and size, and country of origin. If they desire, local Customs officials can check the actual equipment against the list to make certain you haven't sold or purchased any equipment without paying proper taxes. Customs officials can be the primary proponents of BUTT in their search for smugglers, and the net result is hours of waiting. On the other hand, some officials simply look at the list, stamp the carnet and send you on your way.

Not all countries recognize the carnet, and sometimes a tour is booked too late to obtain one. Then life becomes a little complicated. When Inner Circle added Costa Rica to its itinerary at the last minute, we shipped our equipment as excess baggage. I had to list the same information the carnet requires, which the promoter took to a Bond Agent to expedite Customs procedures. Customs went through every piece of equipment, checking each serial number, and the promoter had to place a bond on the equipment. This bond was returned when we left the country, and the reverse procedure occurred. It took at least four hours

to enter and four hours to exit. Additionally, the promoter had to pay the Bond Agent for the Customs work. This, I am told, is standard operating procedure in Latin American countries.

During the Inner Circle Tour, the carnet made Europe a breeze, until we hit Spain and Portugal. The promoter had to post a bond in each country. To save money, we sometimes shipped our equipment as excess baggage, trying to carry on the



guitars and put them in the overhead compartments. We figured that with ten people in our party, each allowed two pieces of baggage plus a carry on, our gift of the gab would get the equipment through. Plus a little swag tip usually convinced baggage handlers to get the gear on the plane. But in Malaga, Spain, with its big, beautiful departure area and 50-plus check-in lines, each with its own weight scale, no such luck. As it turned out, the airlines didn't weigh each piece of equipment; they simply checked it against our carnet. So, \$4,000 later in excess weight fees and hours lost in the hassle with no promoter in sight to pass the work and fees on to, we were on our way, much to the band's dismay.

#### TECHNICAL

To take or not to take. Gear, that is. For most modern-day groups, all you really need to take are your guitars and pedal boards. Most backline equipment is available just about everywhere—Marshall amps, SVT bass, you-name-it drums—and without having to worry about power conversions. As for sound reinforcement and lighting systems, some of the best are in Europe and even South America. I used Yamaha PM 4000s, Ramsa 40s, Crests, Carvers, EAWs, Roboscans, etc. in a small town in Paraguay. You might expect

this in large cities like Rio or Sao Paulo or even in nightclubs such as the Club Quattro, a large chain in Japan, where I worked with PM 4000s and 14 monitor mixes. On the other hand, in Australia, I found lots of older equipment being used—functional, but still last year's models.

Bands that require a lot of stage processing, especially in keyboards, should take their own rigs. You'll never find exactly what you need, and besides, why go to all the trouble of resetting your samples and computerized gear? For example, Inner Circle needed samples and keyboard MIDI devices that took over 20 channels of a mixing console. We used a rack mixer for our keys and simply supplied two channels of stereo. When pushed, for example, at a mountain-top gig in the rainforests of Costa Rica, we compromised to only one channel in mono. But that's the exception. Bands that require a lot of sampling and complex MIDI interfaces must take their own gear on the road.

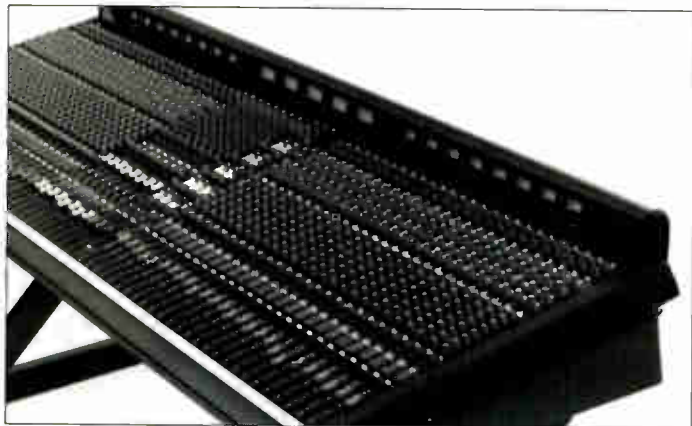
#### POWER

Where would rock 'n' roll be without electrical power? Wherever you tour, power must be addressed, even in countries that supply 110V. For example, one part of Japan uses 110V AC, and other parts use 220V. Even in regions that use 110V, some areas use 60 cycles while others use 50. When I first started in the late '60s, I bought a 1,000-watt transformer for use in the U.S. to convert 110V to 240V for Fleetwood Mac's English-designed Orange band gear, which, unlike most of the Marshall amplifiers, didn't have 110V taps, as they were prototypes.

Today, I use a Furman Power Converter that regulates, filters and stabilizes electrical current. This is especially important for MIDI and samplers, and I even use this unit in the U.S. No fears of brownouts or power shortages! This unit has various plug-in adapters for different countries. For example, it has a three-prong, rectangular, 15-amp plug for England. However, no matter what kind of plug you use, you must always ground your unit. Abroad, few small sound companies use good AC units, and most European clubs suffer from battered plug syndrome, even though club reps will always say it works.

Make sure you have a backup

# SOUND REINFORCEMENT NEW PRODUCTS



## CREST CENTURY SERIES

Crest Audio (Paramus, NJ) expanded its Century Series console line with two new mixers. The Century Vx has eight VCA groups, eight audio groups, four mute groups, a 21-VU meter bridge, eight matrix outputs, true LCR panning and fully balanced buses on all eight aux send systems. The Century GTx includes a VU meter bridge, two matrix outputs and LCR panning. Both models have eight aux sends per channel and 4-band sweep EQs with switchable Q on the two mid frequencies and switchable peak/shelf on the high and low bands.

Circle #212 on Reader Service Card

## JBL STAGE MONITORS

JBL Professional (Northridge, CA) expanded its Array Series with the vertically oriented 4891 and horizontally oriented 4890 slant monitors. Both contain identical transducers and JBL's new 14-inch, ultra-low-distortion neodymium woofer with Vented Gap Cooling. Designed to offer high-SPL output and low distortion across the full audio bandwidth, the monitors' patented motor ventilation design dramatically reduces power compression.

Circle #213 on Reader Service Card



## ADAMSON HI Q ARRAY LOUSPEAKERS

Adamson Systems Engineering (Ajax, Ontario) introduced the Hi Q Array Series loudspeakers for large concert and club applications. Featuring DSP time and frequency compensation and Acoustic Waveguide technology, the system includes five separate enclosures and is designed for a dead hang with a flying system.

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## CYBERLOGIC NC-800 POWER SYSTEMS

Producing more than 11,000 watts of power in six rackspaces,

the new NC-800 Series from CyberLogic (San Rafael, CA) has eight channels of high-power amplification and is designed to replace four conventional power amps and their respective I/O panels. The NC-807 delivers 700 watts/channel at 4 ohms; the NC-812 outputs 1,200 W/ch at 4 ohms.

Circle #215 on Reader Service Card

## MARTIN AUDIO EM150 SUB-BASS SYSTEM

The newest addition to the EM System by Martin Audio (distrib-



uted by TGI North America, Kitchener, Ontario) is the EM150 sub-bass system. An ultra-compact system designed for use with the EM15 and EM25 full-range loudspeaker systems, the EM150 will extend the frequency response to below 45 Hz. An external crossover is not necessary.

Circle #216 on Reader Service Card

## GARWOOD THE RADIO STATION

Garwood Communications (distributed by Firehouse Productions of Brooklyn, NY) has released The Radio Station, a wireless, in-ear monitoring system for stage applications. The one-rackspace system uses UHF radio links and digital coding.

Circle #217 on Reader Service Card

**"ONCE YOU'VE REACHED THIS STAGE,  
YOU'D BETTER HAVE YOUR ACT TOGETHER!"**

After more than 20 years of touring with **Pink Floyd**,  
monitor engineer **Seth Goldman** has some firm opinions about music and microphones.

"Pink Floyd's live performances are complex,  
both technically and artistically," says Seth. "There's just no margin for error.

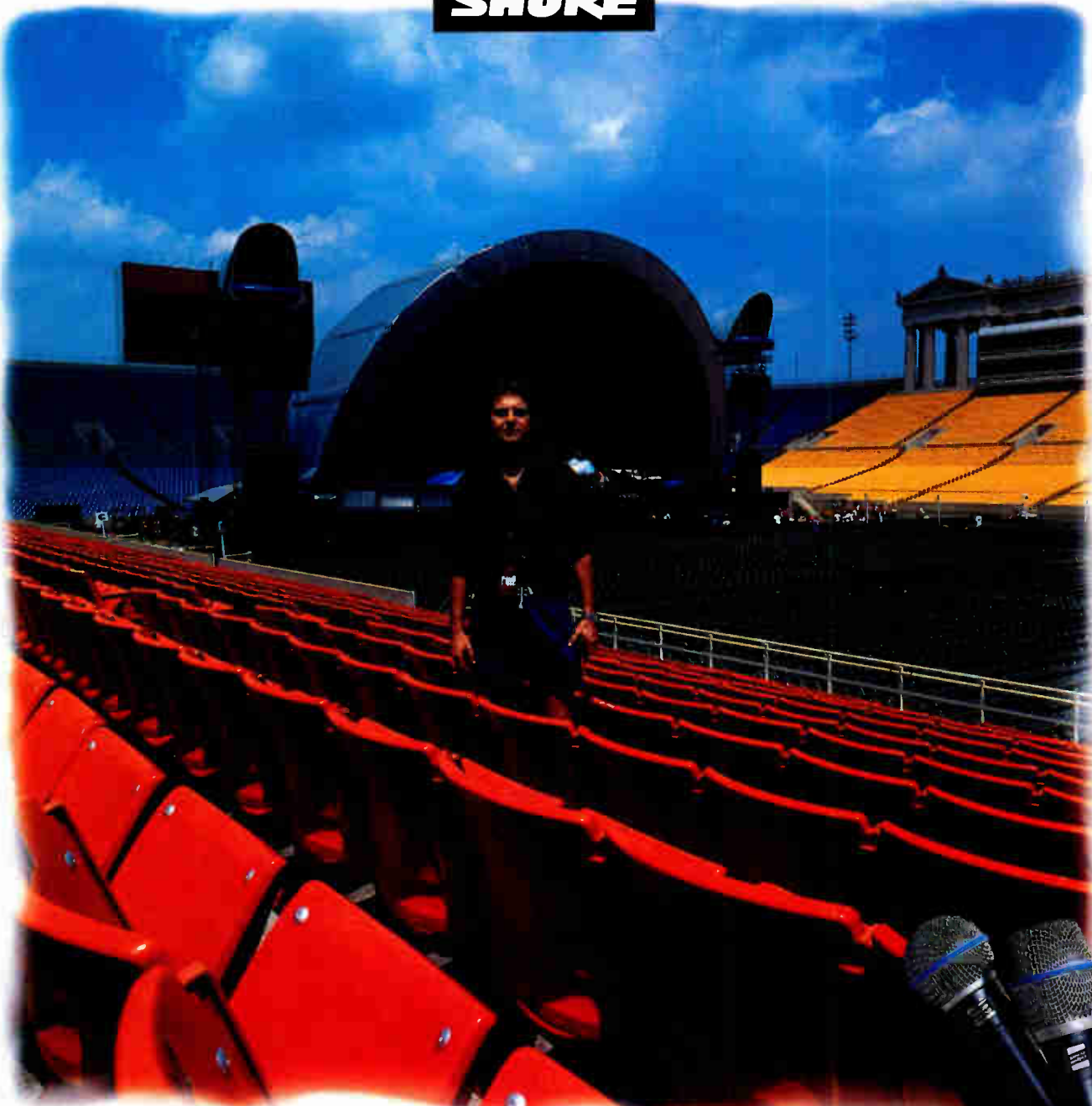
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*Seth Goldman, Pink Floyd Monitor Engineer, Soldier Field, Chicago.*

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## SOUND FOR FILM

Balancing  
Film Sound on  
The Cutting Edge

## PART I

by Larry Blake

I have always considered the day that Walter Murch arrived in San Francisco in 1969 to do sound on Francis Coppola's *The Rain People* to be Day One of modern film sound. This was the beginning of the end of the bureaucratic, compartmentalized, you-edit/I-mix approach to film sound that had been so entrenched in Hollywood for decades.

Although *The Rain People* isn't on many lists of great sound jobs, the body of work that soon followed is certainly on mine: *THX-1138*, *American Graffiti*, *The Godfather* (Parts I and II), *The Conversation* and, of course, *Apocalypse Now*. *The Conversation* was perhaps the culmination of this approach, with Murch supervising the picture and sound-editing, and doing the re-recording (at Coppola's American Zoetrope facility) by himself. I'm not changing my oft-stated opinion that *Apocalypse* is the last word in sound on film; I'm only pointing out that Murch had much more help on that one in all three departments. (It was almost the film sound equivalent of the Dream Team.)

The creative leap shown in these films would have surfaced regardless of the technology, but there's no question that Murch was more than aided and abet-

ted by the newfangled tools at his disposal: high-speed dubbers and punch-in recording might seem obvious, if not downright quaint, to us, but you have to remember that in 1969, Hollywood was just happy to be going backward at sync speed without having to rewind all the units and manually put up the start marks.

Ironically, in some ways, the equipment he was using was very simple: At the start, they had a 16-input Neumann console, and in the *Apocalypse* days they had a 28-input automated MCI. At no point during this period did Zoetrope have more than seven 35mm dubbers! Further to the

point, since they were using Keller flatbed dubbers in those early days, the whole procedure had a more friendly, hands-on feel than a machine room full of 30 mag machines. (For stereo films in the late '70s, Zoetrope began the "regrouping" procedure, wherein seven mag units at a time were copied to 24-track tape, thus allowing up to 22 tracks to be mixed simultaneously.)

I have always felt that sitting on the cutting edge invariably requires balancing high-tech toys with low-tech solutions. The goal remains constant: not losing sight of the creative task at hand, and this is indeed what sets apart

—CONTINUED ON PAGE 143

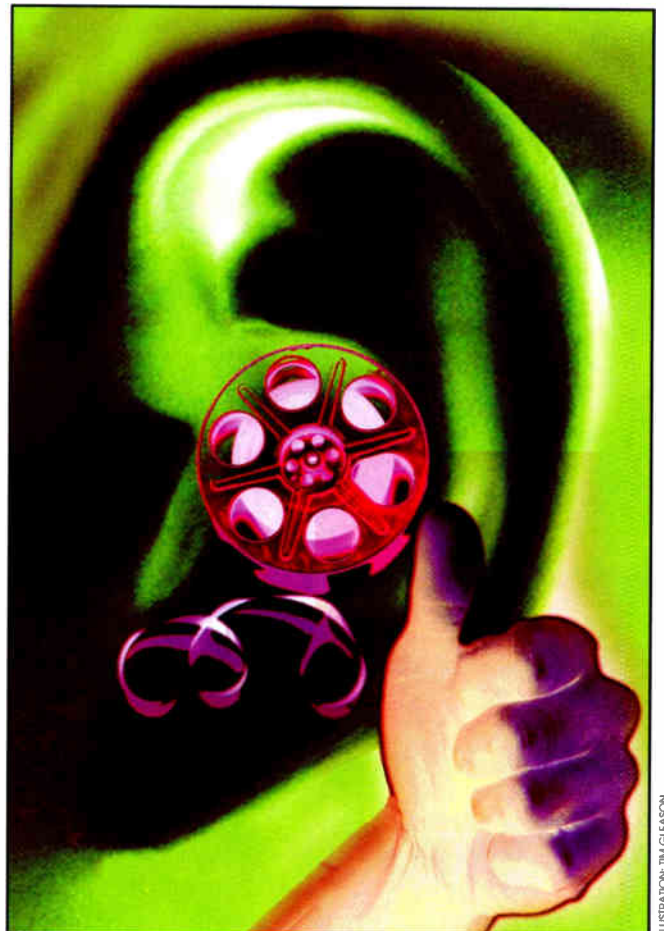


ILLUSTRATION: TIM GLEASON



## Edit Suite Monitoring

### HIGH QUALITY, MANY OPTIONS

by Tom Kenny

It wasn't too long ago that certain monitors were considered standards: UREI 813s or JBL 4311s for the mains, Yamaha NS-10s for reference and Auratones sprinkled throughout the facility; the idea being,

---

**Accuracy:** *n.* conformity to truth or to some standard or model; exactness. (from Webster's Third)

**Accuracy:** *n.* natural, uncolored reproduction; a faithful re-creation of the original signal. (from *Mix* editor George Petersen)

---

"We all know what they sound like." In video edit rooms, it was the EV Sentry 100, largely because they were powered and convenient.



The main room at American Production Services features KRK 1303s for the mains, a KRK 1002 in the center, and KRK 703s. KRK 703s have replaced the NS 10s pictured here in the near field; the NS 10s moved to the surrounds.

Now, driven primarily by the emergence of project and home studios, there are more reference-monitor options available. And many audio post-production facilities have responded by upgrading the monitoring systems in their edit suites and mix rooms.

Because audio and video edit rooms are typically a small, boxlike environment (with the exception of those that double as a mix room) without much acoustical treatment, an accurate monitoring system is particularly important.

Another force driving

the demand for high-quality monitors in edit suites is the emergence of high-quality surround playback systems in homes and theaters. Not everybody is mixing in surround—yet. But multichannel playback systems have become *de*

—CONTINUED ON PAGE 144

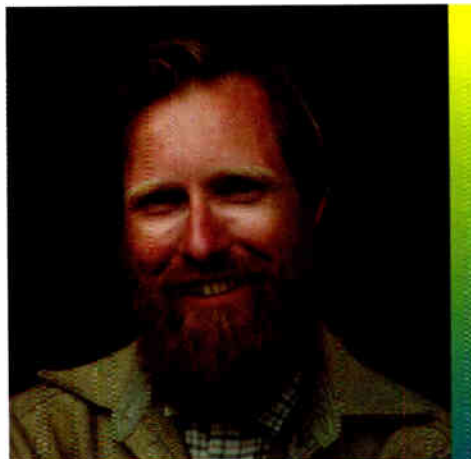
## Alan Splet (1939-1994)

by Randy Thom

"Sound," Alan Splet once told me, "is a heart thing." I was interviewing him in 1980 for a radio documentary about sound in movies. Having already set the film sound community and young, hip moviegoers on their collective ear through his groundbreaking work with David Lynch on *Eraserhead*, and then having designed equally powerful and very different tracks for *The Black Stallion*

and *The Elephant Man*, Alan was beginning work on *Never Cry Wolf*, which would become still another unique and compelling landmark in the history of film sound. *Blue Velvet* and *Dune* were soon to follow, and their tracks were to be just as magnificent.

