In Session With The Chieftains · Percussion Recording Tips · Producer Brooks Arthur

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MIX®

PROFESSIONAL RECORDING · SOUND AND MUSIC PRODUCTION

Top Engineers Talk About New Microphones

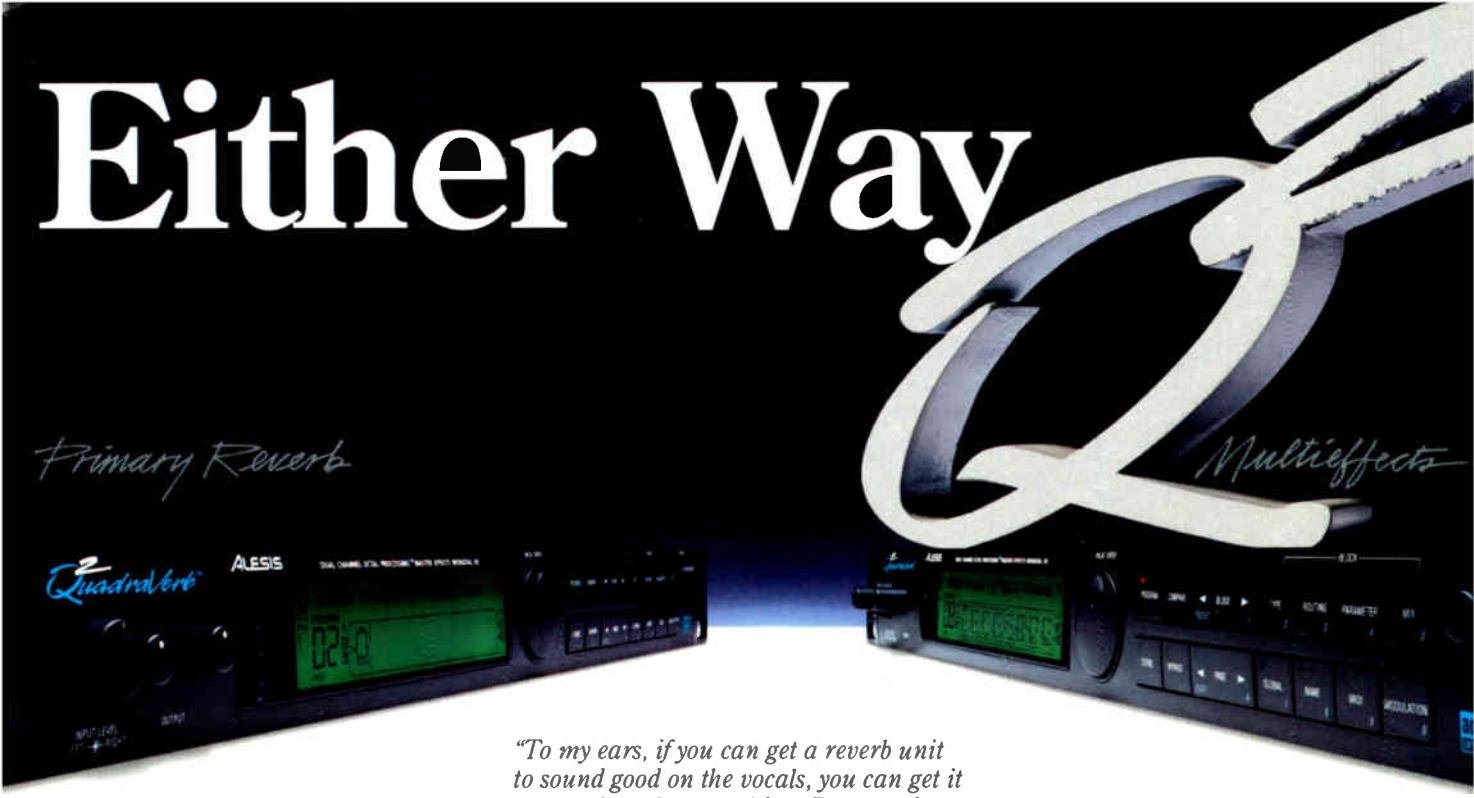
From Recording School To Recording Studio: *A Look at Entry-Level Jobs*

MR. BONZAI INTERVIEWS
PAT METHENY

L.A. Recording '95: *A Business Overview*

Music CD-ROMs

Either Way



In a world filled with too many confusing options, it's good to know that there's a product built to deliver just two things. The best reverb you've ever heard. The most powerful multieffects you've ever used.

Your primary reverb is always the first reverb on the echo buss. The best reverb in the studio. Until now, reverb this good used up most of your equipment budget.

"To my ears, if you can get a reverb unit to sound good on the vocals, you can get it to sound good on anything. Because the biggest challenge for any reverb is the lead vocal. I put this reverb up against everything else out there and nothing surpasses it. I use Q2 on the vocals."

- Francis Buckley, Independent Engineer: Album, Film and Television

"It's nice to see a company interested in the user's input before they release a product. They developed a reverb that really works. It's easy to make these kind of programs run if you've got tons of hardware. How they did it with such a small box at such an affordable cost is really impressive. It was worth the wait."

- Charlie Brewer, Chief Engineer, Village Recorders

"The architecture is the best I've ever seen. You can see exactly what's happening. This is critical if you're going to squeeze the ultimate sound out of a processor. If you need to get at a chorus in a complex patch, you take one look at the display and you're there. Plus, there isn't a classic reverb sound the Q2 can't simulate and improve upon. This unit is a must."

- Jay Graydon, 2 Time Grammy Winner, Engineer, Producer

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Frits Paeper, Production Manager, NOB, Hilversum

NOB is the largest post-production facility in Holland. The studios provide services for a variety of episodic programmes and specials.

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Sun Studio offers a broad range of recording and post-production facilities in a multi-room complex which includes the first OmniMix installation in Denmark, plus a stand-alone ScreenSound V5 with VisionTrack™.

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Feature films and animated series for Walt Disney and Warner Bros

SUN STUDIO, DENMARK

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Brian Christiansen, Engineer, Sun Studio, Copenhagen

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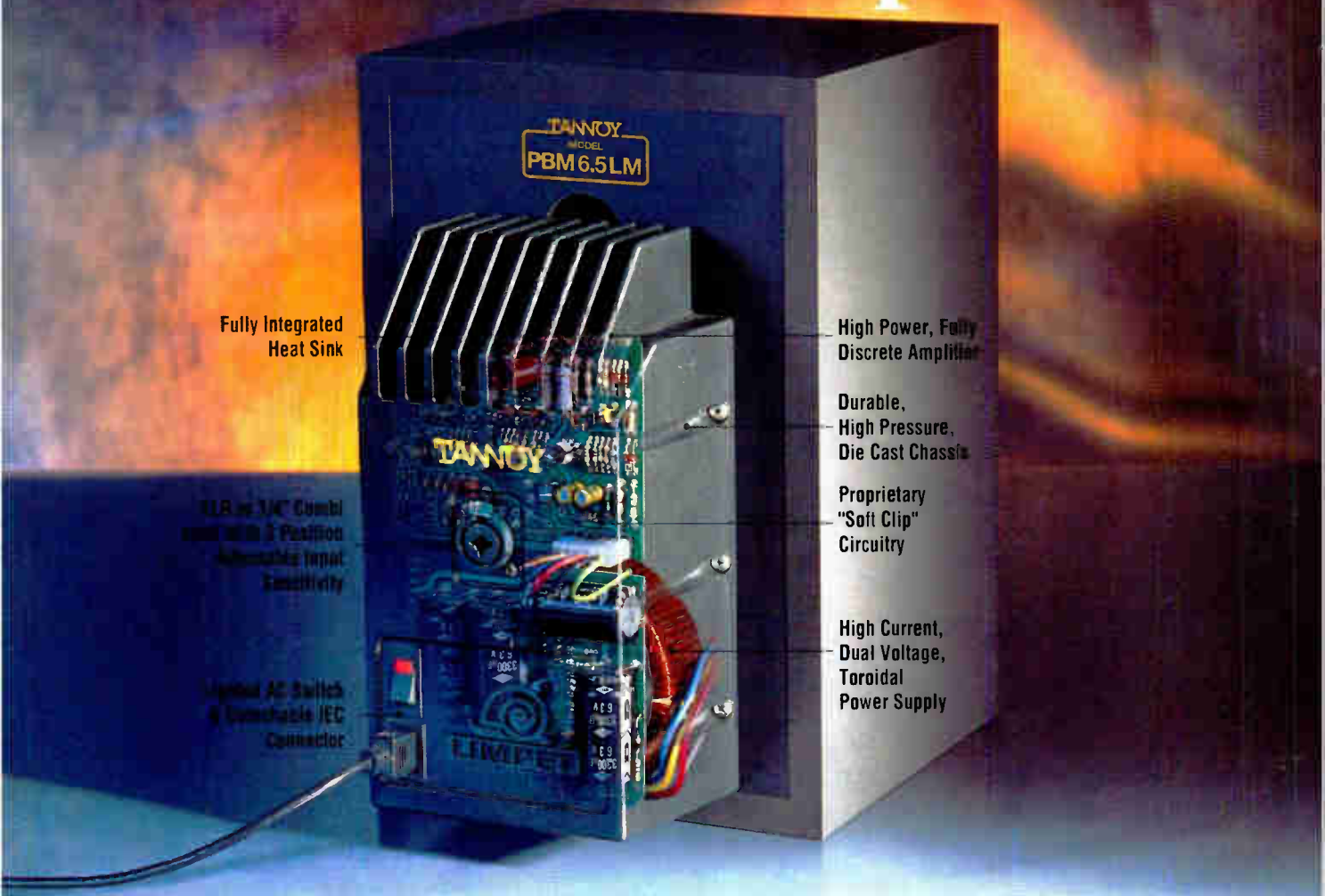

■ Every once in a while a product comes along which not only meets the ever increasing demands of the market, but one whose smooth commercial styling, ergonomics, durability and outstanding performance demands respect. Introducing MR. LIMPET. ■ The LIMPET is a unique, compact design that combines a very high current toroidal power supply, fully discrete amplification stages, and ultra wide (10 Hz to 80 kHz) bandwidth capabilities in a very affordable system. ■ Built using a one piece high pressure die-cast metal housing, the LIMPET is not only very rugged electrically and mechanically, its internal construction takes advantage of the industry's most advanced assembly techniques. ■ The LIMPET amplification system can be used with a wide range of TANNOY professional reference monitor systems, and provides the user with a number of improvements in both the performance of the loudspeaker system, and its flexibility. ■ Each single channel LIMPET system delivers an enhanced stereo image because the channels are fully separated - no power supply sagging due to inter-channel coupling, no crosstalk, no interference. Almost any kind of input level and connector can be used, since the LIMPET offers a balanced or unbalanced "combi" connector that can utilize either 1/4" or 3 pin jacks. ■ The ultra-low noise input section can accommodate either 0.775, 1.0, or 1.5 volt drive levels with no performance sacrifice. ■ The LIMPET's universal power supply, equipped with an industry standard IEC connector easily deals with almost any voltage, making the LIMPET a true global traveler. Finally, you can take your monitors wherever your work takes you, and not have to worry about cumbersome and troublesome adaptors, power converters, or strange electrical systems. ■ In addition, the unique and proprietary soft-clip circuitry and the significant reserves in the power supply ensure that no damage will occur to the drive units while providing the headroom needed for even the most demanding requirements. ■ The LIMPET is ideal for professional recording, broadcast/post production facilities, remote and live recording reinforcement applications, and finally gives the private/home recording studio truly reference quality performance unequaled at twice the price. ■ Instead of settling for the ordinary, get a LIMPET and get a real grip on your reference monitor performance.