—CONTINUED ON PAGE 148



## Alan Splet Remembered

"He was a poet with sound. He had a wonderful sense of economy and use of space in his dubs. Everything would mean more because it had a deliberate sparseness, in that it was focused in its detail. Everything had coherent meaning. Alan

—CONTINUED ON PAGE 152

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World Radio History

—FROM PAGE 140, SOUND FOR FILM

Murch's work, or that of George Martin with the Beatles. We don't care that they mixed *Apocalypse* on a 28-input board or recorded *Revolver* 4-track. The work stands on its own.

Those of you who own 8-track modular digital multitracks, an under-\$5,000, 32-input console, and a digital audio workstation of any flavor have considerably more sound horsepower at your disposal than Messrs. Murch or Martin had. The sound quality of this equipment is superb, and you don't even have to factor in a "for the money" excuse. As you might have guessed, that lack of excuses is both the good and the bad news. However, there are a few things you need to be aware of before attempting to do stereo films with such equipment, and this four-part column will attempt to guide you through some predictable mental and technical roadblocks.

First and foremost, film sound has a separate center speaker channel that is identical to left and right in all respects. Repeat after me: three matched channels. That's "behind the screen," in the front. The surround speakers (no less than four or more than six for most rooms) are divided up into one or two channels. But the real battlefield is your main LCR set up front, and for many, this means weaning oneself away from the notion that stereo equals LR.

Two-track mixes have been standard for stereo television and even used extensively for theatrical films. The reason for this is simple: The Dolby Stereo matrix decoded two tracks on 35mm prints (or on home video media) into four speaker channels. Because of the matrix, what would have been played back in the "phantom center" of two speakers would be carried by a separate center-speaker channel.

Until recently, it could be assumed that a matrix would be there to create the center (and, for that matter, surround) information. However, two things have changed in the past few years. The popularity of discrete, non-matrixed digital release formats has created the need for hard (as opposed to phantom) center-channel information. And this year, this technology will come into homes, with 5.1-channel (LCR, plus left-surround, right-surround and

subwoofer) laserdiscs. Let me be clear about something: Regardless of how widespread 5.1 digital systems become in theaters, 35mm prints will always contain a stereo optical track. Ditto for home-video stereo mixes. No, I can guarantee you that we will be doing 2-track mixes for feature films in the year 2010. Anybody wanna bet?

But back to the point at hand, and let me use a simple example to explain why 2-track stereo doesn't make the cut *sans* matrix. If you are in the *exact* center of a normal 300-seat theater, and a 2-track rock mix is being played back as left and right, your brain will create a phantom center just like it does at home. However, if you move just two seats away (I'm really serious), the image will shift to that side and will take the singer with it. This is *really* distracting, and in a best-case situation could have been avoided by providing the re-recording mixers with separate center tracks for instruments (say, bass/kick/snare) and lead vocal. In a worst-case situation, the 2-track mix could have been put through a 2:4 decoder, thus deriving a center-channel send.

If you follow this thinking through, then, 2-track mixes, even for home video, are problematic. The thousands of TV programs with 2-track dialog, music and effects masters will have no other way to create a 5.1 print master in the future except by brute force 2:4 decoding. Mixing in LCR stereo—dialog, music and effects—from the get-go is a best-of-all-worlds approach because it not only makes discrete mixes feel more natural (and much easier to print master!), it also gives you much more control of elements during the final mix proper. You can easily adjust the level or EQ center-channel material by itself.

In part two, next month, I will continue this discussion, focusing more on the recording and track layout aspects. As always, please send along your comments directly to me at P.O. Box 24609, New Orleans, LA 70184; fax: (504) 488-5139, or via the Internet: [swelltone@aol.com](mailto:swelltone@aol.com). ■

*Larry Blake is a sound editor/re-recording mixer who lives in New Orleans for reasons too numerous to mention, although a taste of his mother's oyster dressing would be a good start.*

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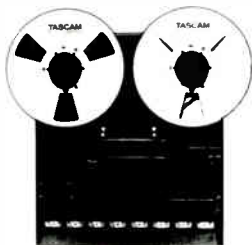
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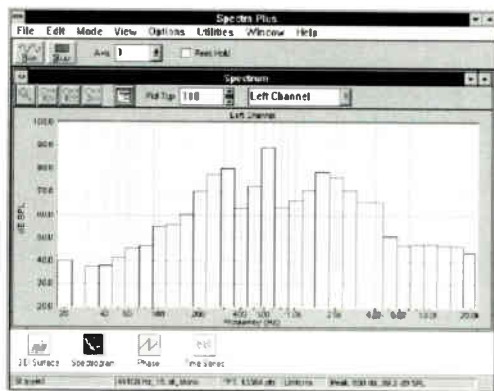
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—FROM PAGE 141, EDIT SUITE MONITORS

*rigueur* in Los Angeles and are increasingly finding their way into New York facilities. (Most of the facilities we talked to in New York had surround mixing capability or were planning to install it this year, but the program material doesn't seem to be there yet.) The rest of the country should soon follow.

### ALL FOR ONE, OR TO EACH YOUR OWN?

There doesn't seem to be anything radically new in reference monitor technology; it's just that there are more and better monitors out there. *Mix* talked to a number of audio post engineers at facilities around the country to find out their criteria for selecting reference monitors, and the terms "accuracy" and "translation" repeatedly popped in and out of the conversations. Budgets aside, it seems that video houses are more likely to put in a certain model companywide once they've made their selection, the reason being that you want that consistency if the producer has to move from room to room, even to the point of installing high-quality monitors in the video bays so that the audio doesn't lose life when the producer goes in for layback. The same apparently goes for the large film studios, as evidenced by the recent Warner Bros. install, where they put Tannoy System 12 DMTs and System 15 DMTs in all 25 edit bays.

The counter approach is to offer individual engineers what they want. Many sound editorial companies mix and match monitors according to the editor, and freelance editors sometimes bring their own.

"Everyone has their own taste in speakers, and you can't argue with that," says Dean Winkler, VP and director of creative services at New York's Post Perfect, home to three identical SSL Scenaria suites. "But once you've chosen whatever it is, in my opinion, it should be the same for the whole facility. Our video monitors, to use an analogy, are Sony PVM-1911s, which are \$10,000 monitors. We have a house master monitor in Color A, and once a week, our head colorist and head monitor maintenance guy check that monitor with a pair of analyzers and their eyes. Once that's signed off, the monitor is probed, and that probe learns the monitor setup. We then go to every other monitor in the

**Translation:** *n.* a rendering from one language or representational system into another; the removal, transfer or conveyance from one place or condition to another. (from Webster's Third)

**Translation:** *n.* refers to the ability of mixes or recordings made on one set of monitors to be played back on another system without losing the overall instrumental or vocal balance. (from *Mix* editor George Petersen)

house once a week and put the probe in to make sure they are all calibrated the same. There should be no difference in the reds or flesh-tones or anything else. The same thing applies in audio. And it has to. We're at that level of criticalness.

"But audio, in a sense is easier," he adds, "because there's less to tweak. We do not use active equalization on the systems because we don't feel that it's worth the trade-off or that it's necessary if you design the rooms right. We did a TEF analysis of

the rooms [designed by Bill Morrison], and they are remarkably flat—there's a slight dip at 96k, but otherwise they are dead flat. And we found that the Westlakes are extremely accurate in terms of frequency balance. It's a very balanced speaker."

#### ACCURACY & TRANSLATION

In Mixed Nuts, the audio division of Post Perfect, they have Westlake BBSM-4s for the close-field and BBSM-12s for the mains, driven by separate Crown Macro Reference amplifiers ("The best bass amp I've ever heard," Winkler says). Assorted Auratones and "TV speakers" are strewn about. The video rooms have BBSM-10s and Crown Macro References.

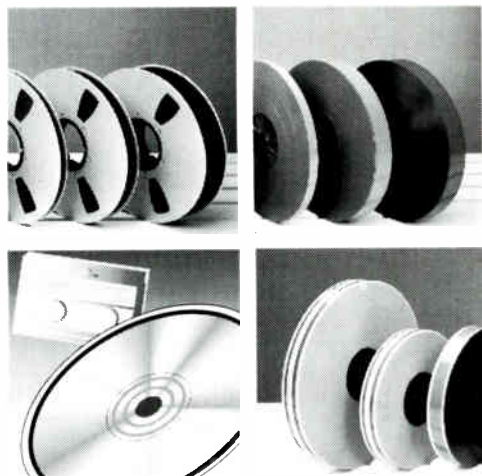
Before the facility went online, the engineers were taken around town to audition monitors, and the Westlakes won hands down because of their accuracy and the fact that they translate well. "The 12s obviously have a lot more power at the lower octaves, but otherwise, they are incredibly well-matched speakers, and that was a big selling point for our engineers. Then again, it amazes me that they still want to

hear how it sounds on a little, tinny TV speaker."

American Production Services in Seattle handles new age music mixing, corporate video, training tapes, commercial spots, radio spots—a little bit of everything. They've been in the full-service video production business since 1975. Today, the main audio room houses an 8-channel SSL ScreenSound system hooked up to an ADA console. The main right-left monitors are KRK 1303 (three-ways), with a 1002 (two-way) in the center and Yamaha NS-10s for the surrounds. The reference monitors are KRK 703Cs. The four online rooms, four offline rooms, three nonlinear rooms and video-dupe facility all contain JBL Control 1s. A separate Mackie 32x8 and Pro Tools-based pre-production room, which is used mainly for dialog editing but doubles as a video-edit suite, uses a pair of the 700Bs.

"A couple of years ago, we had a shootout here in the main room where we listened to each monitor type using the same amps, the same material," says Barry Ballanger, director of engineering. "We went

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## Reference Monitor Manufacturers for Audio Post-Production Applications

*A partial list of reference monitor manufacturers for audio post-production applications. For a complete list, see the "Studio Reference Monitor Buyer's Guide" in the March 1993 Mix.*

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with the KRKs for the accuracy and the non-harshness, meaning it doesn't tire your ear to listen to them. And they're pretty precise, whereas if you start getting into horns or some other type of transducer, it can really be wearing on the ear. When you listen to some of the same material eight to ten hours a day, you don't want a fatiguing monitor.

"And they're very, very good in the low end," he continues. "Frequency-wise, in general, they blew everybody out of the water. The crossover is set up so that it's transparent and

flat. They're not coloring anything. Now that we've gone this track, I need to be able to have the same sound in every room, but it's cost-prohibitive to put them in all the video-edit rooms. I'd put Crown Macro Reference amps and KRKs all through the facility in a second if I could afford it. That's one heck of an amplifier—the best I've ever tested. I just wish they would drop the price on it."

Michael Maxwell is the creative director/manager of Pink Noise and Random Bus, the sound design/music facilities that share space with Den-

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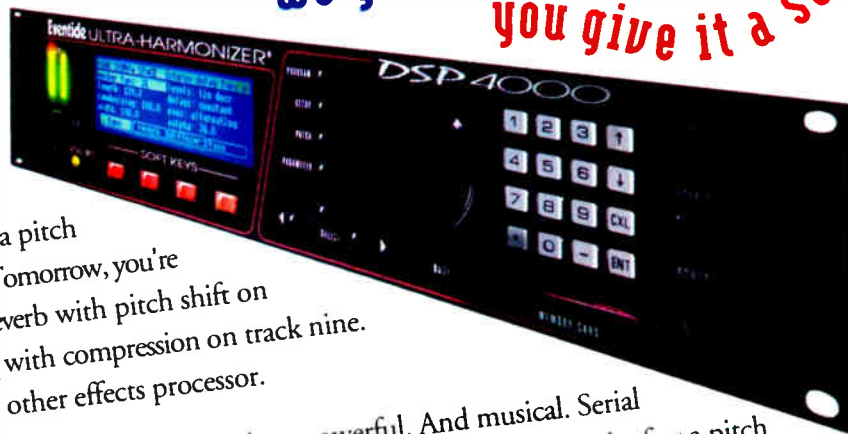
And that's what elevates this unit above the competition. In the rack, it's a one-of-a-kind effects processor. But in the right hands, it becomes a *creativity* processor. It's well worth a few hours of your time to get your hands on a DSP4000. Get a full demo and see why creative people are finding the Eventide DSP4000 inspirational.

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nis Hayes Editorial (DHA USA) in New York City. The company recently finished three television spots for Calvin Klein's "Escape" campaign, put together the audio for a five-minute film for Ford Motor Co., and Maxwell is presently working on his own album project—he's a singer/songwriter.

Random Bus consists of dual, acoustically treated Synclavier suites and a vocal booth, with a DDA console and a Mackie 32x8. The monitors in the main room are Quedsted HQ410s, with Quedsted H208s for the B room, powered by Ashly amps. They also use Yamaha NS-10s and Fostex 631Bs, along with "a television speaker." The rooms were designed by Alderson Acoustics' Richard Alderson, who also supplied and installed the Quedsted monitors.

"Thanks to the design of the room, all the speakers seem to relate nicely to each other," Maxwell says. "I can go to all levels of speakers and know that there will be a good translation between all of them. One plus for the big Quedsteds is that they are a big set of speakers that relate closely to smaller environments like

a living room. If I play something back large for our clients, I can then go to the television and pretty much guarantee that the sound will be the same. We monitor at all different levels on all different speakers.

"We find the growing home-theater market very exciting. As fidelity in the home goes up, so does our challenge to deliver exciting sound. One of the things I found unusual when I came into audio post-production is that people were mixing for a living room in a theater," he adds. "I didn't understand that—you would go into a film mix studio to mix a TV commercial for broadcast into the living room. I'm grateful that our studios relate very well to the home—they're designed to relate very closely to a living room. And we try to make the audio sound good on all speakers in that environment, at all levels. I have to keep my eye and ear on the whole project—music, voice-over, narration, dialog, sound effects—it all has to blend into a nice-sounding mix. [Compared to music mixing], the demands are much more severe on the monitors in terms of range, and in terms of honest reproduction." ■

—FROM PAGE 141, ALAN SPLET

He was awarded an Oscar for sound effects editing for *The Black Stallion*.

Sound is a heart thing: What a simple and perfect way to describe it, I thought. He was distinguishing the impact of sound on an audience from the impact of visual images on an audience. And though we know that pictures have their own special power, we also know that only sound can move us in that sometimes strange and often pleasant physical way. The source of sound begins to move, and the air moves all around it, and whether in the same room or in another room in another decade, someone's inner ear moves in response, and the chest moves, and the heart moves.

Alan Splet especially loved creating sound ambiances for the movies on which he worked. He fabricated weird, sinister oceans of sound for the characters in his movies to swim in. But even in the darkest moments of *The Elephant Man*, when Alan's 19th-century industrial sound atmosphere is at its most sorrowful, there is something ironically implied in the track as well, the promise of joy.

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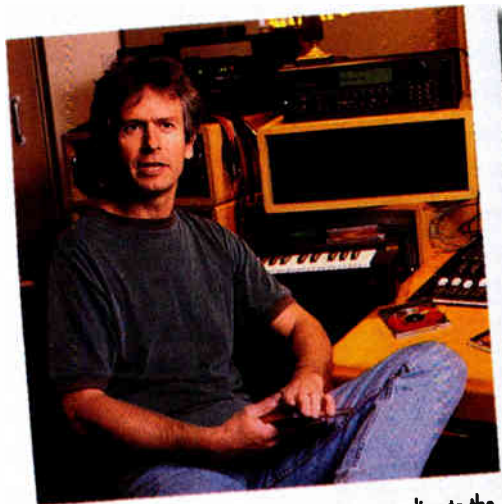
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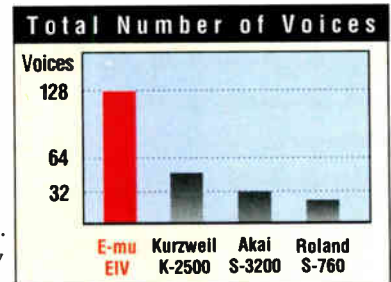
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World Radio History

# What do you like best about your DA-88?

"Built-in headroom. It makes a big difference when you're trying to track quickly."

"The TASCAM unit is clearly more dependable."

"I like having the A/D and D/A converters on an interface card because you can drop in a new card without having to disassemble the whole machine."

"MIDI syncing is so easy and clean. It's hard to know where the virtual recording ends and the taped recording begins."

"I've had a lot of experience with TASCAM... the dependability and the value. It was a no risk investment for us."

"With the sync card it's so easy to synchronize our audio both to video and other audio reels, including our DAT reels."

"It sounds great. Especially in the upper frequencies."

"The 108 minutes of recording time means we can do something we never could before — get an entire performance on a single piece of tape."

"Bouncing. I can bounce forever, it seems. The DA-88 just doesn't distort like other digital decks."

"The sync card has built-in SMPTE, video sync and Sony 9-pin. Perfect for our video house."

"Our DA-88 ended up in a pile on the floor after the earthquake. I put it back together, turned it on, and it worked fine. It's earthquake proof."

"We really like the convenience of the Hi8 format. You don't get tape stretch, you get much more time per tape, and it's really cost-effective."

"The Hi8 format is a superior recording medium, and it's a TASCAM."

"I can't help but notice the difference in the sound. Unbelievable."

"It locks up a helluva lot faster than our other digital multitrack recorder."

"It's trouble free. All I have to do is clean the heads. I'd call it the stress-free modular digital multitrack!"

"I needed over an hour and a half recording time. The DA-88 is the only digital recorder to offer that."

"The frame accuracy is so fantastic, I can edit voice-overs and guitar parts as small as two frames using the Absolute Time capability"

"Punching in and out is so simple. That fact alone made it worth buying a DA-88."

"The punches are very clean and accurate. A dream."

"I've been on the DA-88 nonstop for three weeks now. The transport is phenomenal."

"I like the size, the editing capabilities, and the price. I even like the way it looks."

"I just finished scoring two movies on it. Unbelievable machine."

"Two things. First, the DA-88 gives me a full one-hour and fifty minutes of record time. Second, the wind times are so wonderfully tight and quick... it takes my other digital recorder a day and a half to rewind."

"I like the auto-locator and rehearsal modes, and of course we're doing our next album on it."

"I can now offer my customers digital recording at analog prices."

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"It just feels better than any other recorder in its price range."

"We love the jog/shuttle wheel. It's working out great."

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Each sorrow, fully described, can't help but suggest its opposite, a world all the more hopeful for having arisen out of deep sadness. All of this and much more is evident in Alan's work.

Though he is known as one of the three men, along with Walter Murch and Ben Burt, who helped shape the renaissance of film sound in the 1970s, audaciously calling themselves sound designers. Alan later rejected that title as being too grandiose. On his last several projects, including *The Unbearable Lightness of Being* (Walter picture-edited it) and *Rising Sun*, he moved from sound effects editing to music editing. He was a cellist and had a wonderful musical ear.

In 1969, Alan met David Lynch in Philadelphia. Their first project together was *The Grandmother*. Soon after, Alan moved to Los Angeles to run the sound department at the American Film Institute's Center for Advanced Film Studies. There, he and Lynch would begin collaborating on *Eraserhead*, which took over five years to finish because Lynch had to make money doing odd jobs, including newspaper delivery, to pay for the production of the movie. Speaking about Splet, David Lynch has said, "He was a true artist, an eccentric, and a very kind and gentle person." Phillip Kaufman, best known for directing *The Right Stuff*, and most recently *Rising Sun*, says, "There was nobody in the world who was better than Alan at what he did."

Alan Splet died of cancer on December 2, 1994, at his home in Berkeley, Calif. He was 54. The Splet family has lived in the San Francisco Bay Area since the early 1980s. Alan is survived by his wife, Ann Kroeber, who worked with him on most of his film projects, and by a son and daughter, Chris and Lisa, 13-year-old twins.

Those of us who knew him, who were awed by his talent and blessed by his dry wit and his kindness will miss him dearly. Those who love movies, and especially movie sound, will benefit from the legacy of his work forever.

The family asks that contributions be sent to the Chris and Lisa Splet College Fund, c/o Jeffrey Kroeber, 2 Palazzi Court, San Anselmo, CA 94960; or to the Children's Cancer Research Institute, 2130 Fillmore Street, Suite 235, San Francisco, CA 94115. ■

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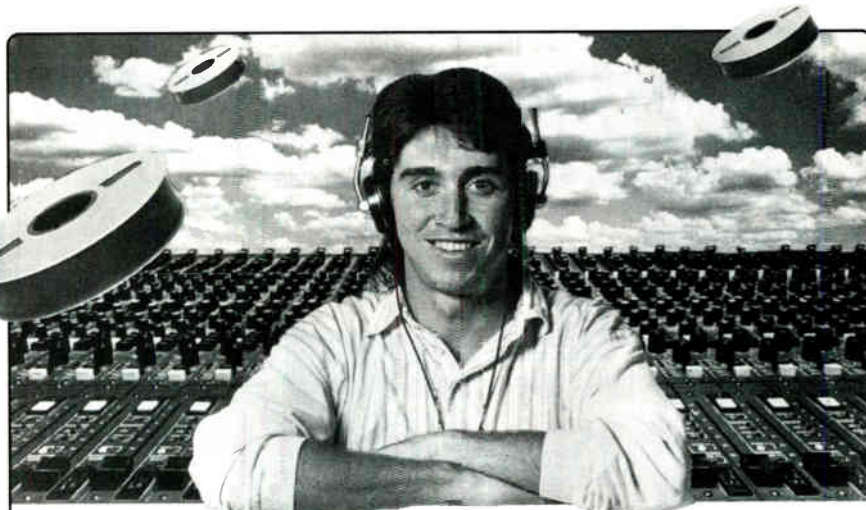
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## ELECTRO-VOICE TL880D SUBWOOFER

Electro-Voice (Buchanan, MI) designed the TL880D subwoofer to reproduce the dynamic and very low-frequency content of digital sound-on-film and other extended bass applications. It features two 18-inch EVX-180A high-performance woofers, each with 1,000 watts of continuous program handling. With an internal volume of 15.5 cubic feet, the system has a removable port for box-tuning frequencies down to 30 Hz.

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## EQE WINDCOVERS

A generic version of the fur-style windsocks currently used with blimp windscreens is now being manufactured by Equipment Emporium (Arleta, CA). The golden-brown windsocks are made from plush syn-

thetic fur and are designed to reduce wind noise. The fur texture dissipates the force of the incoming wind, diffusing it as it passes through the fibers while minimizing the acoustic howling. Price is \$50.

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## SANKEN CSS-5 STEREO SHOTGUN MIC

New from Sanken (distributed by Audio International Design, Hollywood, CA) is the CSS-5 compact shotgun microphone with switchable mono/stereo functions. Developed in conjunction with NHK of Japan, the five-capsule CSS-5 is designed for precise directional pickup. It combines directional capsules in a lavalier design to create a line microphone with a second-order, gradient pressure effect. List price is \$1,995.

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## SOUNDCRAFT GP1

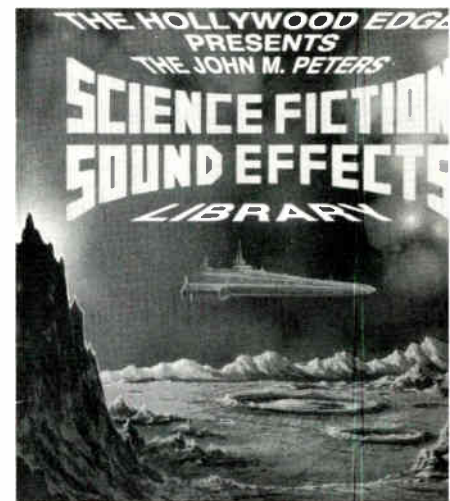
Soundcraft (Northridge, CA) has introduced the GP1, a portable, stereo broadcast mixer. Available with 6, 8 or 12 inputs (either stereo or mono, 100mm long-throw faders), two aux mixes, monitoring and a built-in loudspeaker,

the unit is designed to perform under extreme conditions and is powerable from AC or DC sources.

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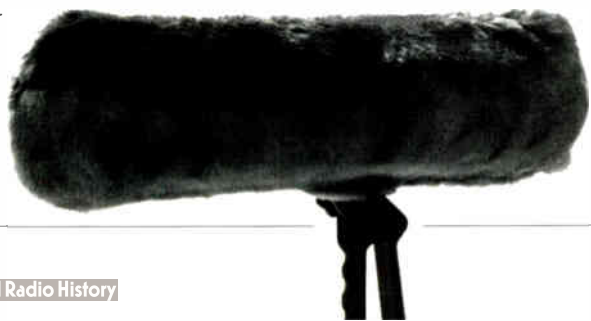
## HOLLYWOOD EDGE SCIENCE FICTION LIBRARY

Hollywood Edge (Hollywood, CA) has released a three-CD collection called "Science Fiction Sound Effects." Composed, creat-



ed, produced and engineered by John M. Peters, the collection features sounds of not-yet-invented sci-fi apparatus, as well as alien sounds, monsters, explosions, mechanical/electronic noises, weather, spaceship fly-bys and laser blasts. Retail is \$295.

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S3000



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RECORDING SESSIONS

20 Favorites From '94

by Blair Jackson

What a weird year. Back in January of '94, who would have guessed that a punkoid neo-Jam/Buzzcocks outfit like Green Day would go triple-Platinum-plus with its fine third album (*Dookie*); that one of the great critical smashes of '94 would be an acoustic album by Johnny Cash (*American Recordings*); and that the charming (if slight) soundtrack of Disney's *The Lion King* would outsell nearly everybody? Herewith are 20 of my own favorites (through November '94), with a tip of the hat to the producers, engineers and studios that helped make them. I suppose I should be embarrassed that nearly every performer below is over 35, and that there is no rap, straight country or jazz and only a hint of alternative on my list—but this is the stuff that really grabbed me for whatever reason. The LPs are listed in alphabetical order.

**1. Axiom Ambient: *Lost in the Translation*** (Axiom). Another intriguing album spearheaded by producer/musician Bill Laswell, this two-disc collection of "sound sculptures" brings together elements of different ambient music threads from past Axiom releases, featuring the likes of L. Shankar, Pharaoh Sanders, Jah Wobble, Funkadelic's Eddie Hazel, Nicky Skopelitis, the Master Musicians of Joujouka, Buckethead and Sonny Sharrock over the course of a

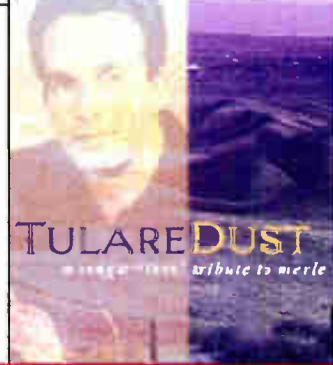
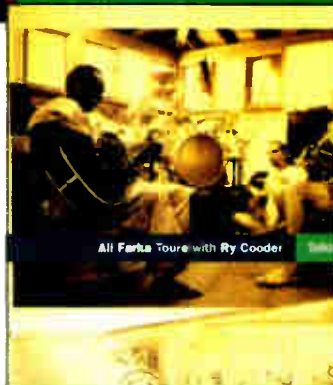
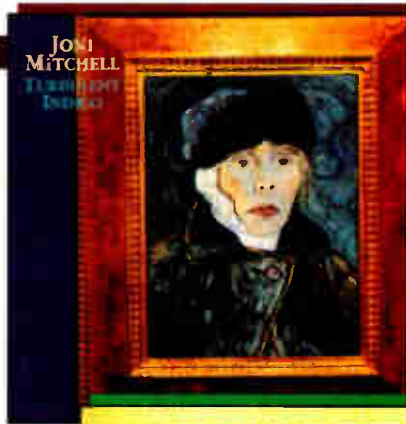
very trippy, eclectic, two-hour sonic journey. *Producer:* Bill Laswell. *Engineer:* Robert Musso. *Studio:* Greenpoint Studio (Brooklyn, N.Y.). *Mastering:* Robert Musso, Greenpoint Studio.

**2. Eric Clapton: *From the Cradle*** (Reprise). The all-blues album Clapton was born to make, with stinging guitar leads, his best vocals ever, a big, live sound and no overdubs. The Eric Clapton Chess album! *Producers:* Eric Clapton and Russ Titelman. *Engineer:* Alan Douglas. *Studio:* Olympic Studios (London). *Mastering:* Ted Jensen, Sterling Sound (NYC).

**3. Elvis Costello & the Attractions: *Brutal Youth*** (Warner Bros.). This has a dash of the old Attractions vibe and sound, but the lyrics and vocals are definitely the mature El, and that's good. His most consistent in a while. *Producers:* Mitchell Froom and Elvis Costello. *Engineers:* Tchad Blake; Kevin Killen (two songs). *Studios:* Olympic Studios (London); Pathway Studio (Isleton, England) and The Church Studio (Crouch End, England, two songs); Sunset Sound (Hollywood, Calif., mix only). *Mastering:* Bob Ludwig, Gateway Mastering (Portland, Maine).

**4. Manu Dibango: *Wakafrika*** (Giant). A who's who of African music helps out saxman Dibango on this eclectic collection of different African styles. (For more on the this disc, see *Mix*, Nov. '94.) *Producer:* George Acogny. *En-*

—CONTINUED ON PAGE 161



## CLASSIC TRACKS

# The Doors' "The End"

by Blair Jackson

Yeah, yeah, I know: "Light My Fire" is the obvious choice for this column. But as a 14-year-old kid listening over and over to The Doors' first album when it came out in 1967, it was the moody, 11-minute, open-ended raga-rock opus "The End" that really sold me on The Doors and immediately made them my favorite group (besides the Beatles, of course) for the next couple of years.

Though I had some problems with the whole Oedipal subtext of "The End"—"Father...? 'Yes, son?' 'I want to kill you. Mother...I want to...aaauuuuughhh!"—a lot of the imagery in the song bent my mind

in strange new directions, and I loved the way the song ebbed and flowed and built to its furious climax, and then resolved back at the main theme in such a sad but beautiful way. The song is an unmistakable artifact of the late '60s—it was directly inspired by numerous LSD trips Morrison took—but it also has a floating, timeless quality to it that has allowed it to transcend that period.

By the time The Doors signed with Jac Holzman's Elektra Records label in mid-'66 (after Columbia had signed them briefly but never made a record with them), they had already established themselves as one of the top club bands in Los Angeles, and Jim Morrison was one of the city's true rising stars. New York-based Elektra staff producer Paul Rothchild, who'd recom-



PHOTO: HENRY DILTZ

mended the label sign the band after seeing several Doors shows at L.A.'s Whisky a Go Go, was assigned to make the group's debut album, and he said from the outset that his approach was to make an "aural documentary" of the group, capturing the band's powerful live ener-

gy in a studio setting.

The Doors' classic first album was recorded over a two-week period in the fall of '66 at Sunset Sound in Hollywood, with a 21-year-old staff engineer named Bruce Botnick manning the 4-track recorder and tube console. Shortly before the

—CONTINUED ON PAGE 169



## Artist's Studio

**CHIP DAVIS  
AND AMERICAN  
GRAMAPHONE  
BUILD A NEW HOME**

by Blair Jackson

The Omaha-based independent record company American Gramophone doesn't have the kind of

high-profile media visibility of alternative music-oriented indies like Sub Pop, SST or Caroline. After all, the 20-year-old label has specialized in unfailingly pleasant instrumental music, much of it with a strong classical music base, but occasionally veering into jazz, folk and light pop/rock. The company revels in its eclecticism: Their catalog includes Mozart and Mason Williams. "Olde" English madrigals and new age-y piano-with-rain meanderings, Bach, the veteran duo known as America and, the company's big magillah, Mannheim Steamroller, led by American Gramophone founder Chip Davis. This isn't the sort of

stuff you're going to see written up in the same places that are gushing over Courtney Love and

whoever this week's depressed band from England is. But make no mis-

—CONTINUED ON PAGE 160



PHOTO: P. DIRCKEY



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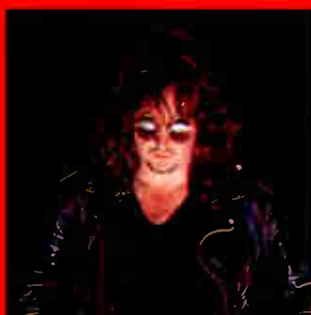
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# Casey Rankin

## AN AMERICAN IN JAPAN

by Blair Jackson

Chances are you don't know his name or his music, but Casey Rankin is one of the most popular American musicians living in Japan. Over the course of 23 years there, he has put out 24 albums, spent six years as the leader of one of Japan's most popular groups, Shogun (who sold more than 18 million records), scored films and TV series, produced a number of Japanese acts, and written music for dozens of commercial clients, including Yamaha Musical Instruments, Sapporo Beer, Kirin Beer, Nissan Motors, Mitsubishi Motors, BMW, Toyota, Daihatsu, Honda Motorcycles, Sony, Cannon, Panasonic and TDK, to name a few. He has headlined baseball stadiums in Japan, and he lives in Tokyo's equivalent of Bel Air. Now the one-time New York session bassist is trying to make in-roads in his original homeland: His first American album, *The Reality of Dreams*, was just released on the independent Creativeman label. It's been a long road from playing acoustic guitar in Greenwich Village in the '60s to scaling the heights of Japan's music industry.

When we spoke last fall, Rankin was ostensibly in America to promote the new album, which is a nicely arranged collection of sensi-

.....  
**Working in commercials has honed whatever talent I may have for bumps and intros and breaks, and generally made me more aware of structure, and that carries over into my regular songwriting.**  
.....

tive and sometimes socially conscious ballads and midtempo rockers recorded live at the Troubadour in L.A. with Jeffrey Weber producing. But I was most interested in hearing about his observations of Japan's recording scene and his commercial work there.

"In Japan, the studio business is run like a well-oiled machine," he says during one of his fairly frequent



visits to L.A. "You get in there, and it's like rhythm tracks in three hours, an hour for vocals, 30 minutes for dubbing, an hour and a half for mixing and boom—you're done. Naturally, it depends on what kind of session you're doing. But over here [in America], there's a lot more thinking going on in the studio as you're putting together the rhythm track. You go through it a couple of times and the producers here seem to talk to the drummers and bass players: 'Yeah, that's cool. What do you think? Do you want to try it another way?' Whereas in Japan, there's not much thought going on in the studio. Everything is laid out completely in advance, and they bring in musicians to come in and do it exactly as it was planned."

Although Rankin generally agrees with the common impression that most Japanese businesses are run very conservatively, he notes that "the commercials there are on the whole a little more creative than in the U.S. The Japanese are into making little mini-movies. There's some really flipped-out stuff in Japan. Parko, which is this department store for young people, and now they have some theaters, too, have made some really avant-garde commercials. Seibu is another company that does flipped-out stuff. Even some of the car manufacturers are making some pretty hip commercials. Insurance agencies and other companies with staid images tend to want something more interesting on TV than the image of the business they're in."

Rankin says that "There are only two other American guys [doing commercial music] who are making

enough money to live. It's a very small market. There are some very good Japanese writers, and Japanese musicians get all the regular work. Most of the stuff I get is specialized. My name comes up when they want something that sounds like it might have been done in America or Europe. Because I've been there so long and worked with so many people already, my name comes up first. I'm a known quantity. I've had a number of hits in Japanese, and people know I'm a bilingual foreigner and that I can work comfortably in both languages."

Like an increasing number of his American counterparts, Rankin does much of his work in his own project studio. "I'll make demos there and then go in and meet with [ad] agency people," he says. "We'll put it up against the film and hear the comments. Then it's my ballgame: I'll either finish it in my studio, or if they need something real acoustic, I'll take my band downtown and work in a bigger studio."