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AUDIO EDUCATION

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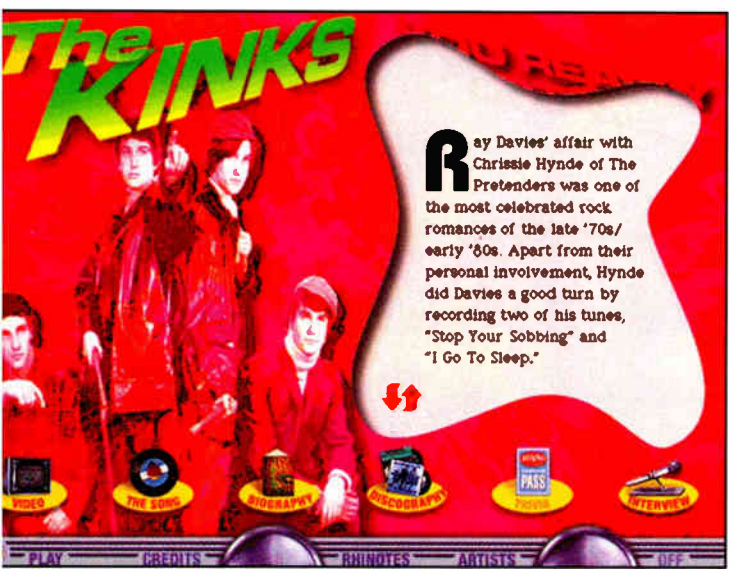
PRODUCTS



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LIVE SOUND

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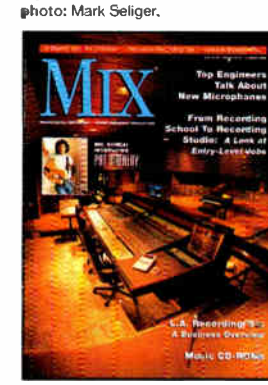
DEPARTMENTS

Cover: Milagro SoundsRecorders (Glendale, Calif.) was designed by Vincent Van Haaff with an earthy environment of redwood, blonde oak, aged brick and polished plum granite. The control room features a Neve V II console with Flying Faders automation, Studer A827 multitrack and Sony 2500 Pro DAT recorders, and monitors from TAD, Genelec, Westlake and Tannoy. A Yamaha C7f grand piano resides in the spacious live tracking room. **Photo:** David Esterson. **Inset photo:** Mark Seliger.



OUR 8•BUS REALLY

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

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

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

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

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

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

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

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

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

Sound design & mixing of commercials for G.I. Joe, Kenner Toys, Hasbro Toys, Transformers ½-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

[1] *Former posts include quality assurance with Warner Brothers, Sheffield Labs, Rainbow Records, Chief Mastering Engineer at JVC. Quote: "It's a great board, dude. Buy it!"*

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

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[1] • Oracular Multimedia San Francisco, CA

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

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[2] • Buzz, Inc. New York, NY

Sound reinforcement for theater presentations and concerts in a 300-seat theater.
Centre Culturel Franco-Manitobain • Winnipeg, MB, Canada

[2] *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.

Scoring for two Fox Televison 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

MB•E Meter Bridge $695[1]

The Side-car $395[4]

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 con-cert sound reinforce-ment, recording of sermons.
New Life Assembly of God
Lancaster, PA

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

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

DNA sampling CD with mega-drummer Bernard Purdie (3000 + album credits)!
Frank Heller[3] • Weasel Boy Recording • Brooklyn, 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

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

[4] 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

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FROM THE EDITOR

Stereo Simplicity

Way back in the Paleolithic Era—some 35 years ago—the stereo LP came to the masses. Now, without getting caught up in the essentially unresolvable vinyl disc vs.compact disc argument, consider those early "stereo" releases. Producers and engineers had a field day proving that they could create recordings with hopelessly exaggerated stereophony. Sounds would whisk by from side to side, sometimes, it seems, just to show whether the purchaser of the record also owned one of those newfangled 2-channel playback systems.

By the late 1960s, stereo experimentation in the studio was getting wilder and wilder, with more inputs to play with and more complex (although still primitive by today's standards) consoles, providing a pan control on each of those inputs. Although it wasn't known at the time, this period also defined many dubious production practices that continue to this day. The most influential of these was the recording of "stereo" drums, which more often than not consisted of a number of individual mics to pick up individual drums and a stereo overhead mic pair to pick up the cymbals.

Today, we've all "learned" how to capture a drum set in the studio: Start with kick, add the snare mic, hi-hat mic and a mic on each tom. Then place the overhead mics—usually in an X-Y or spaced-pair configuration—and switch in plenty of EQ, so only the thin "tink" of the ride or hiss of the crash remains. Add some reverb—chamber, plate or digitally induced—and create that BIG stereo sound by cranking those panpots until the tom fills play eight feet wide across someone's living room.

Realistic? Hardly. Stereo? Perhaps. But it's ironic that the only stereo source in this drum mix is the overhead mics, which had most of their energy snuffed by the heavy-handed filtering. The equalization, of course, was "necessary" to keep the overheads from interfering with the close mics.

And now for something completely different: The next time you're getting a drum sound in the studio, start with the overheads: no rolloff, no EQ. Then mix in the kick mic, and—if necessary—use the snare, hi-hat and tom mics to add a bit of edge to the attack, or to feed reverb sends. The drawback to this technique is that it rarely works in sound reinforcement, where the acoustical signature of the venue is often less than desirable and/or the onstage SPLs rival the point-blank roar of a 747! But in the studio, you may be in for a pleasant surprise.

Give it a try some time.

George Petersen
Editor

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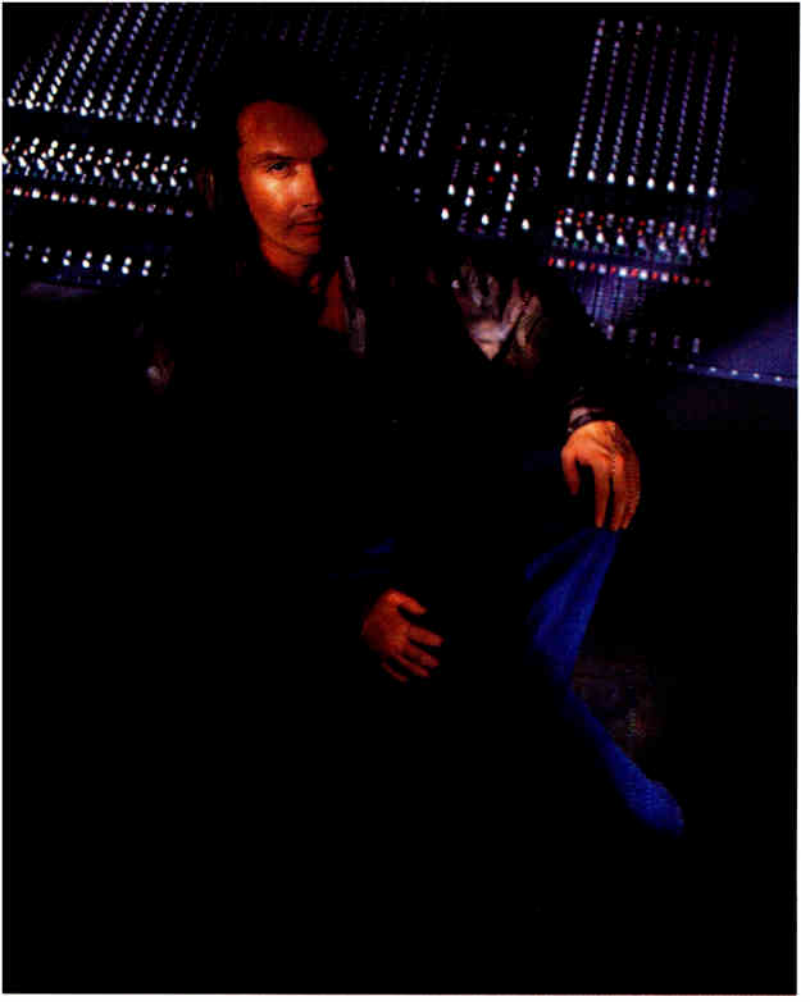

When I finally found the perfect post production console...

"Speed matters when a network satellite feed deadline is looming. The console is fast. It just performs." *Derek Luff, president, Wild Woods Studios in Southern California — talking about business.* **"Three things matter to our clients: do it better, do it faster and do it for less."** *That's why Wild Woods chose the TASCAM M-5000 post-production console.* **"It's incredibly flexible, it sounds great and it's an outstanding value."** *Wild Woods is strictly post-production audio and sound design.* **"This is a 90's console — state-of-art integration with our digital gear."** *TASCAM incorporated superior quality components and innovative signal routing capabilities into the board.* **"It really saves time, allowing us to be more creative. And that means satisfied clients and higher profits."** *One M-5000 wasn't enough for Wild Woods state-of-the-art studio.* **"I was so impressed — I had to have two!"**

Derek Luff and Glenn Aulepp received absolutely no consideration for their appearance in this advertisement. In lieu of receiving studio rental fees for photography, a contribution to the National Wildlife Federation was made on behalf of Wild Wood Studios.

"I love it. It's set up for post-production." *Glenn Aulepp, chief engineer at Wild Woods — on why he chose the console.* **"The board is logically laid out and it's very easy to operate."** *The M-5000 is a 24 bus console with 32 I/O modules expandable to 40. Each channel has two independent signal paths with dual linear faders.* **"I can get things done extremely fast — the large faders are preset for my tape returns, but for tracking I can reverse them at a flip of the switch."** *Both signal paths have an extensive independent EQ, SOLO and CUT.* **"The three cut groups are a necessity."** *There are virtually unlimited grouping and sub grouping options.* **"I haven't run into any limitations for what we do."** *It features 8 AUX sends and has massive headroom.* **"The meter selector is convenient — transient peak hold is very important in a digital environment."** *Engineers like the subtle TASCAM design details.* **"The integrated patch bay is fantastic — very compact and extremely easy to change."** *There's PFL or In Place Solo on both channel and monitor paths.* **"I needed a flexible console so I can complete projects my way — freedom from any console constraints."** *Optional accessories include an I/O expansion kit, stereo modules and a VCA fader automation package.* **"When it comes to post-production, you gotta be good and you've gotta be fast. The M-5000 is perfect for us. There just isn't any other console that offers more value."**

I bought Two of 'em.

The TASCAM M-5000: For the business owner. For the engineer. For the post-production studio. **Perhaps you don't need two.** *But buying one M-5000 could be the best decision you ever made for your business.*

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CURRENT

NAMM 1995
by George Petersen

Every winter, some cataclysm seems to occur during the NAMM Show, whether it be mudslides, war, pestilence or record-breaking meteorological phenonema. At least this time, the devastating earthquakes and floods *preceded* the expo, allowing attendees to focus on business rather than being glued to CNN in their hotels. And based on reactions from the record 988 companies exhibiting on the floor, business was up, up, up, during the event, held from January 20-23, 1995. More than 48,000 registrants (another NAMM record) packed into the Anaheim Convention Center to check out the latest in music and audio technologies.

RSP Technologies' Project X GEORGE PETERSEN

The big word was discounting, with Akai, Beyerdynamic, Behringer, AKG (TriPower dynamic mics only) and many others cutting prices in response to a tough economy. Although less important from a global standpoint, the retro trend remains strong: Tone King of Baltimore showed a line of beefy guitar amps that looked like something out of a *Jetsons* cartoon. Last year, rotary speaker simulators were hot; this year, the real thing made a comeback. Mesa Engineering (Petaluma, Calif.) had a complete system in a 2x2-foot box, and newcomer Motion Sound (Draper, Utah) debuted the Pro-3, a rotary HF horn in a briefcase. Priced at $599, it's just the thing for the session player on the go.

But the grand slam hit of NAMM was RSP Technologies' (Rochester, Mich.) debut of Project X, a large-format, full-function digital console that offers direct interfacing with ADATs or DA-88s. The system consists of a desktop surface that controls audio and DSP functions in a separate rack. Features include recall of all console settings, dynamic, SMPTE-based automation (faders, mutes, pans, auxes, effects parameters, etc.) and control of all operations without leaving the "sweet spot." Onboard DSP includes 4-band parametric EQ, individual delays on all channels, HUSH noise reduction, gating, compression and reverb/multieffects based on Rocktron's Intellifex. A base system with 32 inputs and 16 buses is expected to cost $20,000 to $25,000, and the system can be expanded to 64x24x2. Deliveries are slated for September.

On the analog console scene, Mackie's SR24•4 is a 24-channel, 4-bus sound reinforcement mixer priced at $1,495. Intended for live sound applications—but also suitable for recording—the new model is essentially a simpler version of Mackie's popular 8-bus board, with six aux sends, 3-band EQ and 20 mic preamps, all in a svelte 20.5x18-inch package. And Yamaha has re-entered the recording console market with the RM800, a full-function 8-bus mixer. The 24-channel RM800 (56 inputs in remix) is $2,399; the 16-channel version (40 in remix) is $1,699.

Roland's V-Guitar System VG-8 brings a completely new approach to guitar synthesis. Driven by any guitar using a hex pickup, the system reads the vibrations of each string, which when combined with various modeling algorithms and extensive DSP functions, can create any number of virtual instruments. The VG-8 system offers extraordinary power and flexibility, while its icon-based user interface redefines the art of guitar synthesis.

Akai finally brought its DR8, a stand-alone (4-rack-space), disk-based 8-track recorder/editor to U.S. shores. Similar to the successful DR4d unit, the DR8 will retail at $4,995, including analog and digital (AES and S/PDIF) I/O and a SCSI output for external storage. Options include MIDI sync, SMPTE chase-lock and a remote controller with mixing, digital EQ and ADAT interface.

Speaking of interfaces, Spectral (Woodinville, Wash.) showed The Translator, a bidirectional converter that transforms ADAT fiber-optic, Tascam TDIF-1 and Yamaha Y-2 signals to/from Spectral's SMDAI (AudioEngine and Prisma format) system. The $995, stand-alone box can also handle ADAT/TDIF-1 transfers or allow MDMs to connect directly with Yamaha's DMC1000 digital console.

JBL intended its EON Series for the "plug-and-play" entry-level P.A. market, but serious pros were also interested in these low-cost, powered speakers. EON enclosures are molded from tough polypropylene, with a cast-aluminum front baffle/horn. The EON 15 has bi-amplification (50/130 watts), 15-inch

—CONTINUED ON PAGE 16

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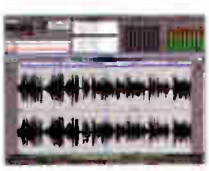

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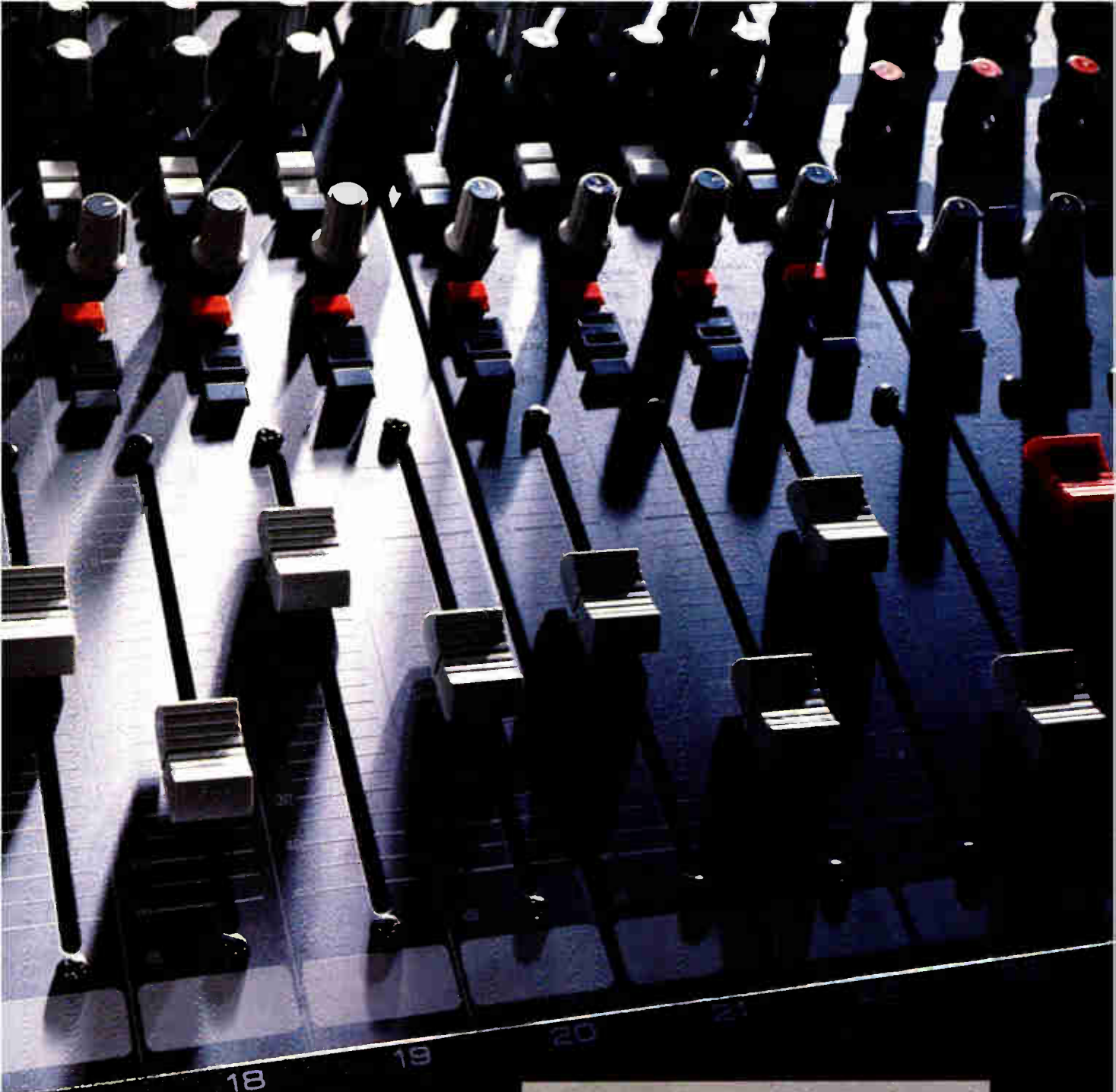

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INDUSTRY NOTES

Restructuring and hires at JBL Professional (Northridge, CA): Mark Gander was appointed to the position of vice president, strategic development, and David Angress was made vice president of North American sales and marketing. The company hired Dr. Paul R. Newman as vice president of research and development and Bruce Zeedik as vice president, finance and administration...**Lone Wolf Corporation** (Seattle) hired **John O'Halloran** as president and CEO. O'Halloran comes to Lone Wolf from a VP position at Aldus Corporation, where he oversaw the start-up and growth of that company's Pacific Rim enterprises...Dallas-based **Russ Berger Design Group Inc.** hired architect **Blane Kelley**...*Mix* Los Angeles editor **Maureen Droney** joined forces with independent production coordinator **Colleen Reynolds** (Duran Duran, Kenny Loggins, Bel Biv Devoe) to create **R.P.M.**, a new company providing coordination and management support for recording, touring and multimedia projects. Phone (213) 876-9711, or fax (213) 876-4198 ...**ART** (Rochester, NY) promoted **Rich Godinez** to director of sales and marketing...**Richard Wear** was appointed to the position of marketing manager, professional products division, at **Celestion International Ltd.** in Ipswich, Suffolk, England...**Community** (Chester, PA) appointed **Michael Jay Pappas** as Western regional sales manager and **John D. Strand** as Asian/Pacific regional sales manager...**Harrison by GLW** appointed several new European dealers and service reps, including **Dansk Audio Distribution** in Copenhagen; **Distribution de Systemes Professionnels** in Paris; **Lyd-Rommet** in Oslo; **Nores OY** in Helsinki; **Synclavier Europe** in London; and **Prefix Handle and Service** in Stockholm...**Neutrik USA** of Lakewood, NJ, hired **Mike Lynch** as Western regional sales manager and promoted **Ellen Wagner** to the position of marketing communication coordinator...**Lucie Fjeldstad** was named president of the Video Systems Division at **Tektronix Inc.** in Beaverton, OR. The company also introduced a BBS for its Television Division, which can be accessed at (503) 627-4413...**Rick Stuart** joined Dallas-based **Bernhard Brown Inc.** as director of marketing...New reps for South Bend, IN-based **Bullfrog Inc.** include **Future Sales** in Alaska, Hawaii, Idaho, Montana, Oregon and Washington; **Krueger Marketing** in Northern California and northern Nevada; **Josh Blacker Sales** in Southern California and Arizona; **Wismer Sales** in Alabama, Florida, Georgia, Mississippi and Tennessee; **Dimension Pt. 9** in Arkansas, Louisiana, Oklahoma and Texas; and **Carolina Sales** in North and South Carolina... Loudspeaker-manufacturer **Technomad Inc.** (Northampton, MA) has retained public relations firm **Aarvak Marketing Communications**... **Digital Audio Labs** (Plymouth, MN) hired **Eric Jorde** as national sales manager...**Soundscape Digital Technology Ltd.** (Westlake Village, CA) hired **Jerry Breiner** as U.S. director of marketing. The company's new phone number is (805) 495-7375, fax (805) 379-2648...**Lucasfilm Ltd.** promoted **Monica L. Dashwood** to general manager of THX Theaters and Consumer Products and hired **Steven Shenefield** to the newly created position of product development manager for the Home THX Program...**Ron Powell** joined N.T. Audio of Los Angeles as sales and marketing director...**Yamaha Corp.**'s Consumer Products Division (Buena Park, CA) promoted **Michael D'Amore** to marketing manager, computer-based products, **Jan Luna** to national sales manager for mass merchandise markets, and **Tom Sumner** to national sales manager, with responsibilities solely in computer markets ...**Harry Donovan** and **Jay Glerum** have slated their three-day seminars on arena and stage rigging for February 27-March 1 in Las Vegas; March 27-29 in Orlando, FL; and April 24-26 in San Francisco. Call (812) 278-3123 for more information. ■

—FROM PAGE 12, CURRENT

woofer, neodymium compression driver, and BiRadial horn —in a 39-pound cabinet angled for main or monitor chores. Heat sinks are mounted in the woofer ports for extra cooling. A powered subwoofer is available, as is a powered, 10-inch, two-way speaker and unpowered versions.

EAW's Linear Activation (L.A.) Series is a new line of cost-effective speakers for the musician, small-club and installed system markets. The flagship LA325 is a three-way, double-15 system with cone mids and a 2-inch compression driver in a trapezoidal box capable of 131dB peaks. On the horizon is a single-15 system and an 18-inch sub box.

We'll present more product hits from NAMM over the next couple of months, but in the meantime, circle your calendars: Summer NAMM is in Nashville July 14-16. See you there.

TENTH ANNUAL TEC AWARDS PROCEEDS DISTRIBUTED

The board of directors of the Mix Foundation for Excellence in Audio announced the recipients of the proceeds (a record $35,000) from last fall's Tenth Annual Technical Excellence & Creativity Awards.

For the ninth straight year, the House Ear Institute of Los Angeles received half the proceeds. SPARS received 15% for its student programs, and the AES Educational Foundation received 10% for its ongoing scholarship program. Hearing Education Awareness for Rockers of San Francisco was awarded 5%. The remaining 20% was divided among past TEC Award-winning recording schools nationwide that have established TEC Award scholarship programs.

CORRECTION

The *Mix Master Directory* included an incorrect address for Trident Audio, now located at 3200 West End Avenue, Suite 500, Nashville, TN 37203; (615) 783-1625. ■

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—D&R Orion Review, Mix Magazine

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by Stephen St.Croix

RED LIGHT READING, PART DEUX

So you waited! Good. Here, with only minor adjustments that editors love to make, is what Digidesign's Evan Brooks told me last month:

"When writing write-once compact discs, you must be aware of the issues regarding disc quality. The quality of a recorded disc can be generally described by two parameters, BLER rate and E32 count. BLER rate is an indication of the number of errors per second, both correctable and uncorrectable, that are seen by the two decoder stages. E32 is a count of the total number of uncorrectable errors.

"BLER gives you a good idea of the overall quality of the disc. While the Red Book standard allows for more than 200 errors per second, a high-quality disc might have 15 or fewer. The higher the BLER figure, the more likely that some of those errors are going to be uncorrectable.

"An E32 error is not correctable by the CD reader. Most audio CD players will either try to "conceal" the error, usually by linear interpolation of the missing data, or will simply mute the audio output briefly if it cannot interpolate. E32 errors can occur because either a defect or a piece of dust exists on the disc, or because the BLER is high due to bad disc quality. So, a disc with a low BLER but some E32 errors is probably well-written, but suffered from dust contamination while writing.