The heart of Rankin's studio is a Tascam MS16 tape recorder ("a great old dinosaur," he says), a Tascam M600 32-in/out board and a Mac with Performer software. He masters to an Otari MX5050 2-track or Sony DTC-500es DAT, depending on the requirements of the client. Outboard gear in the studio includes many of the usual suspects: Yamaha REV5, REV7 and SPX90, Roland SDE 3000 digital delay, Sony D7 digital delay and R7 digital reverb. In his instrument arsenal are various Yamaha, Korg and Roland synths, samplers and drum machines. Rankin credits

—CONTINUED ON PAGE 166



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—FROM PAGE 157, CHIP DAVIS

take about it: American Gramophone is an extremely successful company with millions of devoted fans around the world.

"We just keep on doing the things we do, only hopefully better all the time," muses Chip Davis (who is not related to studio designer Chips Davis). "The *Billboard* charts and radio airplay have never made any difference to my core product. It's always been word-of-mouth, which is the best advertising you can get. The two Christmas albums [*Mannheim Steamroller Christmas* and *A Fresh Aire Christmas*] have sold eight million copies—four million each. We get zero airplay, and if we do get any, it's at Christmas time and the announcers never say what it is. I think we shipped 700,000 Christmas albums again this year. It's staggering."

In addition to the whopping Christmas sales, all seven albums in Mannheim Steamroller's thematic *Fresh Aire* series ("Fall," "Winter," "Impressions of Greek Mythology," music inspired by the number 7, etc.) have gone Gold, as did *Yellowstone: The Music of Nature* ("nature selections" by Respighi, Vivaldi, Debussy, Grofe and Chip Davis). The company's latest series, "Day Parts," brings together pieces by different composers that fit particular moods—*Sunday Morning Coffee*, *Dinner, Party, Romance*—and packages them in gift boxes with "related" items, like seasonal mugs or coffee. Those have been big sellers as well: "*Sunday Morning Coffee* is at 300,000 copies, and I figured we've sold 15 tons of coffee so far," the ever-cheerful Davis notes. "Actually, hot chocolate was the biggest seller in our Christmas catalog. Our packages—the whole company really—aren't just selling music; they're selling lifestyle." And that lifestyle is attractive, wholesome and relentlessly positive.

American Gramophone has always had the reputation of being an audiophile label—in fact, 15 years ago you'd have been more likely to find a copy of one of the *Fresh Aire* albums in a test room at a high-end stereo dealer than at your local record shop. Not surprisingly, the label embraced compact disc technology very early and extremely well, and to this day, the *sound* of American Gramophone records is a point of

pride, as well as a selling point for Davis and company. Until recently, most of the label's music was recorded and mastered at Sound Recorders in Omaha, a studio that was once owned by Don Sears, who was Davis' original partner in American Gramophone. Sears sold his share of the company back to Davis in 1984 and around the same time sold Sound Recorders to John Boyd, who engineered many releases for the label. Now, however, American Gramophone has constructed its own studio building—designed facility—for the exclusive use of Davis and the artists on his label—and brought yet another element under its already large corporate roof.

**Hot chocolate  
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seller in our  
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the whole company  
really—aren't just  
selling music; they're  
selling lifestyle.**

"I've got four acres of land, five buildings, and we do everything on site," Davis says, "from art and design, to a rehearsal studio, a 6,000-square foot rehearsal theater with lights and everything, a full video suite and now the studio. My goal with the complex is to have the artists do as much work as they can there. They can meet with the sales department or look at artwork in progress; whatever they need."

For years, Davis has done the bulk of his pre-production work—most of it MIDI-keyboard-based—in his own home studio, and that will continue to be the case. But he says, "My basement studio was put into a room that was *not* designed as a studio. It's got a 9-foot ceiling, and it's a really big room. I put all of my equipment in a squared-off U-shape, and it's smack in the middle of the room so you can get behind every-

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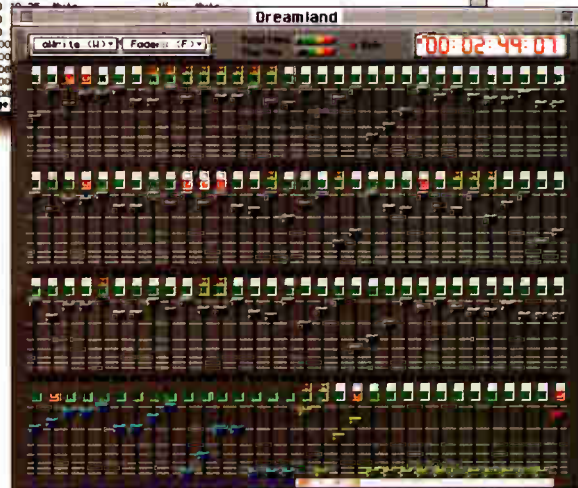
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Start Time	Event	Chan	Fader Level	End Time
00:00:07	Snapshot	2	Start 0 End 255	00:01:19:07
00:00:09:21	Fader Move	4	Start 0 End 255 Events 295	00:01:18:21
00:00:09:26	Fader Move	4	Start 0 End 255 Events 295	00:01:18:26
00:00:10:00	Fader Move	3	Start 0 End 255 Events 295	00:01:19:00
00:00:10:07	Fader Move	7	Start 0 End 255 Events 295	00:01:19:07
00:00:10:11	Fader Move	7	Start 0 End 255 Events 295	00:01:19:11
00:00:10:21	Mute	11	Mute	
00:00:10:21	Fader Move	14	Start 5 End 255 Events 251	00:01:18:10
00:00:10:23	Mute	11	Mute	
00:00:10:25	Fader Move	1	Start 129 End 190 Events 2	00:00:11:25
00:00:10:25	Ctrl BD	488	Controller #102 value 102	



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thing. It's all free-standing, and then I've got my speakers hanging from the ceiling and another pair sitting near-field. I'm using eight DMP7s all cascaded together, so everything stays digital-to-digital in that environment, because ultimately, I take that out [to another studio] and work on it. It's my composing room, so I don't use a hot rod console much.

"Still, that room being completely open and with no acoustic treatment at all—just carpet on the floor—is one of the best-sounding rooms I've ever heard," he continues. "So it really made me question some of the old ways of thinking about studio design. So when I decided to build the new studio, the first thing I did when Peter [Grueneisen, of studio bau:ton] came was I showed him that room and let him hear what it sounded like in there. Then I took him over and showed him the big [new] open space, which was originally designed to be a two-and-a-half-story-high library and company conference area. The first thing I talked to him about was open space. I didn't want to feel closed in. I wanted to be able to walk in and look into the control room, like you're looking in a freestanding room, which is basically what he did. So it feels like a work room, not a control room. I made it more like a living room than a recording studio. And I like the color combination [navy, mahogany and burgundy]—very regal but very warm."

The studio consists of a large control/mix room, a vocal booth, a machine room and a lounge, which doubles as a recording space if needed. The studio is constructed as a series of structurally independent shells within the existing building (which also houses the company's audio/video tape vault) for maximum sound isolation. A floating floor incorporates the cable troughs. Equipment includes a Euphonix CS2000 console, Meyer HD-1 and Genelec 1031 loudspeakers, Otari DTR 900 digital multi-track and Tascam DA-88 recorders, eight channels of Pro Tools, and a slew of outboard gear including the Lexicon 300, Eventide 4000 and Euphonix ES 108S. Two moveable, three-bay equipment racks behind the console double as a producer's desk and MIDI equipment stand. The room measures around 20 by 25 feet with a very high ceiling, 16 feet at the

peak. The ceiling is lit by two large skylights, broken up by two wooden deflection panels. In general, all spaces are well-lit by natural light, and the airy feeling is enhanced by glass openings between all rooms, and the high ceilings. The back wall features RPG diffusor boxes behind a fabric wall, and the side wall is paneled with custom-made studio bau:ton panel strips.

Brian Ackley, who is American Gramophone's director of production, responsible for overseeing the technical end of both the studio and the company's touring operation (Sound Trak), was in charge of equipping the studio, a process that continues to this day, as finishing touches and new gear continue to be added.

"More and more in the MIDI world of doing music, it happens in the control room," says Davis of his decision to eschew the more traditional recording-room-and-control-room approach. "But I wasn't building it to be purely a recording studio, per se, because we're not in the recording studio business. I built it to be a useable functioning room for the kinds of things I do, which involve a lot of MIDI stuff. Ultimately, when I do the acoustic parts of my records, I go to Chicago to use the Chicago Symphony players, or I go to London. I'm doing an upcoming project in Germany. I like working that way.

"Vocals and guitar overdubs are about the extent of what we can do [acoustically] in Omaha, but we do have some flexibility within the space," Davis adds. "Even the coffee area where you walk in has a bunch of inputs and the coffee table is a seven-foot harpsichord [built by Davis's father, an instrument builder], which has direct outs and PZMs built into the soundboard. Our mastering room has a bunch of inputs, too, and then, of course, the vocal booth is dedicated to recording.

"It's going to be a great work-horse room," Davis concludes. "It's comfortable, and it's a place where you *want* to work. I imagine I'll be spending a *lot* of time there." Next up in the still-evolving space: the third Mannheim Steamroller Christmas disc, with Brian Ackley, Hank Neuberger and a few others engineering. Sounds like another winner from a once-little company that's becoming an international giant. ■

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**gineers:** Rod Beale (primary), Chris Tergensen, Jay Healy, Jess Sutcliffe, Moogie Canazio, Peter Doell, Al Schmitt (mix of one song). **Studios:** Bastille Studio (Paris; primary), Guillaume Tell (Paris), Ferber Studio (Paris), Metropolis (London), Hit Factory (NYC), Capitol (L.A.), Saturn Sound (L.A.), The Complex (L.A.), Scream Studio (L.A.; mix for most songs). **Mastering:** Bernie Grundman, Grundman Mastering (L.A.).

**5. Disappear Fear: *Disappear Fear*** (Philo). Despite a passing musical similarity to the Indigo Girls, sisters Sonia Rutstein and Cindy Frank are carving out their own niche, with intelligent, rhythmic folk tunes that occasionally lean in reggae, alternative and pop-rock directions. **Producer:** Craig Krampf. **Engineer:** Mike Poole. **Studios:** Nightingale (Nashville), The Battery (Nashville, mix only). **Mastering:** Denny Purcell, Georgetown Mastering (Nashville).

**6. The Eagles: *Hell Freezes Over*** (Geffen). What a pleasant surprise this is: four strong new studio tracks (including the fast and funny anti-whining anthem "Get Over It") and a passle of ultra-mellow Eagles hits beautifully played and sung live on *MTV Unplugged*. **Producers:** The Eagles with Elliot Scheiner and Rob Jacobs, Stan Lynch (one song). **Engineers:** Elliot Scheiner (live songs), Rob Jacobs (studio songs). **Studios:** Warner Burbank (live, with Le Mobile), Village Recorder (L.A.; studio songs and mix), Sounds Interchange (Toronto, Ont.), A&M (L.A., mix only), Hit Factory (NYC). **Mastering:** Ted Jensen, Sterling Sound (NYC).

**7. Nanci Griffith: *The Flyer*** (Elektra). Gorgeous, intricately arranged tunes and shimmering vocals highlight Griffith's best yet. Helping out are an impressive celeb cast including Counting Crows' Adam Duritz, the Indigo Girls, Larry Mullen and Adam Clayton of U2, the Chieftains and Mark Knopfler. **Producers:** Peter Collins, Peter Buck (two songs). **Engineers:** David Leonard, John Keane (two songs). **Studios:** Woodland Digital (Nashville), Scruggs Sound (Nashville), Secret Sound (Nashville). **Mastering:** Greg Calbi and Scott Hull, Masterdisk (NYC).

**8. David Grisman & Tony Rice: *Tone Poems*** (Acoustic Disc). Exquisite mandolin and acoustic guitar duets covering myriad styles and featuring a different pairing of classic instru-

ments on each song. (See Nov. '94 *Mix* for more.) **Producer:** David Grisman. **Engineer:** David Dennison. **Studio:** Dawg Studio (Marin, Calif.). **Mastering:** Paul Stubblebine, Rocket Lab (S.F.).

**9. Joni Mitchell: *Turbulent Indigo*** (Reprise). Screw the sales charts! This is Mitchell's most thoroughly compelling record since *Don Juan's Reckless Daughter* (and there were some great ones in between)—a dark but still glowing chapter from the music world's most literate storyteller and portraitist. **Producers:** Joni Mitchell and Larry Klein. **Engineer:** Dan Marnien. **Studio:** The Kiva. (L.A.). **Mastering:** Bernie Grundman, Grundman Mastering (L.A.).

**10. Nirvana: *MTV Unplugged in New York*** (Geffen). This is Nirvana's softer, more lyrical side, but it is still way intense, and the pervasive sense of melancholy (heightened by cello on many tracks) is nearly overwhelming. Some cool cover choices, too. **Producers:** Nirvana and Scott Litt. **Engineer:** Scott Litt. **Studio:** Sony Studios (NYC). **Mastering:** Stephen Marcussen, Precision Mastering (L.A.).

**11. Cyril Pahinui: *6- and 12-String Slack Key*** (Dancing Cat). My favorite slack key record since the heyday of Cyril's dad Gabby "Pops" Pahinui, the disc features rich vocals and exquisite picking that both borrows from and moves beyond Gabby's style. **Producer:** George Winston. **Engineer:** Howard Johnston, with some additional engineering by Adam Munoz and Nancy Scharlau. **Studios:** Audio Resource (Honolulu), Different Fur (S.F.). **Mastering:** Bernie Grundman, Grundman Mastering (L.A.).

**12. Tom Petty: *Wildflowers*** (Warner Bros.). Tuneful, sometimes subtle rock and folk-based pop in the best Petty tradition, with ultraclean production from beginning to end. **Producers:** Rick Rubin with Tom Petty and Mike Campbell. **Engineers:** Jim Scott, David Bianco, Richard Dodd (tracking and mix), Stephen McLaughlin (orchestrations). **Studios:** Sound City (L.A.), Ocean Way (L.A.), Andora (L.A., mix only). **Mastering:** Stephen Marcussen, Precision Mastering (L.A.).

**13. Pink Floyd: *The Division Bell*** (Columbia). Slightly formulaic but still classic Floyd with David Gilmour in the bitter Roger Waters role this time; a hugely underrated record. **Producers:** Bob Ezrin and David Gilmour. **Engineers:** Andrew

Jackson, Steve McLaughlin (orchestra), Chris Thomas (some mixing). **Studios:** Astoria (London), Britannia Row (London), Abbey Road (London), Metropolis (London), The Creek. **Mastering:** Not available.

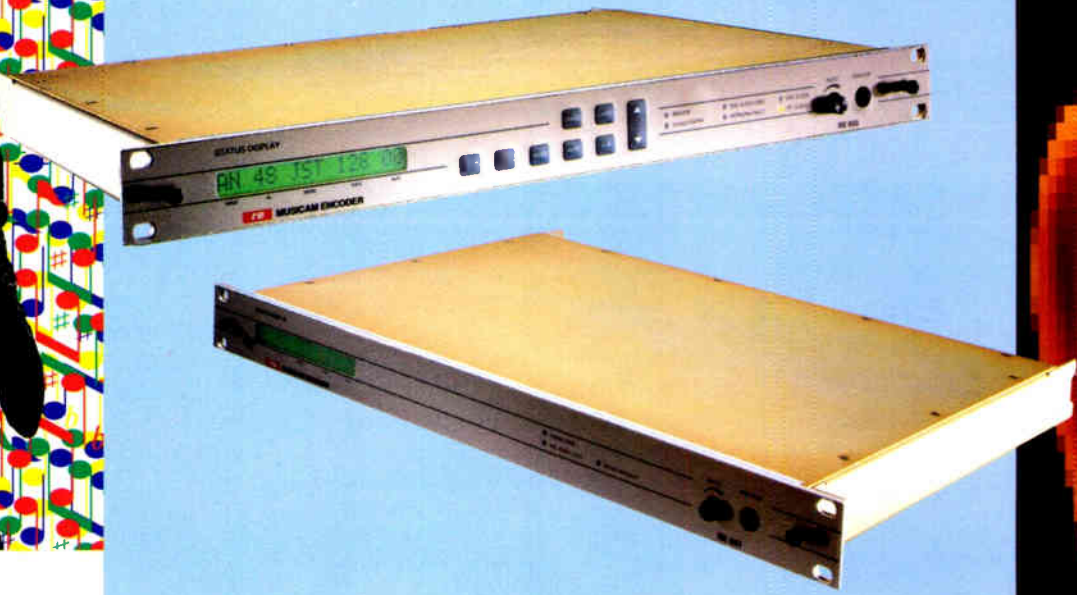
**14. Pretenders: *Last of the Independents*** (Sire). A rocking return to peak form by the always exciting and emotive Chrissie Hynde; her best in years. **Producers:** Ian Stanley, Stephen Street (four songs). **Engineers:** Steve Williams, Stephen Street (four songs), Jon Jacobs, Bob Clearmountain (mix), Tony Phillips (mix one song). **Studios:** The Woolhall (Bath, England), Sarm (London), Townhouse (London), Mix This (Pacific Palisades, Calif., mix only), Metropolis (London, one mix). **Mastering:** Not available.

**15. R.E.M.: *Monster*** (Warner Bros.). A driving synthesis of the band's elliptical, rockin' early sound and their highly lyrical recent material. This band can apparently do no wrong. **Producers:** Scott Litt and R.E.M. **Engineer:** Pat McCarthy. **Studios:** Ocean Way (Los Angeles), Criteria (Miami), Crossover Soundstage (Atlanta), Kingsway (New Orleans, Mark Howard engineer). Mixed at Louie's Clubhouse and Ocean Way. **Mastering:** Stephen Marcussen, Precision Mastering (L.A.).