"Disc quality is important for two reasons:

"1) If you are sending a disc to a duplicator so they can generate a glass master, the CD reader at the duplicator must be able to read the entire disc with no E32 errors. Most duplicators will return any disc that

ILLUSTRATION: GORDON STUDER

is read with even a single E32 error. This makes sense, because they cannot duplicate what they cannot read.

"2) If you are just using the disc as a test disc, or a personal copy, a high E32 count will cause an audio CD player to perform lots of error concealment. This type of linear interpolation is generally audible when the density of errors starts getting high. If you want a disc that sounds like the original material, *and also plays back similarly on different machines*, it should have a very low, or zero, E32 count.

"The following factors determine the quality of a written disc:

"The CD recorder, the brand of write-once media, the size of write-once media, and the speed at which the media is written. Then the total write-read results are further influenced by the CD reader/player.

"Writing a compact disc is nothing like writing a floppy disk. Regardless of what you may be led to believe, you can't simply put any media into any recorder and expect to create a disc that either works or has reasonable quality. The standard that defines how write-once media is made and used [Orange Book] is still evolving. Media manufacturers are constantly experimenting with new—and sometimes improved—formulations. CD-recorder manufacturers are constantly changing their designs. In spite of this, there exist some relatively simple rules that will give you the best chance of creating the highest-quality discs possible. In this case, high-quality means zero E32 errors, and the lowest possible BLER."

So here are Evan's Rules of Order:

"1) Use a CD recorder that will write the disc in 'Disc At Once' mode. This ensures that the write laser never has to turn off and on while writing the disc, so no gaps or garbage (which can show up as E32 errors) can be created.

"2) Use only the media that is recommended and approved by the CD-recorder manufacturer. Even if your best friend swears that El Cheapo brand media works just fine, save yourself an expensive mistake and ignore him.

"3) Use the smallest-capacity media that will hold your material. If you are only recording a 60-minute project, use a 63-minute blank disc, not a 74-minute blank disc. Higher-capacity discs rotate slower and have shorter pit lengths to accommodate more data. This can increase error rates and lower disc quality noticeably in comparison with lower-capacity media.

"4) Write the disc at 2x real-time or faster. Faster rotation rates increase the quality of the written signal on the disc and translate into lower BLER and E32 counts at the reader.

"The correlation between disc rotation rate during writing and disc quality is very real and very significant. Because a CD spins slower when reading from the outer areas, most discs will exhibit an increase in BLER and E32 toward the outer edges of the disc. Because this variable rotation rate is an integral part of the CD spec, there is nothing that can be done about it. However, using a lower-capacity—and thus faster-spinning—disc, and writing at 2x or 4x versus 1x, will ensure the fastest rotation rates possible for the given recorder/media combination.

"Don't be misled by claims of media interchangeability, whether they are from your friends or your equip-

ment dealer. It's not even close to true, and the sad truth is that there's no good way to find out until your master is returned by your client or duplication house. Just because a disc appears to write successfully is no indication of the quality of the disc. The current crop of CD recorders cannot and do not check the quality or error rate of the discs as they write them. Only if they come across as a fatal error, such as an inability to write or track the disc itself, will they report an error.

"Save yourself an enormous amount of wasted time, money and lost clientele and follow the four simple rules above. While this technology is far too young to guarantee that every disc will be written perfectly every time, those four rules will give you the best chances of making the best discs given the combination of recorder and media you choose."

Well, well, well. So there we have Evan's Rules. Personally, I will do what he says, because I have already had some trouble that fits what he predicts. One point that I want to hit again is that higher rotation rates give improved results. Nobody disagrees on this one point. It's the *reasons* for this where they disagree. Several people have told me that because higher rates increase gyroscopic stability, the disc spins more uniformly on all axes, reducing mechanical speed modulation artifacts. Others say that higher rates dramatically decrease the jitter generated by the spindle motor's speed-control servo circuitry. Jitter, as we are all beginning to learn, is somewhat worse than death by Killer Bee stings.

Doug Carson, on the other hand, told me in our talk last month that the concept of servo jitter is pretty silly when you think about it, and as he was saying it, I got this sort of unpleasant mini-rush as it dawned on me that I hadn't been thinking clearly. Basically, it comes down to this: Although it may cause low-frequency, long-term garbage, there simply isn't enough horsepower in the spindle motor to move the mass of the disc fast enough to cause *pit* jitter, so no E32s from this. He says that high-speed writing produces a disc with less errors because thermal-mechanical expansion artifacts are reduced as write speed is increased. Aaargh! I have found Pandora's (jewel) Box, and inside is a shiny green disc.

Once again, I am sorry to give you column after column on this one subject, but it is my belief that all this will be crucial to everybody in our industry, and I want you to be ready.

And speaking of RedE(mission) lasers, here are a few DweebFactz that I am sure you desperately need. Holography was actually developed by Dennis Gabor in 1948, but since lasers hadn't been invented yet, all credit cards, driver's licenses and CD dogbones of the era were simply white squares containing the words "Sorry, Lasers Not Invented Yet" in large red letters. Even though the whole laser deal was proposed by the first known hyperspace starship captain, Albert Einstein, in 1916, it wasn't until 1960 that Theodore Maiman actually got the first ruby laser fired up. Now, while there is no argument that Al and Teddy were great guys, all this didn't really do much for us until the first diode laser was made in 1962. That little beauty is what is *still* used in CD players and recorders today, and it's *still* red. Sorta.

Why is this St.Croix guy so hung

up on what color lasers are, you might ask? Well, lasers started out red because that's the easiest color to make. Red is big. Long wavelength. Longer time constants, looser tolerances, more room for physical slop. But big is bad when it comes to lasers and data, and the truth is that CD lasers are not even red, but infrared. These even longer wavelengths limit how small you can make the little pits that the laser reads, and that of course limits data density, so we are living with 680 meg on a disc. Nobody seems to be screaming too much about that because it's more than enough for an album (as proved by the fact that many "extended" CDs, which contain all of the material on a vinyl album plus "bonus" CD tracks, might have been better left unextended). But what about CD-ROMs and CD movies? These could certainly use more space.

So now both higher-density visible red and ultra-high-density *blue light* CDs are coming. Early units of both systems are in test all over the place already! This is interesting. Visible red might just give us the data density increase we need to go 20-bit on the same-size CD. Blue lasers, on the other hand, have a wavelength about half that of red, so right away we can get twice the data on the same surface. In addition, advances made in optics and laser servo precision provide impressive additional density increases. So we get improvements of *six times*, or *4 gigabytes*, per disc!

I'm all for leaving red lights where they serve us best—for stopping traffic and for denoting certain districts. And if all this catches on, better high-power, nonliquid, epitaxial blue-diode lasers will be made, and maybe we can finally get on with direct-projection laser television. All that's been missing is the blue light source. Mmmm, direct RGB laser projection TV. I feel like Homer Simpson when he thinks of beef. ■

SSC's favorite color is blue, so he welcomes this new technical evolution with open eyes. He looks forward to the day when each of us can carry all the knowledge of man in our shirt pockets, on a single optical disk. Won't that be special? Go to a bar, meet a woman. Get her name, break out your pocket reader, see just how good her last divorce lawyer really was...

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by Marjori Schmugler

PRO AUDIO'S FRATERNITY

STUDENTS AND THE AES

Although I didn't know it at the time, joining the Audio Engineering Society would change my life. My college professor encouraged me to join, and I still remember the first AES convention I attended. I drove 21 hours with a group of audio students, straight from Washington state to Los Angeles. I was in awe of the people and the miles of equipment; the convention opened up a world of possibilities.

Today, I'm an active member of the AES. I am a member because it affords me the opportunity to meet people, and it's a chance to give a little back to an industry I love. When I was asked to write about what the AES does for its student members, I realized I didn't know the full range of services the society provides. So I went straight to the source and called Nicole Lamonte at the University of Miami. Lamonte is a senior working toward a degree in Music, Media and Industry and is the vice chair of the University of Miami AES Student Section.

"The AES exposed me to a wide variety of people in audio and enabled me to explore my interests and see what I would like to pursue in the audio world," Lamonte says. To be successful in the audio industry requires tenacity, and the ability to stay open to options. Many AES activities give students a chance to learn what lies beyond the classroom, get some real-world exposure to the industry and develop preprofessional contacts.

Lamonte believes Student Sections are a "golden opportunity. All the resources are there to help you with your best personal success." AES sections typically sponsor technical programs, tours and social functions for members who live in the region and may provide other services such as a local job bank. Each section has elected officers and operates in the same way as professional sections, except that they're associated with colleges and universities that specialize in the recording arts and related fields.

To create a student section, the AES requires a faculty adviser with a strong commitment and at least 20 students. A listing of student sections is located in the back of the AES Journal and in the Directory of Educational programs published by the AES. Currently, there are more than 16 student sections throughout the United States. There are also sections forming overseas, with Venezuela and Chile being particularly active. The sections not only include students working toward music and recording arts degrees, they also attract students in cross-disciplines such as electrical engineering, computer science and communications. Student

UC-DENVER/PR

University of Colorado at Denver professor Roy Pritts works the board, while student Paul Romaine handles the keyboard rack.

□ I'll Make Love to You • Boyz II Men – Future Disc • E. Schreyer □ He Thinks He'll Keep Her • Mary Chapin Carpenter – Georgetown Masters • D. Cobb, C. Grier, D. Purcell □ Streets of Philadelphia • Bruce Springsteen – A&M • D. Collins □ The 3 Tenors In Concert • Carreras/Domingo/Pavarotti – Capitol • L. Walsh, B. Norberg □ From The Cradle • Eric Clapton – Sterling Sound • T. Jensen □ Hero • Mariah Carey – Gateway Mastering • B. Ludwig □ All I Wanna Do • Sheryl Crow – A&M • D. Collins □ Love The One You're With • Luther Vandross – Gateway Mastering • B. Ludwig □ MMM MMM MMM MMM • Crash Test Dummies – Sterling Sound • T. Jensen □ I'll Stand By You • Pretenders – Gateway Mastering • B. Ludwig □ All For Love • Adams/Stewart/Sting – Gateway Mastering • B. Ludwig □ Wild Night • John Mellencamp – Gateway Mastering • B. Ludwig □ Endless Love • Luther Vandross & Mariah Carey – Gateway Mastering • B. Ludwig □ The Star Spangled Banner • Brandon Marsalis & Bruce Hornsby – Gateway Mastering • B. Ludwig □ I'm Forrest...Forrest Gump • A. Silvestri, Conductor – Ocean View Digital • J. Gastwirt □ Duets • Frank Sinatra – Capitol • L. Walsh Sterling Sound • T. Jensen □ I'm Gonna Be A Wheel Someday • Sheryl Crow – A&M • D. Collins □ Came To My Window • Melisso Etheridge – Gateway Mastering • B. Ludwig – A&M • D. Collins □ Circle of Fire • Sam Phillips – Gateway Mastering • B. Ludwig – A&M • D. Collins □ Basket Case • Green Day – Gateway Mastering • B. Ludwig □ All Apalogies • Nirvana – Gateway Mastering • B. Ludwig □ Daughter • Pearl Jam – Gateway Mastering • B. Ludwig □ Sabotage • Beastie Boys – Capital • K. Reeves – Future Disc • T. Baker □ Longview • Green Day – Gateway Mastering • B. Ludwig □ Go • Pearl Jam – Gateway Mastering • B. Ludwig □ Black Hole Sun • Soundgarden – A&M • D. Collins □ 99 Ways To Die • Megadeth – Gateway Mastering • B. Ludwig, B. Lee □ I'm Broken • Pantera – Sterling Saund • T. Jensen □ Spoonman • Soundgarden – A&M • D. Collins □ Leave That Thing Alone! • Rush – Gateway Mastering • B. Ludwig □ All Alone • Joe Satriani – Gateway Mastering • B. Ludwig □ Vs. • Pearl Jam – Gateway Mastering • B. Ludwig □ Superunknown • Soundgarden – A&M • D. Collins □ Sleeps With Angels • Neil Young & Crazy Horse – Ocean View Digital • J. Gastwirt □ Under The Pink • Tori Amas – Gateway Mastering • B. Ludwig, L. Clark □ God Shuffled His Feet • Crash Test Dummies – Sterling Sound • T. Jensen □ Dookie • Green Day – Gateway Mastering • B. Ludwig □ The Downward Spiral • Nine Inch Nails – Future Disc • T. Baker □ I Don't Want To Know • Gladys Knight – Future Disc • S. Hall □ If That's Your Boyfriend (He Wasn't Last Night) • Me'Shell Ndege Ocello – Sterling Sound • Tom Coyne – Future Disc • S. Hall □ Always And Forever • Luther Vandross – Gateway Mastering • B. Ludwig □ Practice What You Preach • Barry White – A&M • D. Collins □ II • Boyz II Men – Future Disc Systems • E. Schreyer □ Just For You • Gladys Knight – Future Disc • Steve Hall □ Plantation Lullabies • Me'Shell Ndege Ocello – Future Disc • S. Hall □ Songs • Luther Vandross – Gateway Mastering • B. Ludwig □ U.N.I.T.Y. • Queen Latifah – Future Disc • T. Baker □ Nuttin' But Love • Heavy D & the Boyz – Future Disc • E. Schreyer □ Shut Up And Kiss Me • Mary Chapin Carpenter – Georgetown Masters • D. Cobb, C. Grier, D. Purcell □ Is It Over Yet • Wynonna – Georgetown Masters • D. Cobb, C. Grier, D. Purcell □ Independence Day • Martina McBride – Georgetown Masters • D. Cobb, C. Grier, D. Purcell □ Thinkin' Problems • David Ball – Georgetown Masters • D. Cobb, C. Grier, D. Purcell □ I Sweor • John Michael Montgomery – Master Mix •H. Williams □ Blues For Dixie • Asleep at the Wheel with L. Lovett – Georgetown Masters • D. Cobb, C. Grier, D. Purcell □ When You Say Nothing At All • Alisan Krauss & Union Station – Georgetown Masters • D. Cobb, C. Grier, D. Purcell □ What A Crying Shame • the Mavericks – Master Mix • H. Williams □ Baby Likes To Rock It • the Tractors – Georgetown Masters • D. Cobb, C. Grier, D. Purcell □ The Devil Comes Back to Georgia • J. Cash/M. Stuart/T. Tritt – Georgetown Masters • D. Cobb, C. Grier, D. Purcell □ Silver Threads and Golden Needles • D. Parton/L. Lynn/T. Wynette – Georgetown Masters • D. Cobb, C. Grier, D. Purcell □ Young Thing • Chet Atkins Georgetown Masters • D. Cobb, C. Grier, D. Purcell, J.Russell □ Tribute to the Music of Bob Wills & the Texas Playboys • Asleep At The Wheel – Georgetown Masters • D. Cobb, C. Grier, D. Purcell □ Stones In The Road • Mary Chapin Carpenter – Georgetown Masters • D. Cobb, C. Grier, D. Purcell □ The Song Remembers When • Trisha Yearwood – Georgetown Masters • D. Cobb, C. Grier, D. Purcell □ A Deeper Shade Of Blue • Del McCoury – Air Show • D. Glasser □ When the Roses Bloom In Dixieland • the Osborne Brothers – Nashville Record Prod. • J. Eberle □ Like We Used To Be • the Seldome Scene – Air Show • D. Glasser □ The Great Dobro Sessions • various artists – Air Shaw • D. Glasser □ The Garden • Michael Nesmith – Oceon View Digital • J. Gastwirt □ Out Of The Loop • Brecker Brothers – Masterdisk • S. Hull □ Mystery Lady • Etta James – Georgetown Masters • D. Cobb, C. Grier, D. Purcell □ African Skies • Michael Brecker – Masterdisk • S. Hull □ Palmas • Eddie Palmieri – Gateway Mastering • B. Ludwig □ Danzan (Dance On) • Arturo Sandoval – GRP Records • M. Landy □ Going Public • Newsboys – Gateway Mastering • B. Ludwig, B. Lee – Georgetown Masters • D. Cabb, C. Grier, D. Purcell □ Squint • Steve Taylar – Gateway Mastering • B. Ludwig □ The Light Inside • Gary Chapman – Master Mix • H. Williams □ Mercy • Andrae Crouch – Future Disc • T. Baker □ The Door • Charlie Daniels – Master Mix • H. Williams □ I Know Who Holds Tomorrow • A. Krauss & Cox Family – Georgetown Masters • D. Cobb, C. Grier, D. Purcell □ Songs af the Church— Live in Memphis • Albertina Walker – Master Mix • H. Williams □ Matters Of The Heart • Commissianed – Master Mix • H. Williams □ Join The Band • Take 6 – Future Disc • E. Schreyer □ Master Sessians Valume 1 • Cachaa – Gateway Mastering • B. Ludwig □ La Diferenzia • La Diferenzia – Master Mix • H. Williams □ Strange Pleasure • Jimmie Vaughan – Gateway Mastering • B. Ludwig □ Ritual • Le Mystere Des Vaix Bulgares • Bulgarian State TV Female Vocal Choir – Gateway Mastering • B. Ludwig □ Third Annual Farewell Reunion • Mike Seeger – Air Shaw • D. Glasser □ My Life • Iris DeMent – Georgetown Masters • D. Cobb, C. Grier, D. Purcell □ Swamp Ophelia • Indigo Girls – Gateway Mastering • B. Ludwig □ Rise and Shine • Aswad – Future Disc • E. Schreyer □ Strongg • Black Uhuru – Future Disc • E. Schreyer □ Reggae Dancer • Inner Circle – Sterling Sound • T. Coyne □ Love & Liberte • Gipsy Kings – Gateway Mastering • B. 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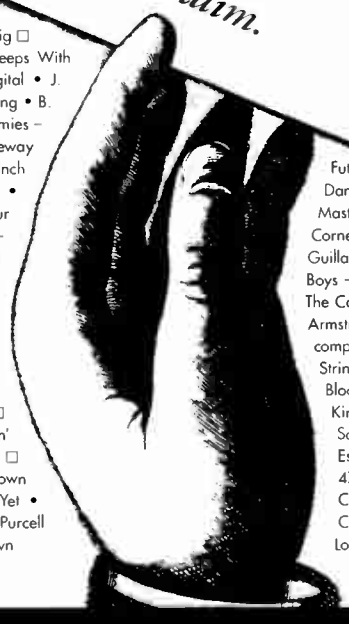

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section members are exposed to a variety of careers in audio, first-hand opportunities to talk with industry professionals and excellent networking possibilities for internships and future employment.

Under the guidance of an educator, students run the sections, select the topics for their meetings, contact speakers, arrange tours and field trips, negotiate contracts, elect officers and do all of their section's budgeting, planning and administrative chores. The University of Miami students are currently working to bring Russ Berger, an acoustical consultant from Russ Berger Design Group in Dallas, to lecture on architectural acoustics. They also are arranging a tour of Post Edge, a video post-production facility in Miami. Last semester, they toured Orlando's Disney Studios, where they saw a broad range of recording facilities and got a demonstration of Disney's computer-based audio systems for theme park attractions and animation.

Other student sections find equally interesting topics. The University of Colorado at Denver section invited Vanessa Ament, an independent Foley artist from Los Angeles, to speak at one of its meetings. The students knew about Ament through a newsletter she publishes for Foley and sound effects artists. The students negotiated the stipend, travel expenses and arranged for the use of the projection room at the Denver Center of Performing Arts. Together, they created a sandbox, and Ament "walked" the actors on film. She told

—CONTINUED ON PAGE 186

Coming Soon to a Section Near You...

AES Mission Statement: To better define and explore career opportunities for students at the junior high and high school levels interested in pursuing a career in the field of audio, provide access to professional engineers, producers and performers and draw enormous attention toward audio education.

This year's AES convention in San Francisco was very exciting for students, educators and anyone else interested in education. The AES devoted an entire workshop to discussions on the AES in the Schools project. This project is being developed by the Diversity Working Group headed by western regional vice president, Laurel Cash-Jones, in alliance with the Educational Committee, headed by Roy Pritts, a member of the Board of Governors. The AES envisions a program that will attract young people in secondary schools to the audio profession and provide information and resources that will help them progress through the industry. The group is motivated to provide materials that ultimately will recruit a diverse and qualified group of people.

The working group will initially focus on production of a counselor's kit with information on career opportunities in the audio field, a directory of facilities and their education programs and suggested areas of study to meet entrance requirements for higher education. The group's long-term goal is to develop an aggressive outreach program in secondary schools. How these goals will be implemented is still being determined, but the vision is in place.

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FROM RECORDING SCHOOL TO RECORDING STUDIO

What Facilities Look for at The Entry Level

by Barbara Schultz

Jobs in the music business, like in most industries, are pretty slim pickin's. And for the aspiring engineer just coming out of recording school, the quest for a position in a studio is full of traps. For instance: You can't get a job if you don't have experience, but you can't get experience if you don't have a job.

In an effort to demystify this and other job-seeking dilemmas, *Mix* interviewed the powers that be at ten of the country's top studios. We asked them to explain what entry-level positions they offer and what processes are involved for someone to go from that coveted gofer position or internship to assistant-engineer status. The facilities we approached are liberally sprinkled geographically and handle a variety of projects, from cutting-edge alternative rock bands to orchestral scores for feature films. Some discouraging words were offered, but don't give up hope. There's a decent sampling of success stories as well.

The internship is an opportunity not only to expose a young person to a facility like ours but also for us to get exposed to them—get a sense of their work habits and their personalities.
—Hank Neuberger

HANK NEUBERGER

Operations Manager

Chicago Recording Company, Chicago

The positions that I most often have an opportunity to hire for, entry-level positions, are runners, which are basic studio helpers, and occasionally assistant engineers. In both cases, I look for these qualities above others: motivation and personality. Entry-level employees

ILLUSTRATION: CHARLIE POWELL

who convince me they are dying to get into this industry are the ones that are going to make an impression. Their experience and their education are things I note, but they are of secondary importance. The reason for that is pretty straightforward: At the entry level of this industry, you pay some dues. Salaries aren't great, hours are long, and if you can't envision yourself being an engineer down the line, then you probably shouldn't take a shot at it. In interviews, I ask them specifically what they see themselves doing in three or four years. If they can convince me that they're going to do whatever it takes to turn themselves into engineers, then that makes an impression on me.

I have a number of interns here all the time, and I occasionally am able to hire from that pool of interns or from the pool of people who have recently interned here. So, the internship is an opportunity not only to expose a young person to a facility like ours but also for us to get exposed to them—get a sense of their work habits and their personalities. So, it works both ways. A number of our engineers started out as interns. There's an engineer now who is very popular named Chris Shepherd, who has just mixed an album by KMFDM on TVT Records, and Adam Schmidt on Warner Bros. Records. Chris is a very good engineer, and he started as a beginner here, right out of Full Sail. Or, I'll give you a better example. Years ago, Brad Wood, who is one of the hottest producers in alternative rock [Liz Phair, Veruca Salt, Sunnyday Real Estate], started as a runner here. He had the intelligence and the motivation and the ambition to just stick with it through some very difficult times when he was building his own studio [Idful Music]. I just can't be happier that someone who paid the kind of dues Brad did is now enjoying some success. He deserves it all.

I don't think going to recording school is a prerequisite at all. I would say that I've had some good luck with people out of Full Sail. They seem to have a little more realistic view of what it's going to take to get into the busi-

ness. Once you get your foot in the door, it's an opportunity, and a facility like ours isn't going to turn somebody into an engineer, but they're going to have an opportunity to turn themselves into engineers.

You have to have patience. You have to be understanding. You've got to be able to let things roll off your back. You have to be treated like a peon and not let it affect your ego.
—Nina Bombardier

NINA BOMBARDIER
Studio Manager
Fantasy Studios, Berkeley, Calif.

Usually, the first position we hire for is a gofer, and they have to do everything from run errands to get lunch to set up studios to doing tape inventory and helping maintenance. It's all about how busy the studio is, and the busier it is, the more experience you'll get as a gofer. The slower it is, the more hanging around and cleaning you're going to do, and you won't get the chance to help on sessions.

Education is not that big a deal to me. You could go to Berklee School of Music and College of Recording Arts and all of these places, but if you don't have a personality and you don't have the basic work ethic, you're worthless to me. You have to have patience. You have to be understanding. You've got to be able to let things roll off your back. You have to be treated like a peon and not let it affect your ego so much. You've got to have a good sense of humor. You really have to work with so many different types of people, from the hip hop guy to the classical violinist, and their personalities are different. Their requests are different. Those kinds of skills are not taught in school.