**16. Robbie Robertson & the Red Road Ensemble: *Music for The Native Americans*** (Capitol). Haunting, atmospheric vocal and instrumental music with Native American themes and feeling, but still unmistakably a Robertson solo effort. **Producers:** Robbie Robertson; Robertson & Jim Wilson (two songs); Robertson, Tony Gendron and Pierre Duchesne (one song). **Engineers:** Patrick McCarthy, with some additional engineering by Toby Gendron, Bruno Ruffolo, Bill Szawlowski, Charlie Brocco, Andy Fitch, Ron Suninger; Bob Clearmountain (mix only). **Studios:** The Village Recorder (L.A.); River Sound (NYC); Sound Concept (Montreal); Suninger Studios (Albuquerque, N.M.); Mix This (Pacific Palisades, Calif.; mix). **Mastering:** Bob Ludwig, Gateway Mastering (Portland, Maine).

**17. Rolling Stones: *Voodoo Lounge*** (Virgin). Maybe it's *not* such a drag getting old, if this vital collection of Stones rockers and ballads is any indication. (See Oct. '94 *Mix* for more on the LP.) **Producers:** Don Was, Mick Jagger, Keith Richards. **Engineer:** Don Smith. **Studio:** Wind-





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mill Lane Studios (Dublin). *Mastering:* Bob Ludwig, Gateway Mastering (Portland, Maine).

**18. Ali Farka Toure with Ry Cooder: *Talking Timbuktu*** (Hannibal). The year's best-selling world music album is a fascinating fusion of American blues and African folk styles, with Toure dominating, but Cooder lending his distinctive touch on a slew of stringed instruments. *Producer:* Ry Cooder. *Engineers:* Mark Ettel, Larry Hirsh (some mixing). *Studio:* Ocean Way (L.A.). *Mastering:* Bernie Grundman Mastering (L.A.).

**19. Various Artists: *Tulare Dust—A Songwriter's Tribute to Merle Haggard*** (Hightone). Much hipper than the other, more mainstream country tribute to Haggard's songwriting genius, this one has a folk-rootsy approach and wonderful performances of old and modern Haggard chestnuts by the likes of Joe Ely, Dave Alvin, John Doe of X, Dwight Yoakam, Lucinda Williams, Iris DeMent and others. *Producers:* Tom Russell and Dave Alvin, Steve Young, Lloyd Maines, Jim Rooney,

Dwight Yoakam, Gurf Morlix, Billy Joe Shaver. *Engineers:* Paul duGre, Mark Miller, Michael Dumas, Little Johnny Fader, Steve Young, Dave Mockford, Hank Bones, Larry Jeffries, Tim Coats, Travis Dickerson. *Studios:* The Clubhouse (Burbank, Calif.), Jack's Tracks (Nashville), Mad Dog (Venice, Calif.), Studio 4 (Philadelphia), Squashophonic Sound (Woodstock, N.Y.), The Works (Edmonton, Alb.), Bones Tones (Brooklyn, N.Y.), Javelina (Nashville), Moondog (Nashville), Dickerson (Chatsworth, Calif.), West Beach (Hollywood, Calif.). *Mastering:* Chris Bellman, Grundman Mastering (L.A.).

**20. Neil Young & Crazy Horse: *Sleeps With Angels*** (Reprise). A dark, mysterious but always evocative mix of styles from rock's greatest chameleon—soft folk, hard grunge and an extended jamming tune or two co-exist with surprising ease. *Producers:* David Briggs and Neil Young. *Engineer:* John Hanlon. *Studio:* The Complex (L.A.). *Mastering:* Joe Gastwirt, Ocean View Mastering (Santa Monica, Calif.).

—FROM PAGE 159. CASEY RANKIN

his programmer, Tsukui Jun, with keeping him up-to-date, technologically.

"For the majority of the commercial work I do, I don't need musicians anymore," he says. "But I like working in the big studios, too. I've worked in almost every big facility they've got there, and they're all well-equipped and well-maintained. Japan is very high-tech. If it's not an SSL G Series, you're kind of dated. The Mitsubishi 32-track system was hot for about five years. Now it's mainly the Sony digital multitrack. When the 3348 came out, it cleaned up. Things are like that over there—when something is hot, everyone wants it. There's more variety in the United States."

Because he has been so successful both with his own songs and in the commercial arena, Rankin says he is perfectly content doing both, and, in fact, one discipline nurtures the other. "Working in commercials has honed whatever talent I may have for bumps and intros and breaks, and generally made me more aware of structure, and that carries over into my regular songwriting," he comments. "But also, I really enjoy doing commercials and soundtracks. In a way, they're more creative than original music. You can

do things with strings and horns in such a shorter span of time. And when you're doing soundtracks you can do things like put together a hi-hat and a flute and a harmonica for a rain scene or something, because you're working with a visual also. If it's a good visual, it'll double the meaning of the sparse music. That's exciting to be part of."

When we spoke, Rankin was fairly low-key about his U.S. album project and his prospects of cracking this huge, new, foreign (to him) market: "I've been at this for a long, long time. This is my twenty-fifth album," he explains. "I'm making the move now, but I'm taking it slow, and I'm not going into it with really high expectations. It's an acoustic kind of thing, so in a way, I'm going back to what I was doing in New York in the '60s, when this guitar player and I would go down to Washington Square on weekends with acoustic guitars and kind of 'Simon & Garfunkel' our way through Saturday and Sunday. This is my music now, and there are things I want to say with it, and hopefully people will get to hear it."

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World Radio History

—FROM PAGE 157, THE DOORS

Doors sessions, Botnick and Rothchild worked together on Tim Buckley's Elektra debut at Sunset, so they had already established a good working rapport.

"Up until a year before that, I'd been doing everything 2-track," Rothchild told me in an extensive interview way back in 1981. "Actually, though, most of the first album is 3-track. We'd put bass and drums on one track, guitar and organ on another, and Jim's vocals on the third. We used the fourth track for a few overdubbing things. Like on '20th Century Fox,' I got the whole band out onto a wooden platform and made them march. If you listen to the rhythm sound on the chorus, it sounds like a small German army! I'd just done a flamenco record where I'd used a similar idea...We also overdubbed Morrison singing harmony to himself on a couple of things. Double-voicing was avant-garde. Overdubbing harmony certainly wasn't new, but the idea of doubling a voice was still considered radical."

Rothchild said that "The End" was one of the songs that originally convinced him The Doors were a great band, and he knew from the outset it would probably be the centerpiece of the first album. "When 'The End' was first performed in the studio, we took almost a whole day to set it up, because it was a very complex piece to record," Rothchild remembered.

"I remember exactly how I miked the session," Bruce Botnick told me recently. "On the drums we had a Sony C37 on the overhead, there was a C37 underneath the snare, an Altec 'salt shaker' on the bass drum, and that was it. On the guitar amp was a Telefunken U47—they weren't Neumanns at the time. The organ was a 47 as well, and then on the piano bass it was direct. Jim's vocal was a U47 as well, and I used a UREI 176 limiter on it. Some of the album was 3-track, but I recall that 'The End' was 4-track: The piano, bass and drums were on channel one; Jim was on channel two; Robbie [Krieger, guitarist] and Ray were separated on the other channels; so we had a little more control.

"There was a room echo chamber that we used on it—except for Jim's vocal, which was an EMT plate—and they were all delayed using an old Ampex 200 that had been converted over to a 3-track, which had different

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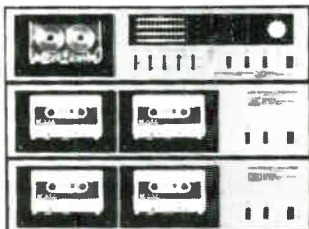


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record EQ and playback EQ settings," Botnick continues. "So we could set the recording EQ to the AME, which was the Ampex Master Equalization setting, and do the playback at NAB [EQ setting] and that would goose the chambers and get the nice slap that I liked. That drove the two chambers. The room chamber was basically in stereo, with two microphones in it: RCA 44s. The console was all-tube, built by a fellow named Alan Emig, who was the original recording engineer on Dave Brubeck's 'Take Five' and a lot of the famous stuff over at Columbia Records. The 4-track was an Ampex 300; actually a 3-track that I had converted—I got a 4-track head stack made for it."

Actually, the first attempt to record "The End" had to be abandoned because Morrison was too high on a combination of LSD and alcohol to perform in the studio. "We tried and we couldn't get it," Rothchild told *Crawdaddy* magazine in 1967. "Jim couldn't do it. He wanted desperately to do it. His entire being was screaming, 'Kill the father, f— the mother!' He was very emotionally moved. I have tried several times to record artists on acid, and it doesn't work."

The next afternoon was a different story, however. As Rothchild told me, "When we finally got the tape rolling, it was the most awe-inspiring thing I'd ever witnessed in a studio. It's still one of the top musical events of my life. When they were done, I had goosebumps from head to toe. It was magic. I went into the studio and told them exactly what I told you and then I asked them to do it again. 'Let's make sure we've got it.' So they did it again, and it was equally brilliant. Afterward, Ray [Manzarek, Doors keyboardist] said, 'Whew, I don't think we can do any better.' I said, 'You don't have to. Between these two takes we have one of the best masters ever cut.' It turns out we used the front half of take one and the back half of take two. We did the same thing with 'Light My Fire.'"

That isn't the end of the story, however. Ray Manzarek told one writer, "Later that night [after "The End" session], Jim came back and went into the studio and took the fire extinguisher and hosed the whole place down—not the control room thank God; just the area where the band was. Just blasted the whole place, man. Just to cool it down. That's what he was doing. I know he was doing

that. Just calming the whole thing down. 'Wait a minute. Too much heat here, man.' Stoned out of his mind. And the studio people came in the next morning; they didn't know anything about it. [They] absolutely freaked. Paul Rothchild said, 'Uh, don't worry, don't worry. Elektra will pay for it. No, there's no reason to call the police. Just some minor vandalism. Don't worry about it.' He knew right away who did it. We all knew right away what had happened."

Getting two nearly perfect takes of the band's *magnum opus* had a profound effect on Morrison and the group: "We thought we were going to be just another pop group, but then something happened when we recorded 'The End,'" Morrison told an interviewer. "We saw that what we were doing was more important than just a hit song. We were writing serious music and performing it in a dramatic way. It was then we realized we were different from other groups. We were playing music that would last years, not weeks."

The song was given a second life in 1979 when Francis Ford Coppola used "The End" during the brilliant opening sequence, and again during the dramatic denouement, of *Apocalypse Now*. (The Doors were one of the most popular bands among the troops in Vietnam in the late '60s.) And the version in the film even emphasized a part that was buried on the original: Morrison rhythmically chanting "F—! F—! F—!" during the furious instrumental build-up near the song's close. "Flat out, we knew 'F—, f—, f—' wouldn't get on the radio so that was censored," Rothchild recalled of the original sessions. "It's on the master, but it's not upfront like it is on the Coppola-[David] Rubinson mix [for *Apocalypse*]. On the original, it's there as part of the rhythm track, which was the original intent. It was never supposed to be a *lyric*." Producer Rubinson also added some percussion that was not part of The Doors' performance: "No one in our camp had anything to do with that," Botnick says.

But Botnick, who went on to record all The Doors' studio albums, and even produced their final record with Morrison in the lineup, *L.A. Woman*, personally remixed the original 4-track tapes of "The End" for one particularly spellbinding sequence in Oliver Stone's overblown film *The Doors*. ■

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by Philip De Lancie

# TAPE & DISC NEWS

# M

## MUSIC + MULTIMEDIA = "ENHANCED CD"

In our December issue, Paul Potyén reported on "enhanced CDs," in which multimedia content is added to a music album to create a dual-purpose product playable in both audio CD players and CD-ROM drives. Activity has recently been heating up in this area, with major players in the software and music industries publicly backing the product concept, which is intended for distribution primarily through record stores and other music outlets rather than through software channels. For the record industry, the idea represents a way to get on the multimedia bandwagon; for the computer industry, it is a way to stimulate sales of multimedia-equipped home computers.

CDs combining Red Book audio with multimedia data have been around for a while, but the concept has been held back by the fact that the data on such "mixed-mode" CD-ROMs resides in what would otherwise be track one on the CD. The discs play back fine in a normal CD-Audio player, but the user has to remember not to try to play track one, or they may be blasted with unpleasant noise.

Everyone seems to recognize the need for a solution to this "track one problem," so that the multimedia data is transparent and inaccessible when the discs are played in a CD-Audio player. Although a number of ideas have been put forward, it is too early to say whether any one approach will emerge as a consensus choice. The solution with the most weight behind it at the moment has been proposed by Microsoft in cooperation with Sony Electronics and Philips, co-

owners of the CD specification, and involves a replicated version of the multisession Orange Book recordable CDs. According to Microsoft, a new color book specification detailing the proposed standard is expected soon.

Sony Music is going ahead with the production of titles in the multisession



enhanced CD format. The company has demonstrated an Alice in Chains title and announced that it expects to release it along with a Bob Dylan title early this year. An enhanced version of Mariah Carey's Christmas album is also under consideration. Atlantic Records, meanwhile, has also announced that it will release titles in the new format.

A number of other important players have also now made their support for enhanced CDs official. The RIAA, the trade group representing the collective interests of the major record labels, has announced the formation of a New Technology and Multimedia Committee, with a subcommittee devoted to the technical issues involved. The committee also will be looking





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into an industrywide promotional campaign to raise consumer awareness about enhanced CDs. And Apple Computer, referring to the multisession approach, has announced support for what it calls "the emerging standard for enhanced CD." The company is also gearing up a "Music Developers Program," an extension of the Apple Multimedia Program, which will inform and support the creators of enhanced CD titles (call [408] 974-1323 for further information).

**INTERACTIVITY: WHO'S GOT IT AND WHAT DO THEY WANT IT FOR?**

A survey conducted by the Gallup Organization for the magazine *Interactive Age* brings some much-needed statistical research to the area of consumer preferences in information superhighway services. Home shopping, for instance, has been widely touted as providing a revenue stream that can keep other services afloat. But when asked which interactive home services would be most important to have, it turns out that only about 28% of the 1,020 adults surveyed had any interest in buying via the tube—the lowest response of any service. Video-on-demand fared better, eliciting a positive response from 58%, while "online bulletin boards/town meetings" took top position with 60%, indicating that two-way communication has as important a role to play as convenient access to passive entertainment.

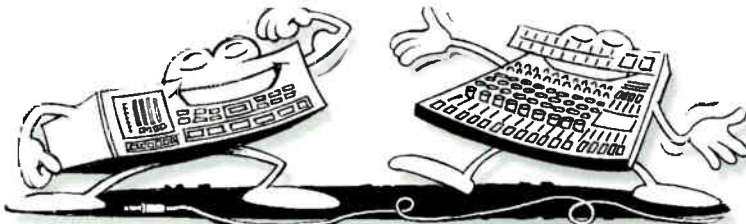
Another area of interest in the survey was a look at what respondents currently own or use regularly: About 70% have cable TV, followed by 34% with home computers and a surprising 24% with CD-ROM drives. Nearly 14% use home shopping, 12% opt for pay-per-view movies, and less than 8% are online or Internet users.

While online activity was highest among 18- to 24-year-olds, and fell off sharply in the 50-plus group, CD-ROM usage was more evenly distributed by age: 32% for 18-24, 22% for 25-34, 28% for 35-49 and 20% for 50-plus. Start honing your demographically based marketing plans today.

**SPLICES**

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time such a high proportion of an individual artist's catalog has been available on the format...Neil Young's latest release, *The Complex Sessions*, was mastered at CMS Digital in Pasadena, CA, by Robert Vosgien. Jazz-fusion saxman Tom Scott also mastered his new GRP release, *Night Creatures*, at CMS...MusicLane (Markham, Ontario) reports mastering albums for Motorhead and Spoons...Ken Lee mastered Grunge 101% and Grunge 102% at San Francisco's Rocket Lab. The facility also saw producer Scott Mathews, of Dick Dale fame, working with engineer Marc Senesac on an album by Norman Collins...Atlanta's Griffin Mastering reports booming business since opening its doors October 3. According to company representatives, Atlanta clients are delighted to find that they no longer have to travel out of town for mastering...New York City's Digital Force has been retained by the Fox Network to oversee the mastering and duplication of a series of CDs used for music during Fox's coverage

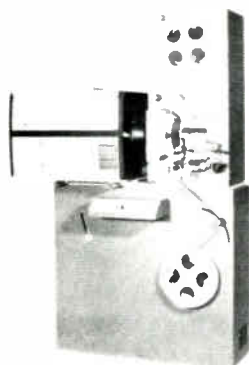
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*The Sollas Model 18 overwrapper*

of NFL football games...Phil Austin of Trutone (Hackensack, NJ) mastered projects for Dred Fox and Soul Circus, while colleague David Radin mastered for Hilton Ruiz...Eastern Standard Productions is reducing waste at its Buffalo, N.Y., duplication facility by receiving all of its BASF duplicating tape in the new Ecoshuttle packaging system, which allows most of the packaging to be returned to BASF for reuse...Microboards (Carver, MN) has reduced the price of its PlayWrite 1000 CD-recording system to \$1,995. The single-speed, multifORMAT CD-R system works with Macintosh, Intel-compatible and Unix host computers, and comes with Dataware recording software and an hour of free technical support...Sollas (Morristown, NJ) introduced the Model 18 overwrapper, capable of wrapping at 20 to 60 parts per minute with a variety of materials, including polypropylene and cellophane. ■

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World Radio History



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# C O A S T

## L.A. GRAPEVINE

by Maureen Droney

**Stopped in at Scream Studios** to visit with owner Randy Alpert and studio manager Jeanne Moultrie. Housed in a building that went up in



PHOTO: MAUREEN DRONEY

**Owner Randy Alpert and manager Jeanne Moultrie at Scream Studio in Studio City.**

the 1940s as a Ventura Boulevard jazz club, the Studio City facility began its current incarnation in 1988. That's when Alpert and engineer Paul McKenna teamed up to renovate the facility, installing an SSL G Series console into a Vincent Van Haaff-designed control room. Alpert, who started producing records professionally at the age of 17, had labored for years in the production trenches under the pseudonym "Randy Badazz," and at the age of 20 produced and co-wrote the Number One, Grammy Award-winning record *Rise* for his uncle

—CONTINUED ON PAGE 185

## NASHVILLE SKYLINE

by Dan Daley

**Several major acquisitions for Nashville** took place at the AES show in November. **Music Mill** bought a new 56-input API Legacy console. The board will be installed in the B room, replacing a Trident TSM, which will go up for sale. The console purchase, along with the purchase of two Sony 3348 digital multitrack decks and a yet-to-be-finalized outboard package purchase at the show, will be the centerpiece of a possible refurbishment of the entire facility, which includes Nashville's only Focusrite console in Studio A. That's motivated by a desire to broaden the client base of the studio beyond, mainly, those brought in by owner, producer and PolyGram Records-head Harold Shedd. Chief engineer Todd Culross believes that Music Mill can gain greater market share within Nashville itself. "Anything else that comes in from New York or Los Angeles is gravy," he says.