From the gofer position, we usually move them into some type of tape-copy job so they learn our tape-copy room, where we do everything from making cassettes from DAT or ½-inch or ¼-inch, with SR or regular Dolby, maybe making some video copies and learning editing. From there, you have to hope the studio is really busy with major recording dates so that you get to start learning microphone choice and placement, outboard gear patching. That's when we really start seeing if somebody has it or doesn't have it, how quickly they learn and how adept they are. And then, hopefully, the person can start assisting on sessions when an assistant is needed, and maybe start engineering some little dates.

At our facility, we're much more diversified than just a straight-ahead recording studio. We do Foley here, ADR, loop group and voice-over work, and that requires video lock-up, which requires two engineers. So another place where you might be able to move up would be doing sheets that keep track of all the times and the slots on the video and the audio, because the engineer has to be punching in.

One of my guys, Richard Duarte, started as a gofer, and he had some experience in the video world. He also had school experience—a degree in broadcasting from Boston University. He was a gofer for about a year and then he moved into tape copy, and then he started assisting in sessions and also started learning Foley. So he became a second in Foley and ADR, and now he's firsting Foley and ADR and firsting recording sessions.

People who work here tend not to leave. There are so many studios that hire what they call assistants, and they're interns. In other words, not paying them any money, and they have them do everything from assist sessions to answer the phone to clean the bathroom to run for sandwiches to work on the weekends, and it's so unfair. I think a lot of studios have taken advantage of that intern situation. Here, when you're hired, you're put on salary. You have paid vacation; you have paid sick days. After you're here six months, you have a life insurance policy. After you're here for a while, you have a 401k retirement plan. We have full health benefits. I'm pretty careful about who I hire, and the people who work here feel a bit more loyalty to the company because they're also getting something back.

JIM TOMLINSON
Facility Manager
Margarita Mix, Hollywood, Calif.

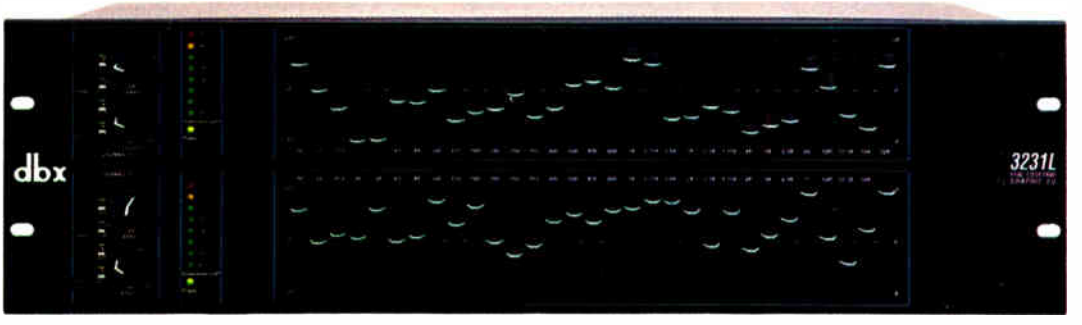
At Margarita Mix, we hire for various jobs, starting with the entry-level runner position on up to first engineer. The decision to hire someone depends on if they've got the experience that fits the specific position we're trying to fill. But the basic requirements to be an assistant engineer are at least some experience as an assistant, computer literacy and a good technical aptitude. They should have the ability to understand signal flow, audio-for-video, and good interpersonal skills are a must, because they have to constantly communicate with the engineers and our clients, often acting as a buffer between them.

Some college is fine. It never hurts to get a good education, but it depends on the person—their learning abilities and the amount of time we have to train the individual. We have a reputation to maintain, so we need somebody who can, with a minimum of training, assist the engineers with whatever they need, which can range from loading and editing material in the DAWs to logging track sheets to pulling sound effects and music to answering questions for others in a session—questions that range from what types of tape we have to something as basic as how the phone works. We also try to cross-train our assistants in many areas. An assistant must also be able to run the central machine room and be prepared to fill in as a relief engineer.

I will say that I think the best people in the industry start at the bottom and work their way up.
—Jim Tomlinson

Whenever possible, we try to promote from within. I'd say it's about 50-50 between people we promote from within and those we have to hire from the outside. I will say that I think the best people in the indus-

We understand the competition has been making some noise.



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try start at the bottom and work their way up.

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TREVOR FLETCHER
Studio Manager
Criteria Recording, Miami

We do everything from Bolivian salsa to death metal, so you've definitely got to have an open mind and be willing to handle adverse conditions. I've had people come in who went to school for a long time and think that they're prepared for the career, and 15 minutes into an internship, they decide maybe they should be delivering mail.

I'll give you the world's most hideous intern story. I had a guy come out of a really tiny school in South Florida that wasn't necessarily known for producing people who would get involved in the audio industry. The guy's background was, I believe, in air conditioning repair. He had very definite ideas about the kind of stuff he'd like to do, but he realized early on that he was going to have to re-evaluate his life in terms of relationships and in terms of desires...and in terms of did he want to be rich or did he want to be an engineer, because the two are often pretty far apart. He decided that he really wanted to do it. He came here and exhibited great amounts of energy, common sense and desire.

One day, we got a phone call from a 95-year-old widow whose husband's last words were on a microcassette. He'd died two days earlier, and she wanted to have a cassette because she couldn't play a microcassette. So, she left the cassette at the front desk. It was in a napkin or something, and nobody was immediately available to grab it. But our garbage guy was cleaning up at night, and it was just in this paper that looked like somebody had blown their nose on it, just lying there on the desk, and he thought he was doing a good thing by throwing it out.

So, the next morning, I came in and nobody could find it. It's not in the proper tape storage place, because evidently nobody knew quite how to handle it. It's gone, and I'm thinking, "Oh, great, this woman is going to have a coronary and die and join her husband." So, the only thing we can think of is the cleaning guy must have tossed it. Well, if you've lived in South Florida on a mid-August day when the temperature is 102° with 90 percent humidity, not to mention we have five rooms, and so we've got rock 'n' roll bands eating pizza and KFC and stuff...To make a long story short, he dug through garbage filled with maggots and spoiled food, found the microcassette, came in, made the tape, gave it to the woman, and we hired him. His name is Keith Rose, and he's assisted for four or five years here. He's doing a lot of in-house engineering projects and works really hard. And that's what I'm looking for. People who are less concerned with, "Okay I've been here ten hours today, I'm going home," than they are with saying, "I'll stay here however long it takes. Is there somebody who can show me how that synchronizer works with timecode if it's got dropouts?"

I'm looking for people who are less concerned with, "Okay I've been here ten hours today, I'm going home," than they are with saying, "I'll stay here however long it takes." —Trevor Fletcher

To take on an intern, they would have to have graduated from some type of program, be it Full Sail, University of Miami, University of Wisconsin, USC, Middle Tennessee State University, one of those places, but basically, we look to see that they have some type of background aside from them and their friends singing with a karaoke in their garage. They should have paid some dues as far as having equipment break down and dealing with it, maybe some live sound stuff, obviously a good school background.

KELSY BOYD
Studio Manager
Smart Studios, Madison, Wis.

We don't require that anyone have a formal education, but they have to know the gear well: They could walk into the studio and have at least a basic idea of how things work. They have to know their way around a console; even if they don't strictly know our console, they have to be able to figure it out. They should be familiar with mics, outboard gear and tape decks; being able to align the tape decks is a biggie for us. I guess our definition of an assistant engineer is, if an outside engineer comes into our studio and has never been here before, our assistant has to be able to answer any questions they might have about any of the gear that's in the studio. Before I let someone assist on something, I really want to know that they're familiar with the ins and outs of the studio.

For a very, very entry-level person, I have them just sit and observe a session, like maybe a mix session, right away. They just have to sit in the corner and watch what's going on, and if the engineer says, "Go get me some coffee," or "Go get me a piece of gear," then that's what they're there for. We also really encourage anyone who is affiliated with the studio, if there is down time, to take a reel from our stock and maybe put a mix up and get familiar with the gear on their own time. They don't get paid for that, but it's something that's expected of them; you don't learn how to use the gear during a paying session.

We also encourage engineers who are just starting out to hustle up their own projects, and I always give the bands that they get lined up a really good deal on studio time, even if it's way below our quoted rates.

We also encourage engineers who are just starting out to hustle up their own projects, and I always give the bands that they get lined up a really good deal on studio time. —Kelsy Boyd

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It's usually some friends of the engineer, a band that's really never had any experience in a bigger studio, so there's a benefit for both of them. It gives our engineers some experience, and it also gives a band a chance to record.

We just hired our first intern, Mike Zerkel, who went to Full Sail for a year. With Mike, as soon as he started, we threw him right into working. He sat in on sessions for the first couple of weeks, I would say, but we started him pretty quick after that, doing some minor repairs and some smaller sessions. We hired him full-time after his internship was over. Mike understood what he needed to do to get hired, which included being willing to sacrifice everything, at least right away, for his career. In Mike's case, he worked like 14-hour days the first couple of months here for free just to show what he had to offer and that he really wanted to work for us.

A lot of people think that when they get into a giant studio like A&M or something, that's cool, but I think it might take a lot longer to actually get into working at what you were trained for. With a mid-sized studio like ours, everyone is very important to the studio. We rely on everyone to do a lot of different things, not just engineer. Everyone has to wear many different hats here.

PRESTON SULLIVAN
Studio Manager/Producer
Sixteenth Avenue Sound, Nashville

Recently, we hired a guy by the name of Pete Martinez. He came here to intern right out of Middle Tennessee State University. It was a nonpaying position; it was part of his education. It ended up that the second we had at that time was finally getting to the point where he was saying, "It's too many hours; I'm tired; I want to first some more and don't want to be a second anymore," and he didn't like the pressure. So, Pete was here at the right time, and he's done an incredible job. He didn't finish his education. He just jumped right in and skipped the few classes he had left. I think he spent an awful lot of time at that school with the maintenance program there—in the studio more than in class. He started out mainly just helping the second who was here on the SSL. We put him up in the B studio, and he'd help clients with everything an intern does: from getting cappuccino for clients to setting up gear and documenting things. He interned here for about four months. It was quick, but he was ready. I think he's one of the best seconds around Nashville right now. The records he's done are from Bon Jovi, to Stevie Wonder with Take 6, to Mark Knopfler; he's done some major, major projects.

Pete coming from MTSU was helpful. MTSU has an SSL, so the kids coming out at least have an immediate working knowledge to where they can walk in and help our staff guy start documenting. They can start doing Total Recall on the board, those type of functions. Those are absolutely important for someone we take on as an intern or an assistant. Also, they must be computer-literate, especially for our A [SSL] room.

The main thing is we need kids who know how to align tape machines. A lot of these kids come out of these programs and don't even know how to align a tape machine, and I think that is just a disaster. If you're going to start to work for me, and a client is going to be in at 10:00 a.m., and they want to drop their tapes off the night before to get an alignment done, at least you have to be able to start there and set that machine up correctly. And if they can't do that, then you know what? I can't even help them get five bucks an hour for an hour or two. That's been one of my biggest complaints about kids coming out of all these big programs. And I want a kid with ears. I really like kids that are musicians as well, not just the technical guys.

I don't care about their education and how much they spent on the school. I care about what I see in their eyes and their heart and their desire.
—Preston Sullivan

I think the negative side about this whole internship program is that the kid who has no education—who didn't go to one of these schools that has a program but was out there in clubs for the last six years, running around with bands, really learning live sound or just learning about sound—goes to L.A. or New York or Nashville and says, "I want to work in a studio now. I think I'm ready," and the entry-level position is gone because of the intern program. In the old days, maybe you'd need somebody to sweep the floor and set up the room for tomorrow, and you had that kid with that burning desire. His parents didn't understand what he was doing, and nobody else understood what he was doing, but he wanted to be an engineer and knew that this was his goal in life. So, I try to keep a real open mind about that, and I don't care about their education and how much they spent on the school. I care about what I see in their eyes and their heart and their desire, and you can get some great kids that way.