**Starstruck Entertainment's new facility** on The Row announced the purchase of a pair of new SSL 72-input 9000 consoles with J Series automation at AES. No other major technology decisions have been

made for the two-room facility that is now scheduled to open in late 1995, according to Richard Barrow, the creative director of Starstruck's publishing company and the studio construction supervisor. The overall facility design is by Harris, Grant & Associates.

**Lisa Roy** has left her general manager position at Masterfonics to start her own studio booking and referral service, based in Nashville. The new company, Studio A, will offer studio, producer and engineering referrals and booking services. Roy's departure from Masterfonics was characterized as amicable, and Masterfonics will be among the Nashville-area facilities that Roy will be doing referrals with.

**Emerald Recording** will expand its newly added second recording room over the summer. The short-term plan, according to studio manager Milan Bogdan, will be to enlarge the control room in anticipation of moving the main control room's SSL console in there. The interim console will likely be a Trident of some type. The SSL will be updated to a 9000 Series at some point before that move. A machine room will be added by extending out the front of the building. "The B room has already paid for itself," Bogdan says

—CONTINUED ON PAGE 186

**Oz Audio & Post Studio recently opened in Franklin, TN, with a 64-input Otari Concept One console and an Otari MTR-90 MkIII recorder. See page 186.**



PHOTOGRAPH BY CAM KING

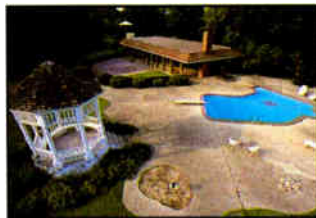
# C O A S T

## STUDIO SPOTLIGHT

by Jeff Forlenza

**Dockside Studios**, the two-room facility set on a bayou plantation in Maurice, La., recently upgraded gear. Owner Steve Nails (who runs things with his wife, Cezanne, and chief engineer Tony Daigne) reports Neve expert Fred Hill worked to combine two discrete Neve consoles—one from Chicago's JorDan Studios and one from New York City's RPM Studios—to give Dockside a combined 52 tracks in its A room. Rupert Neve, Fletcher at Mercenary Audio, Bob Mason at RPM and Hill all contributed to the console surgery. Nails also added plenty of vintage mics and outboard gear.

Nails states that their A room has been busy every day since opening. Notable sessions include producer Steve Berlin tracking Buckwheat Zydeco's *Island* release, *Five Card Stud*; slide guitarist Sonny Landreth recording his new album for Zoo/BMG with guests Allen Toussaint, Mark Knopfler and Stephen Bruton; blues guitarist Gatemouth Brown recording his latest for PolyGram/Verve, *The Man*, with an 18-piece band; and Bobby ("See Ya Later Alligator") Charles cutting *Wish You Were*



**Top:** Dockside Studio A before installation of the revamped 52-input Neve consoles. **Above:** plantation-style accommodations.

*Here Right Now* for Canadian label Stony Plain Records/WEA.

Musicians like Stanley "Buckwheat Zydeco" Dural, Sonny Landreth, Bobby Charles and Beausoleil's Michael Doucet are bayou neighbors, but people from around the globe are traveling to record at Dockside. One reason is the Festival Internationale de Louisiane in nearby Lafayette, La., a truly international music festival with an underlying French-speaking theme. When musicians play the festival, they often stop off at Dockside to record.

Two Malagasy musicians traveled from Madagascar (an island off eastern Africa) for the Festival and stayed in Louisiana to record at Dockside: Dama Mahaleo and D'Gary, who were discovered when Henry Kaiser and David Lindley traveled to Madagascar to record their *World out of Time* se-

—CONTINUED ON PAGE 187

## NY METRO REPORT

by Dan Daley

**The Big Apple expands:** New York has been seeing some expansion rooms either coming online or planned for in recent months. However, as hard as it is to get the business to the point where it is expandable in New York, sometimes that's only the beginning of the hard work. In a vertically driven real-estate

—CONTINUED ON PAGE 186

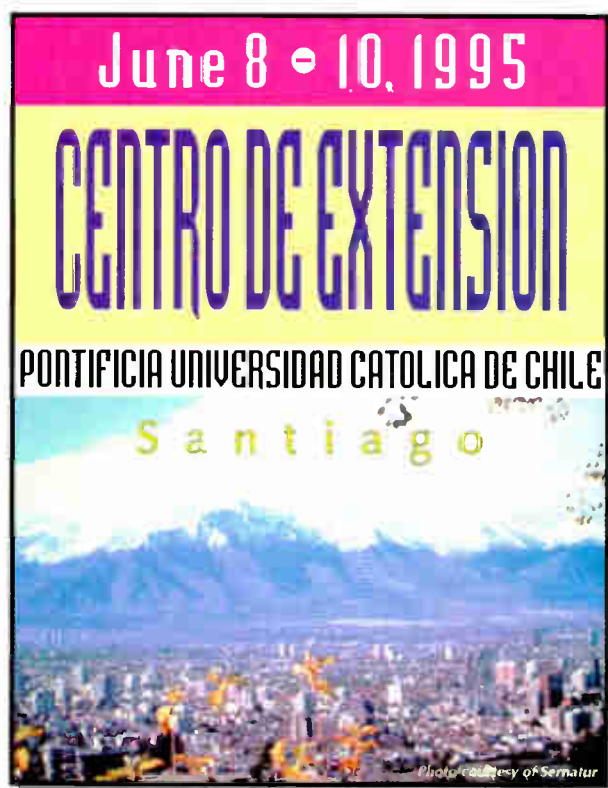
**Lou Reed was at Sear Sound in New York City recording and mixing a song for the Doc Pomus Tribute on Rhino Records. Seen with Reed are (from left) producer Sean Slade and producer/engineer Paul Kolderie.**



PHOTO COURTESY OF SEAR SOUND

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# SESSIONS & STUDIO NEWS

by Jeff Forlenza

## NORTHEAST

The ever-eclectic Hal Wilner produced NYC-band Spanish Fly for inclusion on an EP release for the Hello Recording Club (run by They Might Be Giants' John Flansburgh and John Linnell) with engineer Anne Pope at The Looking Glass Studios in Manhattan... T.S. Monk (son of Thelonius) mixed his latest Blue Note release at

## SOUTHERN CALIFORNIA

Rap act The Pharcyde were at L.A.'s Skip Saylor Recording mixing their new self-produced single "Pandemonium." Rick Clifford engineered and Eric Flickinger assisted on the Priority Records sessions... The Go-Gos are back: producer John Porter and engineer Joe McGrath tracked several new Go-Gos tunes that were included in their 15th anniversary boxed set on IRS Records at Red Zone Studios in Burbank... Alternative act The Lupins were at Burbank's Master Control tracking a song for the sound-

Caram Costanzo... Trisha Yearwood was at Nashville's Sound Emporium working with producer Garth Fundis and engineers Dave Sinko and Ken Hutton on her latest MCA release... Boyz II Men tracked vocals for their third Motown album at Atlanta's Doppler Studios with engineer Jimmy Zampano... Clint Black was at The Castle Recording Studios in Nashville, mixing his High Five Productions project, *The Road*, with producer Brian McNamara and engineer Lynn Peterzell... Contemporary gospel group Tabatha was at Soundworks Recording (Decatur, AL) tracking their debut release with engineer Dave Pittman...



PHOTO: JAY BLAKESBERG

**Terrence Trent D'Arby and Booker T. & The MG's were at Fantasy Studios (Berkeley, CA) tracking "Change is Gonna Come" for the soundtrack to BBC's series on African-American music, which will be aired on the Discovery channel. Gordon Lyon engineered the sessions, with Richard Duarte assisting. Seen here in Fantasy's Studio D are (l to r) Duck Dunn, Steve Potts, Booker T. Jones, Terrence Trent D'Arby and Steve Cropper.**

River Sound in New York City. Monk produced, Joe Ferla engineered and Tony Gonzalez assisted on the jazz sessions... Guitarist Chris Whitley brought his band to New York's Baby Monster Studios to record material for his latest Columbia release with engineer Chris Shaw... Singer/songwriter Victoria Williams and Dave Pirner (of Soul Asylum) teamed up to record a song for the Harry Nilsson tribute album at The Magic Shop in New York City. Mike Rathke produced and Steve Rosenthal engineered the sessions... Slash/Warner Bros. recording artists Faith No More were at Bearsville Studios (Bearsville, NY) tracking their new album with producer Andy Wallace, engineer Clif Norrell and assistant Chris Laidlaw... At Philly's Sigma Sound, Elektra recording artist Teddy Pendergrass remixed his song "One in a Million" with engineer Michael Tarsia...

track to the latest Jim Carrey film, *Dumb and Dumber*, with producer/engineer Nick Luanay... At Hollywood's Grandmaster Recorders, producer/engineer Sylvia Massey was producing the Zoo Records debut from Spade Ghetto Destruction with assistant Matt Silva; also at Grandmaster, OffBeat recording artists The Coma Tones worked with producer Sylvain, Sylvain and engineer Ric Bowls... Jazz singer Joy Eden Harrison recorded and mixed her latest Bizarre/Planet release at Hit Single Recording (El Cajon, CA) with the production/engineering team of Buddy Blue and Randy Fuelle...

## SOUTHEAST

Pearl Jam tracked and mixed their latest Epic album, *Vitalogy*, at Atlanta's Southern Tracks Recording with producer Brendan O'Brien, engineer Nick DiDia and assistant

## NORTH CENTRAL

Wisconsin-based singer/songwriter/keyboardist Gary Tanin enlisted some big-name guests for his first album—Jerry Harrison (Talking Heads), T Lavitz (Dixie Dregs) and Victor De Lorenzo (Violent Femmes) all contributed on Tanin's *Sublime Nation*, on the MultiMusica USA independent label. Tanin co-produced the album with Harrison, which was tracked at The Alley (Milwaukee), and then mixed and digitally mastered by engineer Dave Neitzke at T.O.P. Studios in West Allis, WI... Monster Voodoo Machine were at Chicago Trax Recording with producer/engineers Critter and H. Beno tracking and mixing their latest D-Tribe/BMG release, *Suffersystem*... Capitol recording artists Everclear were at Smart Studios (Madison, WI) tracking their major-label debut with engineers Michael Douglas and Mike Zirkel...

## SOUTHWEST

At Pedernales Studios (Spicewood, TX): Paul Leary (of the Butthole Surfers) was producing The Toadies with engineer Stuart Sullivan; and Atlantic recording artists L7 worked with producer Michael Bariere and engineer Larry Greenhill... At The Hit Shack in Austin, blues stringer/singer Sue Foley was recording her latest for Antone's Records with producer T.S. Bruton and engineer Jay Hudson. The Bruton/Hudson team also tracked Chris Smither for a Hightone Records release... At Houston's 34th Street Music Recording, Pierre and the Zydeco Dots were working with producer Roy Ames and engineer Pat O'Bryan on an album for Home Cooking/Collectible Records...

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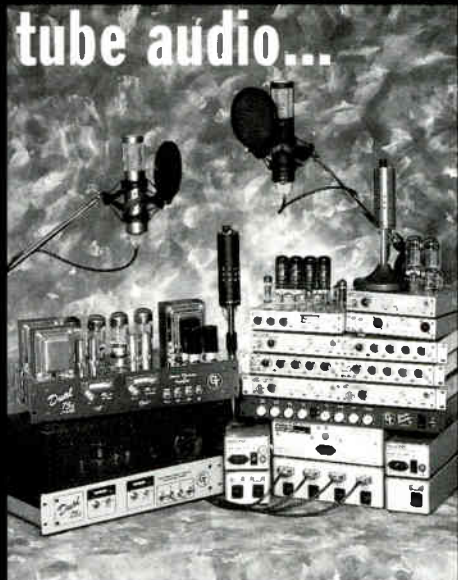
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## NORTHWEST

R&B legend Booker T. Jones produced the new album from Australian singer Wendy Matthews for RooArt Music at The Plant in Sausalito, CA, with engineers Dave Thoenen and Tom Leukens...Metal band Forbidden were at Music Annex (Menlo Park, CA) tracking an album with producer/engineer Patrick Coughlin for release in Europe and Japan on BMG's Gun Records label...Geffen recording artists Remy Zero tracked their debut album at Prairie Sun Recording (Cotati, CA) with engineer Wes Sharon...

## STUDIO NEWS

Hollywood's Music Grinder Studios recently installed an SSL 72-input 6000E console in Studio A. The new desk, which has 48 G Series modules and 24 E Series modules with a G computer, was put to use by Madonna, who tracked her latest album on the SSL. Other recent gear acquisitions at Music Grinder included a Lexicon 480L digital reverb, eight Neve 1084 EQ/mic pre units and a 12-input Neve 8108 sidecar...Shane Faber and Michael Mangini (engineers, mixers and co-producers of Dignable Planets' Grammy-winning debut album) have moved their studio and production company to new quarters: Their studio, Sound Doctor Studios, and production company, Jeep Jazz Music Inc., now reside at 3 Veterans Way, Edgewater, N.J. 07020; new phone: (201) 886-1962...Dinosaur Studios in New Orleans reopened under new management, headed by engineer James Wyatt. New Dinosaur equipment includes an Amek Angela 28-input console and a rack of Neve 33115 mic pre/EQs to go along with the Studer A80 24-track...Independent label Atlan-Dec/Grooveline Records opened a private 24-track room in Norcross, GA, to cater its roster of artists. Gear includes Alesis ADAT recorders, an Allen & Heath GS3 console with MIDI automation and a Mackie 2408 mixer...Ray Burns and Kathy Redish recently opened Boot Hill Recording Studios in Cody, WY. Boot Hill gear includes a Soundtracs Topaz 32 console, Tascam DA-88 digital recorders and a full outboard rack. ■

Send nationwide sessions and studio news to Jeff Forlenza, c/o Mix, 6400 Hollis St. #12, Emeryville, CA 94608.

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the A&R men love it,  
and my accountant  
almost broke into  
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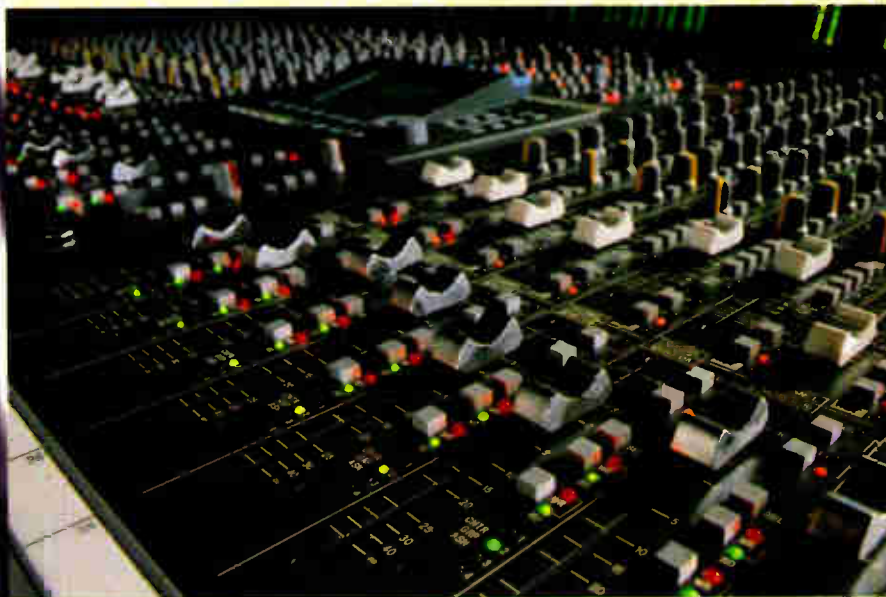
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—FROM PAGE 178, L.A. GRAPEVINE

Herb (trumpeter, label owner, etc.). Those years of experience shaped his concepts when it came time to build *Scream*. Recalling an all-nighter at the old United Western Studios, when he couldn't get a soda because he had no change for the machine, Alpert laughs and says, "I was determined to make a comfortable studio, not some cold, massive complex. And I wanted to make sure that things always worked!"

One of the facility's first projects was Faith No More's landmark and multi-Platinum *The Real Thing*, making producer Matt Wallace into a loyal client. Since then Wallace has mixed 14 albums at *Scream*, including projects for John Hiatt, David Baerwald, Queen and Paul Westenberg. Another frequent client is producer Michael Wagener, who was mixing for drummer/singer Ken Mary the day we stopped in. Wagener has recorded and mixed around 20 projects at *Scream*, among them Ozzy Osbourne's *No More Tears*, Janet Jackson's single "Black Cat," and Extreme's *Pornograffiti*, including the gold single "More Than Words." A lot of other producers also seem to be regulars, among them David Leonard (Indigo Girls, Dwight Yoakam), Andy Wallace (who mixed Nirvana's sextuple-Platinum *Nevermind* album at *Scream* along with the single "Smells Like Teen Spirit") and Don Gehman (Hootie & the Blowfish). Toby Wright mixed 1994's Platinum Alice in Chains EP *Jar of Flies* and is booked in soon to mix the Ric Ocasek-produced punk/reggae act Bad Brains.

Describing his studio as cozy and private, Alpert says, "I think people today like to feel like they are at home. They are not into the glitz and glamour like the groups we did here in the '80s. They think of themselves more as bands rather than as entertainers. And we try to give them a place where they are comfortable and can work with no interruptions; an environment where they don't have to put on airs."