SHAWN MURPHY
Scoring Engineer
Todd A/O Scoring, Los Angeles

Insofar as it involves scoring, I suggest and hire assistant engineers for the stages that I work on, and when I go to other studios, I hire whatever independent seconds I need. I think, basically, that all the technical stuff has to be a given. You don't look for someone who happens to be a hotshot technical person because you assume that they know how to do that job. Now, what goes with that, in my end of it, is they have a lot of experience. They are obviously capable of operating the machinery. They know about picture sync and synchronizers, and they know about setting up an orchestra and proper positioning for microphones. All of that is a given. Some assistants may have a little better expertise in digital editing, and some may have a little better expertise in synchronizers, and some may have a little better expertise in working the stage, but they all are of extremely high competence in all areas. None of that is what you learn in school, of course. The most important thing to me is their behavior: their booth etiquette, their people skills.

I never interview people. I always use people I know, either because they were a second at a studio where I worked, or because a friend or another engineer or associate sug-

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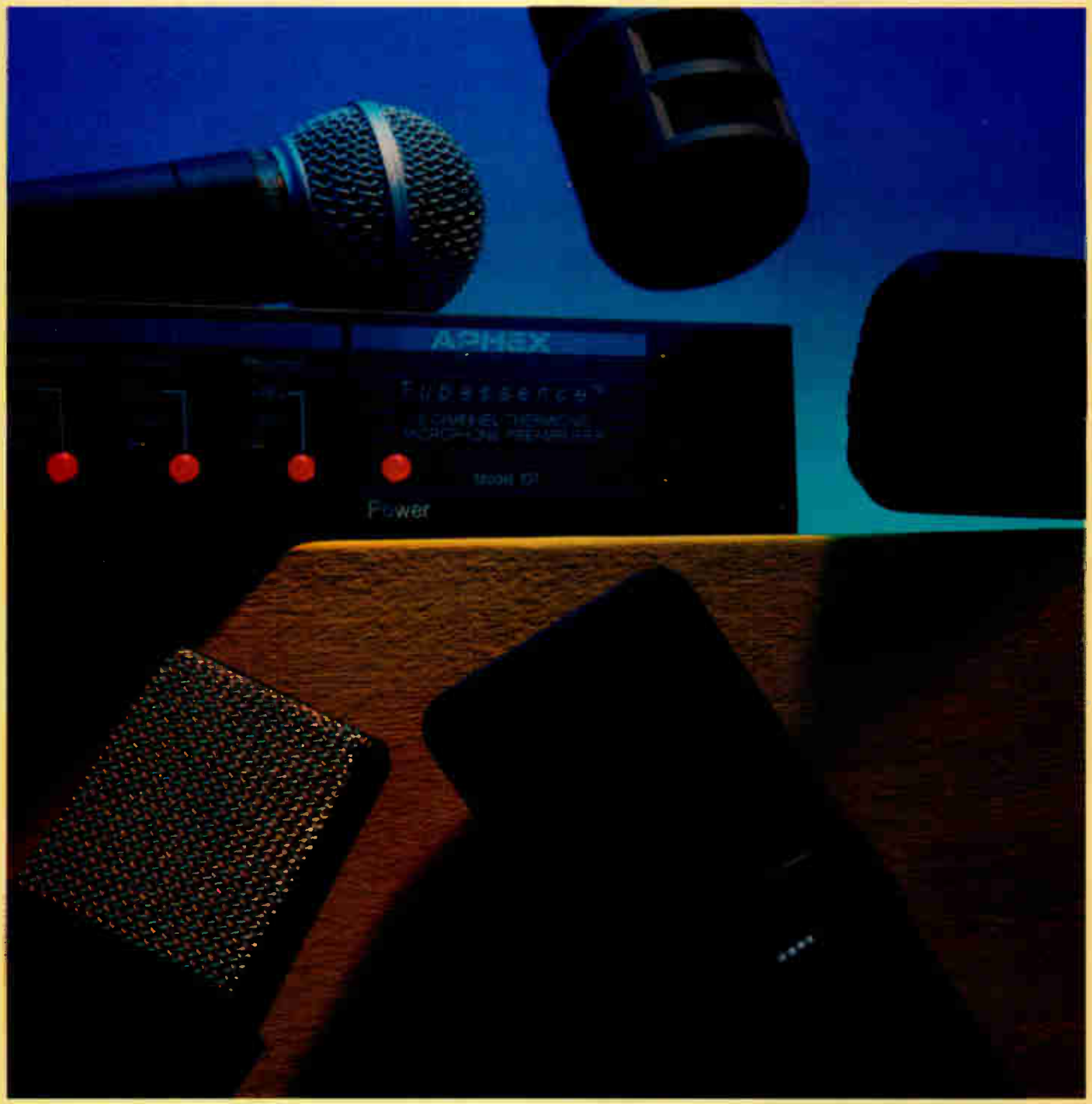

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gests them or knows them. I don't mean this to sound aloof or stuffy, but on the level of my sessions, which include big orchestras, there are no entry-level people. I don't think there's anyone that I work with in music scoring now that I haven't known for ten years.

The common comment I encounter when I talk to students or when I give a class or seminar is the question of, "How do you get a job, and what are the important skills?" And when I ask them, "What's your timeline?" most of the students say, "I see myself as assisting for a few years and then sitting in the chair. You know, maybe two or three years down the road." Then I say back to them, "Well, I've been at this for 30 years, and I really only sat in the chair in a full-time way after about ten or 12 years, and a lot of people never sit in the chair—if you aspire to this level of work."

I've always told students that I don't think recording schools are the way to go, to be honest. I think that having a good educational background, good people skills, a good sort of...I hate to call it liberal arts, because it's a little more than that, but a good educational background is the most important thing. Recording schools are great if you want to pick up the particular technical knowledge that you might need to bolster your background, but I would rather meet someone who has a B.A. in some other subject, like music for instance. The problem is you see people come to you that are electronic engineering people, and some of the recording schools have very strong electronics backgrounds, but what you find is those people have the worst people skills of all, and so they're the least likely to make their way in the business. You get the sort of person who's attracted to pure science, who follows that course of study, which is not an interactive one, necessarily. Whereas, if you're in the arts, in music particularly or the arts in general, you might have a much more interactive course of study, where you're always having to give and take and interact and get other people's opinions.

REED RUDDY
Studio Manager
Bad Animals, Seattle

Really what I look for, first and foremost, is just good people who really want to make it in this business—more so than people with tons and tons of knowledge. I think anybody who's in it knows it's a tough row to hoe to get anywhere in the biz. So, we look for somebody who's driven, somebody who will be an intern for us for a period of time and do all the schlep work, from taking out the garbage to getting food for people, all those things.

After you're an intern, if you prove you're somebody we want to work with, we would start you out as a night receptionist or a runner. Typically, the person is out of school. Recently, we've gotten people from MTSU, and they're good because they have a full four-year college program with an emphasis on recording. I have another one starting here later this week. Or the University of Massachusetts at Lowell is a good school. We also have a lot of people from Full Sail.

We have people here as interns for three months, which I think may be longer than some, but it gives them an opportunity to really see what we do. I think that in our operation, with six studios—three music rooms and three rooms where we do audio for TV, film and radio work—there's a lot to grasp here and a lot of different parts of the business to actually see and understand. We have a list of things we like the interns to do each day. The ones we hire are people that will find something else when they're done with their list, who I'm not having to follow around every day and go, "Are you doing this?"

One of our people, Tom Smurdon, went to Full Sail. He's been here for four years, and he's great. I think he'd been away from the business for a year or so, trying to get gigs, before he hooked up with us. He started out taking all sorts of verbal abuse from us, and toward the end of his internship, things changed. Lots of times, you can be done with your internship and nothing comes up for a while. The people who really want to do it will stay in contact with us here. Tom, all of a sudden, was in the dub room. He's working in there making tape copies now, and he's well on his way to being an assistant engineer.

We have a list of things we like the interns to do each day. The ones we hire are people that will find something else when they're done with their list.
—Reed Ruddy

We're contacted often by the schools. Full Sail, for instance, they call us. Also MTSU and U. Mass. They're talking with us more and more. We want a relationship [with the schools], so they know the type of person we're looking for. I get a lot of resumes, and I'm amazed at how many people don't call me back. They just wait for me to call them, but I want somebody who will follow up. That's just what you do after you send a resume. You call the people and see if they got it and try to set up an appointment. One question I don't like to hear from people I do interview is, "How much money do you make?" because then I know that's all they're thinking about. It takes a long time to make any money in this business, and there are no guarantees.

ROBERT SOLOMON
President and Owner
Woodland Digital, Nashville

We just do interns in the maintenance and tech aspects. They do minor wiring, mainly, and lots of soldering, and they learn about maintenance. We don't know yet about how it will work to promote them. We just had our first intern this year. We got a summer intern, and then we picked up a fall intern. The current one is Elijah Shaw from MTSU. Our chief engineer, John Magriff, interviewed quite a few before he was willing to take one.

Generally, our second engineers have come out of some kind of school like Full Sail. Nowadays, when you have to work with very, very intense automation systems, and each automation system is completely different, we're seeing that an education at one of these schools can be really helpful. But it's not the be-all and end-all. The last second we hired is Sandy Jenkins. We liked her because she had dedication, willingness to learn, willingness to

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work, had gone through some kind of recording school and had worked for five or six other studios around the country, and then mainly it was the recommendations she got from her former employers. And we want all of our seconds to work together and to fit in. When there's setup or teardown, we want all of our seconds to converge on that one room and all work together, regardless of whose session it is, and that gets them close together.

Second engineering is all about learning and understanding the equipment. It has nothing to do with how good of an engineer or how musical they are, and that's a little bit different than it used to be. It used to be you had to have a real musical sense to get that far. It's different now because we have people who are just seconds and only seconds. All you have to do is be familiar with the equipment and know how to get into one particular function or another of the console or any aspect of the equipment, and to be able to convey that understanding and knowledge to the first engineer, and to be there on the spot and at their beck and call.

Our second engineers don't get coffee. They don't run errands. Their job is to know every bit of equipment in that room, where everything is, the quirks of all the different pieces of equipment. They have to be completely versed on the automation system, signal flow and how to keep things jumping in there. Almost 99 percent of the time, we get guest first engineers and we supply the second. [At this point, Robert called to two of his second engineers, Marc Frigo and Sandy Jenkins, and asked what they considered the most important information they'd acquired along the way to becoming second engineers. Marc answered, laughing, that he "acquired the knowledge that he wasn't going to make a lot of money." Then he thought a moment and said, "tape machine alignment." Sandy answered, "signal flow."]

One of the things that we do is that we never start an engineer doing engineering. Marc was hired to clean toilets. We want to see how dedicated they are at first, before we even got to the studio aspect of it. Sandy was first hired to fill in at the front desk and clean, and that lasted all of two weeks with her. This whole facility operates on second engineers. They control everything, and without them, the whole life and soul of this facility and company would be completely different.

CAROL DAVIS

Studio Manager

Record Plant, Hollywood, Calif.

We like to hire from within—work people up through the ranks—and that process can take up to a couple of years. We would usually hire for a runner position, and that person would possibly be a graduate of a school like Full Sail, somebody that's really ambitious and wants to be an engineer. Then we have a training program that, after they've been here for six months, they can qualify for based on not only seniority but on their energy level and how involved they'd like to get in the studio. And then we call them "tech trainee," and they're working with the tech department on setups. They start to shadow sessions. They will be maybe a "second second" on tracking dates, helping the assistant that's already on it. Then, if they can get up to par, they're tested by the tech department and it's determined whether or not, assuming there's a position available, whether or not there's a place for them in the rooms.

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The entry-level runner position is a paid position with menial duties, but what I try to do here is, when we have a demo project of one of our assistant engineers, I try to get as many of the people as I can involved in at least sitting in on the session. They've got to sit in on a lot of sessions before they can start to comprehend what's going on around them.

We have a guy here right now named Chandler Tucker. He's just great. He's like, "Oh, God, is there any way I can shadow on that?" and he doesn't get paid for that, but he's learning things, and it's an exciting thing for him. He's a young kid, and he's doing drums with Duran Duran, and that's pretty thrilling in itself. He's a runner/trainee. He's going through the program right now, and it could take him another year, but we have a lot of faith in him. He's been here maybe a year. He came out of the L.A. Recording Workshop in Studio City.

We don't really like to work on interns. I do for the booking department once in a while, for data entry or something. Beverly High School has a program, and I've been using those kids, but that's more on the business side. On the runner side, it's kind of awkward because it's hard for me to watch them.