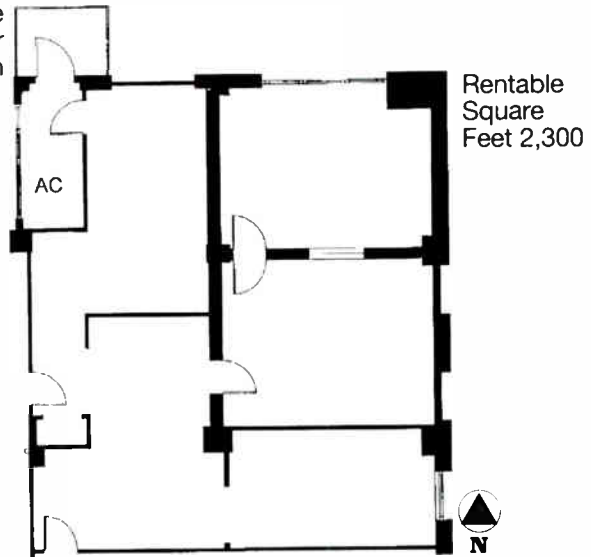
**Marvin Gaye lives:** Over at Capitol Studios, Motown A&R director of catalog development Amy Herot and engineer Leslie Ann Jones have been searching for unreleased songs from the Marvin Gaye catalog, working with a variety of tape formats from 3-track on up to 24 that were recorded between 1966 and 1979.

"I think one reason Amy likes working at Capitol is that we have the best of both vintage and new equipment," Jones says. "And the vintage gear is not mothballed in some closet in the basement somewhere; it gets used all the time. For example, we have 3-track playback heads for our 4-track Ampexes." Herot concurs, "There are only a handful of studios that have that situation. Motown in Detroit had these great echo chambers that were built in the attic of the studios, and it's really nice to be able to use a live chamber if you are trying to capture that sound."

Herot and Jones have just finished auditioning about 70 16-track tapes. "The songs we are working on were transferred 3 or 4 times, from 3-track, to 8, to 16, to 24. Amy found the original 3-tracks, and, hopefully, when we mix we can go back to the rhythm tracks on those 3-tracks," Jones explains. "Some of the vocals will be from the 24-track incarnation—vocals that Marvin himself was the happiest with over the period of the ten years that he worked on the tapes. He sounds great! But we don't want to use the orchestra tracks from the 24-track. They are just too many generations

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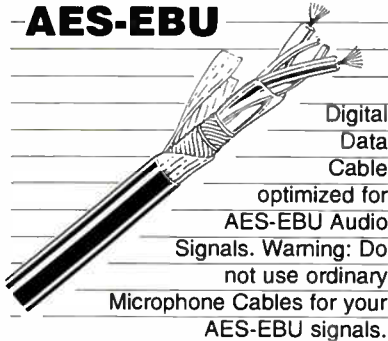
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down. The nice thing on this project will be that we don't have to get it to sound like anything else. The other three songs we mixed were going on a CD that was part of a Marvin Gaye boxed set. One of the four CDs was unreleased stuff, two-thirds of which was taken from 2-track or mono mixes, so the remixes had to sound like that, which was really hard. Thank God we have live echo chambers, so we could give it the same kind of flavor. There's a certain lack of fidelity that's really appealing about that stuff—if you try to gloss it up, it just doesn't sound right."

Fax your L.A. news to Maureen Droncy at (818) 346-3062. ■

—FROM PAGE 178, NASHVILLE SKYLINE

of the now-Mackie-equipped overdub room. In the meantime, as of February, Audio Digital Post (a new venture by Howard Steele and Mike Davis) has opened an SSL ScreenSound-equipped post suite within space leased on Emerald's second floor. Davis is a former member of Dolly Parton's touring band who has moved into scoring and post-production; Steele will also continue as technical director at Nashville's Elite Post.

A conversation with Memphis/L.A. studio owner **Gary Belz** revealed that he and partner Allen Sides of Ocean Way are still gung-ho about opening at the old Tony Alamo church site sometime in 1995. The peripatetic studio idea—it has migrated several times between the church and another site in Nashville over the last two years—will likely incorporate a license to use the House of Blues trademark in the studio name, from the chain of clubs in which Belz, along with Hard Rock Cafe founder Isaac Tigrett, is an investor. Probable name of the studio: House of Blues Studios, An Ocean Way Facility. Belz also adds that the pair is looking to lease nearby parking facilities to address being checkmated in that department by Island Bound Studio's opening next to the church's rectory.

**New Studio: Oz Audio & Post** opened in Franklin on November 21, the prodigy of former Toto vocalist Devin Payne. Payne started that band in his Encino, Calif., garage studio; the 1,600-square-foot Oz is somewhat more elaborate: self-designed with a 64-input Otari Concept One console with Optifile automation, Westlake 10-inch BBSM

monitors, Otari MTR-90 MkIII, a soon-to-be-delivered Otari RADAR hard disk system, and an Olympic-class volleyball court that will host the Argentinean team's practice sessions next summer. Payne has a record deal in Europe pending and will make his own records there, as well as letting out the studio for hire. "Williamson County is harboring an incredible collection of pop writers, engineers and producers," Payne says. "That's why I chose this place instead of right in Nashville. It's been getting so you have to carry a gun to go down on The Row at night."

Fax Nashville news to Daley at (615) 646-0102. ■

—FROM PAGE 179, NEW YORK METRO

market with a high-density population, you have to plan quite far in advance to get space in the same building. Then you've got to convince a banker to feel as sanguine about your prospects as you do.

That was the case with Dave Amlen and his second room at **Sound On Sound**. The John Storyk-designed, SSL G+-equipped second room was scheduled to come online late last year. But Amlen struggled for two years to secure bank financing for the construction. "Bankers in New York are just transitioning from a manufacturing base to a service base, a couple of years after New York itself did that," explains Amlen of his odyssey. Because most studio owners go to dedicated leasing companies within the industry to finance capital equipment costs, "Banks don't understand a business—all they see is a payroll and rent and that's it. I've heard it's a problem for any capital-intensive business in New York City."

The other issue, Amlen notes, was that banks expect that the profit base of any single-room studio be able to support a second room, which is a Catch-22 situation. "It doesn't matter that you're building the second room because you're turning business away from the first room," Amlen laments. The upside, however, is that this scenario actually allows for an easier time when it comes to adding third and fourth rooms.

**Simon Andrews' Right Track Recording** will unveil a new mix room and a complete reconfigura-

tion of the studio complex in March. Andrews is enthusiastically upbeat about what he characterizes as a "renaissance" in New York that covers the entire entertainment spectrum, including music, theater, television and film. However, he also faced the darker side of the city in planning his expansion. The vertical real estate market had its effect; Andrews was ready to expand long before the contiguous space in his building was available, and his desire to get that space had an effect on its cost, as well. But that's simply business; what annoyed Andrews most was the relatively thick layer of mire that New York City's local regulations and ordinances laid atop the usual batch of state and Federal regulations. "By the time I finished complying with all these regulations, I had a folder two inches thick," he complains.

**Steve Burgh's Baby Monster** added a ScreenSound-equipped audio post room over the summer and Burgh encountered the "usual absentee landlord problems," he says. Aside from the problems associated with transitioning a facility from music to post, Burgh says real-estate costs were the usual bugaboo for expanding in Manhattan. His expansion was relatively free of major issues; he was able to sidestep one big one by using his former office, tech and storage space for the new room and taking on other space in the building for those duties, thus lessening the criticality of contiguous space. "Not everyone's that lucky, though," he points out.

**John King's expansion** of his Chung King Studios into Chung King World Wide, slated to open in March, involves an entirely different building. (He's also reported to be looking at a Nashville location for 1995.) The new one, in west SoHo, was formerly an industrial printing facility. "Those are the best kind for studios," King explains. "They were built for high sound pressure levels because presses are incredibly noisy." The new location will have, among other things, a 14-inch concrete slab for insulation.

King, whose business was originally built on rap and hip hop clients, also has extended artistic families to deal with. "The posses can get pretty large for sessions and the landlords in New York all know each other," he says. "So for the new

place, I made sure there were two elevators, including a freight elevator. Noise and crowd control—those are the two issues you have to deal with in New York unlike anywhere else. When you think about it, New York has the loudest studios in the country and the closest quarters. Quite a combination."

**The NY fax** is back in operation. As you may have noticed, New York Metro is theme-oriented now. We've looked at dance mixers, Hispanic-owned facilities, etc. Any ideas for truly New York themes, please fax them to (212) 685-4783. Operators are standing by. ■

—FROM PAGE 179, STUDIO SPOTLIGHT

ries for Shanachie. After the Festival '93, the two musicians were joined by producer Kaiser at Dockside to record their new CD for Shanachie, *The Long Way Home*. Also at Dockside, African soukous legend Tabu Ley Rochereau worked with producer Scott Billington.

Owners Steve and Cezanne Nails attract many a client with their southern hospitality: From Steve's collection of cool old guitars to Cezanne's hot crawfish etouffee, recording at Dockside goes beyond technical specs—though they certainly have the gear. ■

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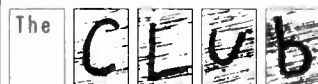
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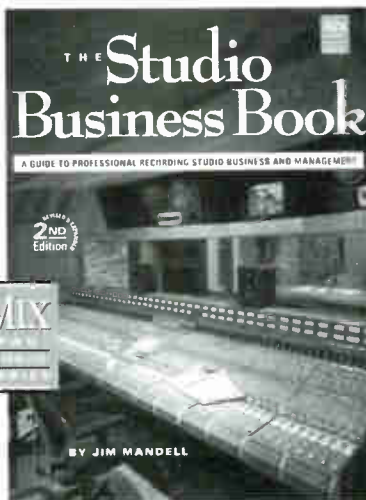
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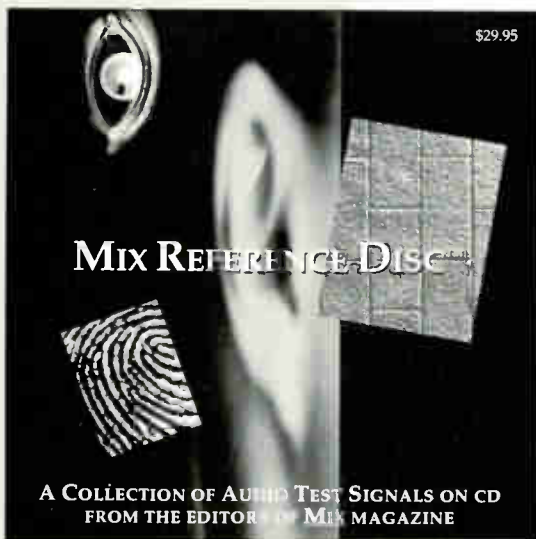
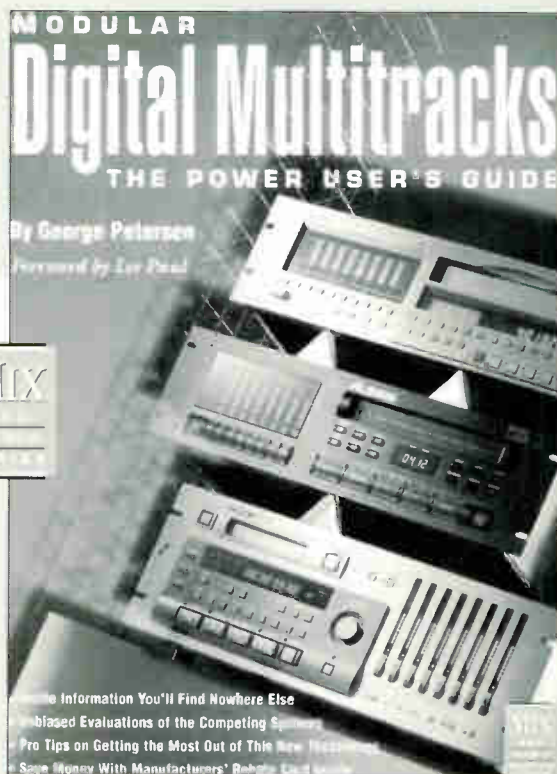
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—FROM PAGE 60, FIVE-YEAR PLAN

the birth of CD-ROM, its false start and then a fast turnaround of its fortunes. That experience reinforces the fact that, while technologies develop, mature and succeed or fail in shorter periods, their eventual success or failure is not always immediately apparent. For all we know, DCC might actually flourish.

What has to be looked at in the broader context of markets are technology, geography and changing client needs. Technology: what consumer formats will likely flourish, both long-term and mid-term? What pro formats will become more widespread (important as interactivity between studios becomes more of an issue in multimedia work—a true MDM issue)?

Geography: Will markets be around the corner or around the world? Local clients will expand. People who are not clients now will be establishing new satellite locations in a global economy. Check publications like *Advertising Age* for agency expansions.

Client Needs: What will the mix of services demanded by clients become over the next five years? Multimedia is a useful buzz word, but what will each mean by that? More voice-over, less music or vice versa? More sound effects? More sound design? Live presentations?

Project studios have grown exponentially and, for better or worse, largely at the expense of traditional commercial studios. But when putting together your five-year plan, don't forget that what goes around comes around. Project studios will not be immune to changes in technology, particularly with the multimedia field nipping away at the low-end markets. Project studios have consistently picked up work on song and artist demos, voice-overs, urban music genres and record pre-production. However, traditional studios are taking back some market share in areas like alternative music recording and acoustic-based recording, thanks to a move toward vintage sounds and equipment and, consequently, a need for larger, recording-dedicated spaces. Alliances between project and traditional studios are increasing because they allow each participant to bring its own advantages to a recording project and increase the client base.

The future markets for project studios will be diverse, but I expect that



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152	002	Acoustic Systems
155	003	Akai
1	-	AKG
IFC	004	Alesis (Q2)
27	005	Alesis (Monitor One)
75	006	Alesis (ADAT)
115	007	Alesis (Matica)
93	008	American Gramophone Records
9	-	AMS/NEVE
185	009	Anderson Organization
143	010	Angel City Electronics
104	011	Anthony DeMaria Labs
25	012	Aphex Systems
110	013	Applied Research & Technology (ART)
175	014	Aspen Music School
171	015	Audio Precision
56	016	AudioTechniques
123	017	AudioTechniques (parts)
13	018	Avid Technology
43	019	BASF
126	020	beyerdynamic
87	021	Brainstorm Electronics
82	022	Bryston
89	023	Burlington A/V Recording Media
55	024	David Carroll Electronics
166	025	CCS Printing
191	026	Century Music Systems
170	027	Conservatory of Recording Arts & Sciences
131	028	Crown
60	029	CTI Audio
107	030	D & R USA
129	031	The DAT Store
109	-	dbx Professional Products
42	032	Demeter Amplification
186	033	DGS Pro Audio
168	034	DIC Digital
52-53, 54	-	Digidesign
10-11	035	DigiTech (TSR-24S)
103	036	DigiTech (Studio 5000)
153	037	Disc Makers
78	038	Dolby
100	039	Dreamhire
22-23	040	Duracell USA
92	041	dynaudio acoustics
81	042	EAR Professional Audio/Video
167	043	Eastman Kodak Co.
118	044	Electro-Voice (EV)
149	045	E-mu Systems
161	046	Ensoniq (Sampling 1,2,3)

PAGE	READER SERVICE NUMBER	ADVERTISER
146	047	Europadisk
147	048	Eventide
37	049	Fostex
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98	-	Future Disc Systems
153	051	Gefen Systems
47	052	Genelec
81	053	Gold Line
128	054	Goodman Music
33	055	G Prime
130	056	Grandma's Music & Sound
182	057	Groove Tubes
158	058	Haffer
72	059	Harris Allied
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177	061	HHB Communications Ltd. (PortaDat)
122	062	The Hollywood Edge
101	063	Hot House Professional Audio
66	064	Institute of Audio Research
BC	-	JBL Professional
175	065	Jim's Music Center
162	066	JLCooper Electronics
191	067	JVC Professional
169	068	KABA Research & Development
31	069	Korg
119	070	Leo's Professional Audio
85	071	Lexicon
73	072	Lightwave Systems
130	073	Los Angeles Recording Workshop
176	074	MacBEAT
14-15	075	Mackie (8•Bus)
IBC	076	Mackie (LM-3204)
176	077	Magna-Tech Electronic
145	078	MAG-ZON
100	079	Manley Laboratories
170	080	Markertek Video Supply
99	081	Meyer Sound
57	082	Micro Technology Unlimited (MTU)
189, 190	083	Mix Bookshelf
67	084	Neumann/USA
80	085	Neutrik
30	086	Night Technologies International (NTI)
24	087	Optifile/Sascom Marketing
65	088	OSC
46	089	Otari
76-77	090	Peavey Electronics
61	091	Pinnacle Micro
144	092	Pioneer Hill Software
119	093	PolyQuick

PAGE	READER SERVICE NUMBER	ADVERTISER
143	094	Progressive Music
105	095	Project One Audio
56	096	QCA
17	097	QSC Audio Products
21	098	Quintessential Sound
40-41	099	Rane
165	100	RE America
151	101	The Recording Workshop
144	102	Rhythm City
166	103	Rich Music
163	104	Rocket Lab
18-19	105	Roland (JV-1080)
38	106	Roland (DM-800)
125	107	Sabine
79	108	Schoeps
137	109	School of Audio Engineering (SAE)
84	110	Sennheiser (HD 25 SP)
148	111	Sennheiser (MD 504)
139	112	Shure
6-7	113	Solid State Logic (SSL)
51	-	Sony
183	-	Soundcraft
29	114	Spectral Synthesis
152	115	Speir Music
34-35	116	Spirit
184	117	Stanford Research Systems (SRS)
134	118	Stewart Electronics
3	119	Studer Editech
70	120	Studio Audio Digital Equipment (SADiE)
72	121	Studio Consultants
180	122	Studio Sound International
160-161	-	Sweetwater Sound (Insert)
86	123	Sydney Urshan Music
63	124	Symetrix
2	125	Tannoy (PBM 6.5LM)
174	126	Tannoy (PBM II)
150	127	Tascam
128	128	Technomad
173	129	Telex
151	130	Thoroughbred Music
59	131	3M Corporation
142	132	TL AUDIO/Sascom Marketing
95	133	Uncle's Stereo
169	134	West L.A. Music
160	135	Whisper Room
182	136	The Woodwind & The Brasswind
160	137	World Studio Group
124	138	Yamaha
127	139	Yorkville
74	140	Z Systems

they will continue to specialize. Because project studios are generally based on the talent of the owner, one facility is not going to be able to cover as many bases as a technology-based traditional studio. Multimedia will be a leading area, as many multimedia projects are handled by many facilities and rarely done in-house. Games, corporate and industrial multimedia applications such as marketing kiosks will all require better audio, especially as the playback bit structure goes up from eight bits.

With the number of music releases approaching record numbers and production budgets spiraling downward, project studio owners will have a lot of opportunities in music-recording. But project studios are generally entry-level facilities, and once artists achieve some success, they typically move on to larger studios. You have a choice: Move on with them, expanding your equipment and space and costs or keep a tight reign on expansion by buying carefully and not exceeding the original business plan. You're also at the

mercy of consumer music trends; for now, dance music enthusiasts are quite happy listening to records made up of samples. If the trend moves back to Glenn Miller (don't laugh; this has happened), you might just need that garage space after all.

Audio post-production walks a technological tightrope between the previous two areas. It requires additional investments in new equipment

**WHEN PUTTING TOGETHER YOUR FIVE-YEAR PLAN, DON'T FORGET THAT WHAT GOES AROUND COMES AROUND. PROJECT STUDIOS WILL NOT BE IMMUNE TO CHANGES IN TECHNOLOGY.**

and techniques: investment in techniques because project studios don't generally buy talent; the operators learn the skills or network them.

Five-year planning makes sense. "The industry has gotten to the point where a lot of people in it who are technically and creatively very capable don't know what they're doing from a business point of view," argues Dr. Jim Piekarski, assistant professor at MTSU's recording industry program. "People have to get as aggressive in terms of building a plan and client base as they do in acquiring equipment. Project studio people generally got into the business because they love music. But without a business plan at this point, many of them are going to suffer later on."

In short, planning as far ahead as possible makes the most sense. Project studios are a business now and a regular part of the professional recording industry. So owners/operators need to think and act accordingly. It was nice when things were simpler, but growing pains have their own reward. ■

*Dan Daley is Mix's East Coast editor.*

—FROM PAGE 136, A TRUE TALE

was refreshing to step out of the club and onto a cowpie.

Mixing in all these different spots was a challenge, to say the least. The Paradiso in Amsterdam was a theater-turned-concert-hall, but when they converted it, they ripped down all the lush curtains. Bad move. Between its 50-foot ceiling and hard walls, the sound became as goopy as midsummer asphalt. We couldn't roll off enough high-mids to boost the clarity. There was another place in Switzerland that was on the fourth floor of an under-construction warehouse (subsidized). The back wall was cement, with a big head of the Statue of Liberty etched in. Sound was flying all over the place. Noel was twirling knobs all night. We followed the Number One Golden Rule of Touring: Never let the sound interfere with the live show.

News Flash! There are women techs in Europe! Art and I would

work gigs in the States where the club followed "Vatican rules": They were owned, managed and mixed by men. In the States, we could go entire tours without rubbing elbows with the other half of our species. In Europe, it's hard to do a show without having a woman come up to you with a rackmount effects unit she's patching in to the main board. The only drawback of this setup is that it makes the time behind a board go by quickly.

As soon as the show was over, Maxx, our lead vocalist, would pull the keyboard out of the Europe-U.S. power transformer and lug it around with him. Once he got backstage, he would plug in his electric razor and smile, because that transformer allowed him to use his Norelco on that nasty Russian beard of his. The transformer itself looked like a chainsaw without the chain and seemed to be the only model available in Europe. The down side of this was that only about

25% of the clubs had this unit. So, to do the rest of the shows, we spent many hours tromping around looking for the European versions of Radio Shack. For all of you electronic musician types, budget in money for the little plastic and metal outlet converters. They are expensive, but worse, we bought an actual wall wart for some of our effects, and they ran about \$80 apiece. Yikes.

Finally, when in Mars...Eat cold pizza and drink warm beer. Watch out for the toilets with a shelf in the bowl (I think they were developed by fecal scientists). Drink wine in France, Italy and Spain, and beer everywhere else. Also, there are no English muffins in England; Czechoslovakia has a beer called Budweiser, and it tastes good; Amsterdam is all that is said of it and more (they have more canals than Venice); and if you dig French fries, bring your own bottle of Heinz, because the stuff you pay extra for sucks. ■

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## FIELD TEST

—FROM PAGE 106, CAIG PROGOLD

multimetal (copper speaker wire to nickel banana plug to gold binding post) connection is always a good idea. On playback, I *think* it sounded better, but was I just imagining it? Time for another test...

In-console patchbays are a constant problem—at least in my studio. These 400 connectors are a natural target for airborne contaminants. I don't allow smoking in my control room, so *that* wasn't an issue, but dust will inevitably settle into any connector (particularly those that face upward), and oxidation is always a concern. I have a couple of patch points that occasionally are problematic—or at least require reinsertion of the jack a few times to clear the connection. After a quick squirt of the ProGold G5 aerosol (5% strength) into each of the offending sockets, the improvement was clearly audible.

I've had some problems with an older reverb unit. The device would occasionally act erratically or emit that tell-tale "lights on, nobody home." The problem turned out to be dirty pins on the program EPROM, which was socketed. I pulled the chip, cleaned the pins with a ProGold Wipe and used the tip of the ProGold Pen to get into the chip socket. The wipes—small squares of cloth soaked with ProGold—are nonabrasive and lint-free. The Pen has a nice reach for getting into tight spaces, such as relay contacts. I reinstalled the chip, bolted the cover down and it's been fine ever since (two months so far).

The ProGold G5 spray (5.5 ounces) retails at \$15.95; a 2-ounce can of the 100% G100 spray is \$24.95; 50 wipes are \$19.95; and the pen is \$19.95. All are CFC-free, plastic-safe and nonflammable (once the solvent dries). CAIG also offers maintenance kits with various combinations of products for different applications.

Perhaps the best part about CAIG ProGold is that the treatment is long-lasting, said to be between one and ten years. I'm not sure about the ten-year part, but for now, I've got another reverb in my rack, a glitch-free patchbay and clean contacts, pots and faders all over the studio. Not a bad return for a couple of dollars.

CAIG Laboratories, 16744 West Bernardo Drive, San Diego, CA 92127; (619) 451-1799 or (800) CAIG-123, Fax: (619) 451-2799. ■

—FROM PAGE 100, CHOOSING MONITORS

mixes. It's virtually impossible to evaluate monitors without having some material you know as a reference point. I have a set of CDs for auditioning speakers, and they include orchestral, solo vocal, solo piano and various rock and jazz artists. I also have several test CDs of sine waves, which are useful for determining low bass performance, as well as checking the extreme top-end response. Some hints for the audition process:

- Don't try to compare more than two pairs of monitors at once. A simple A/B test is hard enough to handle, without having to attempt an A/B/C/D...test.

- Don't fall into the "louder is better" trap, if you are switching between two speakers with different efficiencies. If necessary, adjust the gain or amp levels so that the speakers you're comparing play at similar volumes when you switch.

- When listening to unpowered speakers, make sure that both sets of monitors are driven by the same (or same model of) amplifier. Power amps can have a noticeable difference on a speaker's sound, and you need to eliminate any unnecessary variables when making comparisons.

- Be aware that your hearing can become fatigued over time, especially if you're listening at high volume. If you are having trouble focusing on what you're doing, it may be a hint that you need a break.

- Make sure that your listening tests include playing material at low and high volumes. A good monitor will sound consistent at all levels.

- With studio monitors, the listening environment is *everything*. Listening to near-field speakers from across the room is absolutely wrong. If you're looking for speakers that are meant to be heard from one meter away, then you should listen to them in the near-field, and preferably, seated, with the speakers at ear level. This will remove most of the acoustic effects of the room so you can focus on hearing the speakers.

Most importantly, take your time; don't rush the evaluation. You shouldn't feel pressured to make a quick decision. Auditioning studio monitors is an important process, one that requires a little time and advance preparation. But this small investment really pays off when you find the monitor that's right for you. ■

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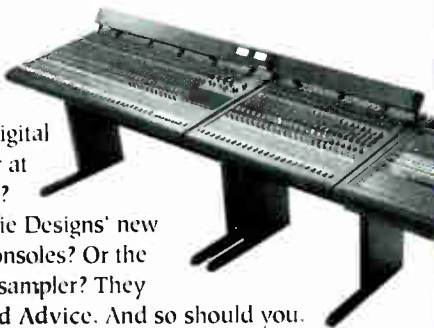
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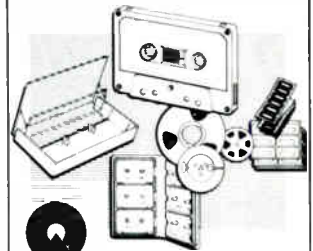


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# FEEDBACK

## DOUG'S TWO CENTS

I greatly enjoyed your October 1994 article on sonic restoration. In addition to an even-handed and cogent evaluation of CEDAR, the article gives a good overview of a subject that is really quite vast. Restoration work now occupies most of my time. I don't normally do much work with acoustic records, but recently a batch came in, which, being spoken-word, were difficult to pitch properly.

On that subject, George Petersen's calculation of the number of cents equal to the difference between 78.26 and 71.29 does not seem right. He identifies this as approximately 160 cents, when 8.906% equals 106.87 cents. *[Oops, you caught us on that one, Doug. We meant to say 106 cents as you calculated. The 160 cent figure was a typo—Ed.]*

Also, I asked Mike Stosich of Esoteric Sound about the issue of 71.29 rpm, as I have seen the figure 72 rpm given for disks of that period. The consensus is that companies were not entirely consistent during the early years, so you cannot take *any* figure as gospel. (I try to "tune" every early disc I transfer.) Also, Mike is going to update his info on Pathes: only the acousticals with *paper labels* were cut at 80 rpm; others were cut at approximately 76.26 rpm.

As recommended in the article, I also transfer mono recordings in stereo for later editing of both groove walls. I normally remove noise from each channel and then use a sum-and-difference matrix to optimize the L+R mix. The obvious advantage to making this mix is the cancellation of all vertical modulation, which consists of surface noise, rumble and various distortion products. When you use only one channel, this garbage is not cancelled. Of course, there are often sections of a disk where the L+R sounds worse than either channel alone, and I switch accordingly at such spots.

In the past, I, too, have used a mic preamp to get an unequalized phono output. Your article should have noted that this is desirable only for acoustical records. In the case of the pre-war electricals, those who do not use Esoteric's Re-Equalizer (or the OWL unit) may be assured that the common RIAA curve, while technically wrong, will sound a whole lot better than a flat transfer.

*Doug Pomeroy  
Pomeroy Audio  
Brooklyn, NY*

## RICOH REPLIES

I enjoy Stephen St.Croix's column. In "To C or Not to D, That R the Question" (October '94), it seems Stephen has had less than a good time so far [exploring CD-Rs]. I like to say Ricoh makes CD-R drives "for the rest of us." The RS-9200CD (our current model) has a full 1.2 MB of buffer. The result? A CD-R drive that can be attached to a wide range of systems. No Micropolis A/V drive needed. The RS-9200CD is supported by most pre-mastering software companies, including Digidesign's MasterList CD. Our new RS-1060C drive will retail at \$1,995. For this, you get an external unit with the form factor of a CD-ROM drive, 2X read/write (1X also supported) 1.2 MB of buffer, and Ricoh's quality.

*Bob DeMoulin  
Ricoh Corporation  
San Jose, CA*

## MORE ON THE NEUMANN IMBROGLIO

A recent Feedback column featured a letter from Klaus Heyne of German Masterworks, who voiced his frustration with the lack of parts and inefficient service from Sennheiser with regards to older Neumann microphones. My purpose for writing is to bring a scenario to light, which evolved here in Canada as a result of the current Neumann situation.

In a letter dated September 19,

Gotham Audio (Downsview, Ont.) urged Neumann users to turn in these vintage microphones for good trade-in value, as Gotham has access to markets in other countries where people are less informed of the true Neumann situation. Tempting as it may be for some to trade in an old U47 for a Microtech UM92S, I question the integrity of anyone or any business, which would do so knowing that the supplier is "disposing" allegedly obsolete product into the hands of other audio industry personnel in other countries who are less informed, but nevertheless trying to make a living at what they do just as we are.

I feel that Gotham must be held responsible for their stated intentions, and be held accountable to the people who do business with them.

*Howard Redekopp  
Vancouver, B.C.*

## THE CHANGING FACE OF PRO AUDIO

I am writing to applaud you on past profiles, articles and interviews you have done with female or minority audio professionals. I would very much like to see more devoted to them in the future. I feel my fellow readers would endorse such a suggestion as well. As we all know, this industry is dominated and virtually run by white men. This is not meant as an attack on the status quo; it is merely a statement of truth.

I have met and worked with quite a few outstanding nonwhite and female engineers, producers, designers, etc., and it would be encouraging to see more of them in the industry. With the commercial success and chart and sales domination by R&B and hip hop, we will soon find the face of our industry changing. This change will bring diverse and talented individuals, whose impact cannot be denied or underestimated.

*Adam Armstrong  
Executive Producer  
Strongarm Productions*

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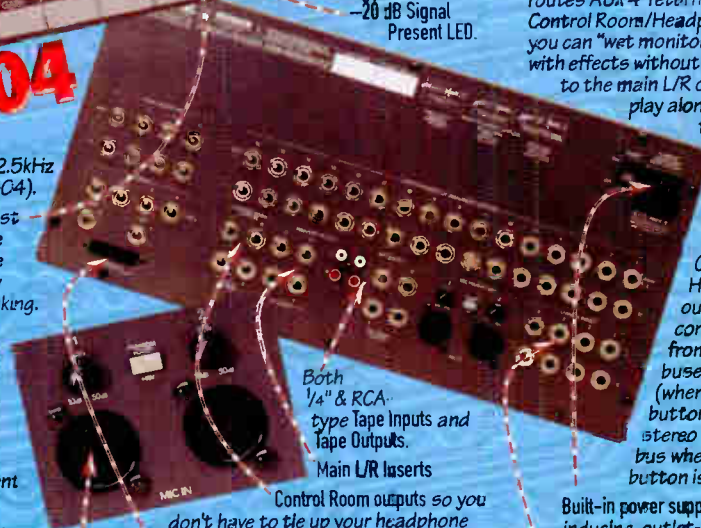
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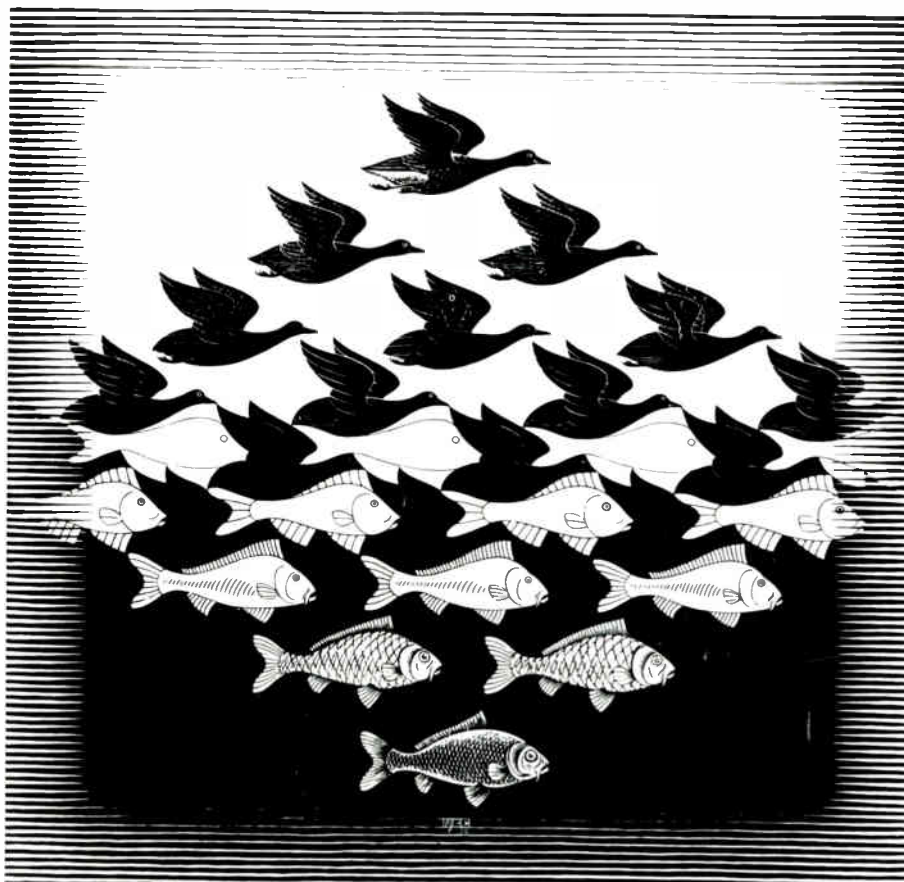
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# If you think only your eyes can play tricks on you...



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Study the illustration. Are the geese becoming fish, the fish becoming geese, or perhaps both? Seasoned recording engineers will agree that your eyes *and* your ears can play tricks on you. In the studio, sometimes what you think you hear isn't there. Other times, things you don't hear at all end up on tape. And the longer you spend listening, the more likely these aural illusions will occur.

The most critical listening devices in your studio are your own ears. They evaluate the sounds that are the basis of your work, your art. If your ears are deceived, your work may fall short of its full potential. You must hear everything, and often must listen for hours on end. If your studio monitors alter sound, even slightly, you won't get an accurate representation of your work and the potential for listener fatigue is greatly increased.

This is exactly why our engineers strive to produce studio monitors that deliver sound with unfailing accuracy. And, why they create components designed to work in perfect harmony

with each other. In the laboratory, they work with quantifiable parameters that do have a definite impact on what you may or may not hear. *Distortion*, which effects clarity, articulation, imaging and, most importantly, listener fatigue. *Frequency Response*, which measures a loudspeaker's ability to uniformly reproduce sound. *Power Handling*, the ability of a

loudspeaker system to handle the wide dynamic range typical of the digital domain. And, finally, *Dispersion*, which determines how the system's energy balance changes as your listening position moves off axis.

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