I would say, once you get your education down, get a professional resume done up and pick the studios you really want to work at and be willing to work as a runner. Financially, that's tough in L.A. These kids don't make much money, and it's not an easy city to live in, even making a lot of money, so you have to be prepared to have roommates or whatever living situation helps you get through a good two to four years of making hardly any money. I see a lot of kids who come here from different parts of the country, and they're really excited but they can't make ends meet. They're broke, and their cars are broken down all the time, and they don't really know what they're going to do, and then they start to get depressed, and once they start to get depressed, they lose their energy and their excitement. So I think keeping yourself motivated through it all, that's the key to making it in anything. ■

Barbara Schultz is Mix's copy editor. She started out answering the phones, too.

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GEARING UP for School

by Adam Beyda

Trade-oriented education programs and schools perform a vital service, filling a gap between traditional education and on-the-job training, and audio engineering programs are no exception. Reading Sartre may help an engineer understand the emotional nuances of the angst that the band in the studio hopes to sonically convey, but how might one actually get that pain to tape? That's where special training comes in.

Audio engineering education comes in a variety of formats, from an afternoon seminar to a four-year bachelor's degree, but all have one goal in common: to train aspiring professionals. And any program offering instruction in sound and music recording must have access to the equipment necessary for these endeavors.

Access to equipment is an important part of any engineering program, but it's just that—a part. Although there's a close connection between skills and gear, in the same way that the best stuff in the world doesn't guarantee a hit record, having the snappiest gear in school does not make for a quality education. Schools must be sufficiently equipped to enable students to learn what they'll need to know, but it's important not to confuse the tools with the ends. After all, it's not about who has the most toys—a well-rounded curriculum and an attentive, motivated faculty (combined with a well-considered plan for acquisition of gear) will surely give students more of the basic knowledge and experience they're after.

RECORDING PROGRAMS, EQUIPMENT AND MANUFACTURERS

Still, possession and acquisition of gear is a necessary and important consideration for recording schools, and keeping abreast of technology is an ongoing struggle for industry educators. *Mix* asked a sampling of recording program administrators how they meet this financial and informational challenge, asking in particular if schools have formed special relationships with equipment manufacturers.

Both manufacturers and educators supply vital resources to the industry—gear and personnel, respectively—and schools provide an important training ground for future users and consumers of

ILLUSTRATION: GREG SPALENKA

equipment, so the connection seems natural. In fact, many schools benefit from manufacturer support, formal and informal, but there are certainly no rules, and a lot of confusion and misunderstandings persist. Some administrators complained of poor or indifferent treatment from manufacturers. Although no school expects manufacturers to dole out free gear, all would like to establish mutually beneficial ties with manufacturers. But the connection remains nebulous. It's clear, however, that schools and manufacturers have a wealth of resources, information and experience to share with one another.

CONSERVATORY OF RECORDING ARTS & SCIENCES
Phoenix

John McJunkin, administrative assistant

The Conservatory avails itself of a variety of resources in making curriculum and equipment decisions. The staff are active industry professionals whose work outside the school puts them in touch with industry developments; the school meets several times a year with an external advisory committee consisting of studio owners, producers and engineers who make recommendations; and the school has developed relationships with various recording facilities via its internship program, through which it gleans information about new gear.

McJunkin says the school is in the process of expanding and putting together a new facility, so he has been contacting a lot of manufacturers. "We have benefited from educational discounts to a certain extent," he says, adding that he has encountered some indifference, as well. The school has produced many successful graduates, but McJunkin feels that because it "has not 'cranked out' large quantities of graduates, we are not seen as a major force in recording education yet." He hopes that as the school grows, manufacturers will be more responsive to pleas for cooperation. As is, the school has developed relationships with individuals at Symetrix, T.G.I., TC Electronic and Neotek.

FIVE TOWNS COLLEGE
Dix Hills, N.Y.

Martin L. Cohen, associate dean

Cohen says that for schools to achieve sustainable, mutually beneficial relations with manufacturers, it's important to dispense with flashy bravado and proceed professionally and responsibly, to offer solid commitments backed up by realistic, substantial educational and professional goals.

Five Towns has established relationships with companies in the New York area such as SSL and Sony, which make gear available to the school at a reduced price and frequently visit, maintaining working relationships with the school's professional faculty.

Cohen says that at Five Towns, in order to stay in budget while keeping up with technology, the school will "often skip generations when purchasing gear. For example, we waited for the second version of Pro Tools before purchasing it, thus allowing the price to come down and assuring that the technolo-

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FULL SAIL CENTER FOR THE RECORDING ARTS
Winter Park, Fla.
Gary Platt, senior vice president and director of education

Full Sail obtains state-of-the-art equipment from manufacturers by creating lasting, "win-win" relationships with them. Platt says that many of today's products require specialized training, and companies need help providing training for purchasers and potential purchasers, something salespeople tend to spend too much time on. "It's crazy to have a salesperson wasting the company's sales time training, when at Full Sail we can provide that service better and faster. For this reason, many manufacturers help us to provide a quality representation of their products for training with favorable terms."

The school creates unique relationships with manufacturers of products pertinent to its educational endeavors. "Many companies place product here as a sponsor," Platt says. "Some have given us extremely favorable price breaks, others have used our professional services for video and CD-ROM production tradeouts. Some pay us to provide training where needed. Manufacturers such as Roland provide technical seminars for students throughout the year. Certified graduates of Full Sail are used as resources for training on new products in the field with Roland, as well."

Platt emphasizes that the school's relationships with a wide variety of manufacturers (including JBL, Meyer, Otari, Peavey, Roland, Siemens, Tascam and Yamaha) "are about relationships with people. It takes time to create the friendships and trust that cultivate the kind of bond that will make a deal win-win, but in my experience, it's the only way that it works."

INSTITUTE OF AUDIO RESEARCH
New York City
Miriam Friedman, director

The Institute has a great resource of information about technical developments and trends within its faculty, which consists of industry professionals active in the New York area. The school is in daily contact with leading facilities in the New York area, as they employ many school graduates and supervise student interns—the school benefits from studio owners and managers who offer input as to the training required for entry-level personnel. A formal Program Advisory Committee, comprising a cross-section of industry professionals, makes equipment recommendations to the school, and Friedman also cites participation in the AES and SPARS as providing valuable information.

"At IAR, we are training the future professionals, and therefore those with future purchasing power, of our industry," Friedman says, adding that manufacturers provide a steady stream of guest lectures, presentations and demonstrations, including recent visits by Dolby, Ferrofluidics and Sennheiser. The school also organizes field trips to facilities, institutions and live sound installs, such as a trip to check out the Grateful Dead's setup at a recent Madison Square Garden show.

LOS ANGELES RECORDING WORKSHOP
Studio City, Calif.
Christopher Knight, director

The L.A. Recording Workshop recently ordered an SSL 4048 G Plus with Total Recall and Ultimation. Knight says the school chose SSL because of

the company's outstanding support of educational facilities. SSL is providing staff training, and "in return for their support," Knight says, "our arrangement allows SSL to use our facilities for demonstration and training, especially on the Ultimation." For its video editing programs, the school acquired an Avid Media Composer, and it's in negotiations to become an authorized Avid training facility.

Knight believes training on top-quality equipment is essential to give students the skills necessary to start a career in professional audio or video, and he says that the Workshop is "able to provide this training because of great support from the equipment manufacturers."

UNIVERSITY OF MIAMI
Music and Audio Engineering Programs
Ken Pohlmann, chairman, Music Media Department

Pohlmann says that audio companies support his programs well, and manufacturers in particular provide both studio equipment, and hardware and software tools. Many Miami graduates are employed by manufacturers, and the school has a strong track record of supplying employees to companies who have supported it. "When a corporate VP looks around and sees lots of Miami grads," Pohlmann says, "she's glad she helped us out."

He adds that a lot of manufacturers have supported the program, "but only when they feel we are able to repay them and help recognize their efforts for us." For example, the school does a lot of beta testing of products, and Pohlmann says that bilingual students have translated manuals into other languages. "Faculty members often consult with manufacturers, supplying engineering or training expertise. We have also hosted a number of seminars where manufacturers meet with potential clients in our studios for demonstrations.

"It absolutely doesn't work to hold out your hand and expect manufacturers to arrive with lots of toys," Pohlmann concludes. "They expect academics to work as partners, to help them develop products, train customers and employees, present and future, and to supply them with evaluation reports. When academics and industry can get together, it's a wonderful thing to behold. Best of all, the students benefit from the relationship, and they are, after all, the next generation of movers and shakers."

MUSIC TECH
Minneapolis
Jon Dressel, Recording Engineer course director

Music Tech focuses its curriculum toward supplying students with core information, regardless of changes in technology—information they can apply across technological platforms, even if the school does not have the piece of gear that came out yesterday. For example, Dressel says, the concepts of using a multitrack can be applied to any multitrack system. Dressel says that when faced with the equipment they will use on the job, students can generalize their experience, though he recognizes that it's important that educators apply the principles and theory of recording with current technology in mind. "We purchase gear that keeps our students current with industry trends, but we also approach new technology conservatively, so that we do not teach our students on tomorrow's dinosaur."

The school strives to create alliances with manufacturers that keep the school's educational integrity in-

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tact. "As an example, we would never align ourselves with a manufacturer to equip a room or rooms exclusively for the purpose of low price or no cost for the equipment," Dressel says. The school has found SPARS to be an important catalyst for contact with manufacturers, along with dealers and manufacturers' reps that include the school in demos, lectures and product review. "Although we all love the technology we use," Dressel concludes, "from vintage to state-of-the-art, the bottom line of our industry is service."

UNIVERSITY OF NEW HAVEN
Music and Sound Recording Program

Michael Kaloyanides, director

The acquisition of big-ticket items such as consoles and multitrack recorders is a difficult proposition for any school, and U. New Haven has recently taken out loans for expensive acquisitions. The school "has a yearly equipment/supplies budget to purchase new gear," says Kaloyanides, "and the decision on what new products to get is primarily based on what is educationally most useful. I like to think that we avoid what is trendy in favor of tools that have proven their worth in modern recording."

It absolutely doesn't work to hold out your hand and expect manufacturers to arrive with lots of toys. They expect academics to work as partners, to help them develop products, train customers and employees, and to supply them with evaluation reports.
—Ken Pohlmann

Manufacturers and dealer reps regularly lecture and give demos at U. New Haven, and the school has a variety of relationships with manufacturers. When the program started in the early '80s, Allen & Heath provided it with three refurbished consoles on indefinite loan. Since then, when the consoles have needed service, A&H people have turned service calls into troubleshooting and repair workshops for students.

Kaloyanides points out that it's difficult to get manufacturers to extensively loan or donate expensive gear, because such gear isn't manufactured in great quantity, so there's not a lot to go around. However, he says, "I do wish they would see the wisdom of making their gear more affordable to those of us in education by instituting educational discount and loan plans."

THE RECORDING WORKSHOP
Chillicothe, Ohio

Jim Rosebrook, director

Rosebrook stresses that staying current with rapidly changing technology is a matter of having good information, including keeping up with publications and online resources. Because the school has been around awhile, the staff also gets information from its network of associates and graduates.

"You need good instincts and a flexible planning method," Rosebrook says. "For our planning, we have frequent reassessments of our curriculum and facilities. Our training programs are scheduled on a two-month cycle, and we introduce something new virtually every cycle." The school acquires hardware in line with the goal of best preparing students for success in the industry. "This means keeping gear that is commonly found, obtaining new gear that is leading the market and also playing a wild card on our best bet for what's just around the corner."

A variety of manufacturers conduct demos and offer the school support and advanced information, relationships most often initiated, Rosebrook says, "when there is a philosophical bond between a product and our school's educational goals."

SCHOOL OF AUDIO ENGINEERING

Guy Nicholson, European director

"SAE is not a recording studio that must have the latest fashion in every device to book studios," says Nicholson. "Rather, we must have a good cross-range of gear that is usable and reliable, so we have to buy very wisely."

In terms of acquisition of gear, the school considers the future of the recording industry while also considering user life of the product and its reliability in student-user situations. Many manufacturers have supported the school with hands-on demonstrations, temporary loan of equipment for test and special prices for new products.

"Size has an impact with manufacturers," Nicholson says. "As we have 17 schools throughout the world, overnight we can introduce new products and educate users and future-users on them."

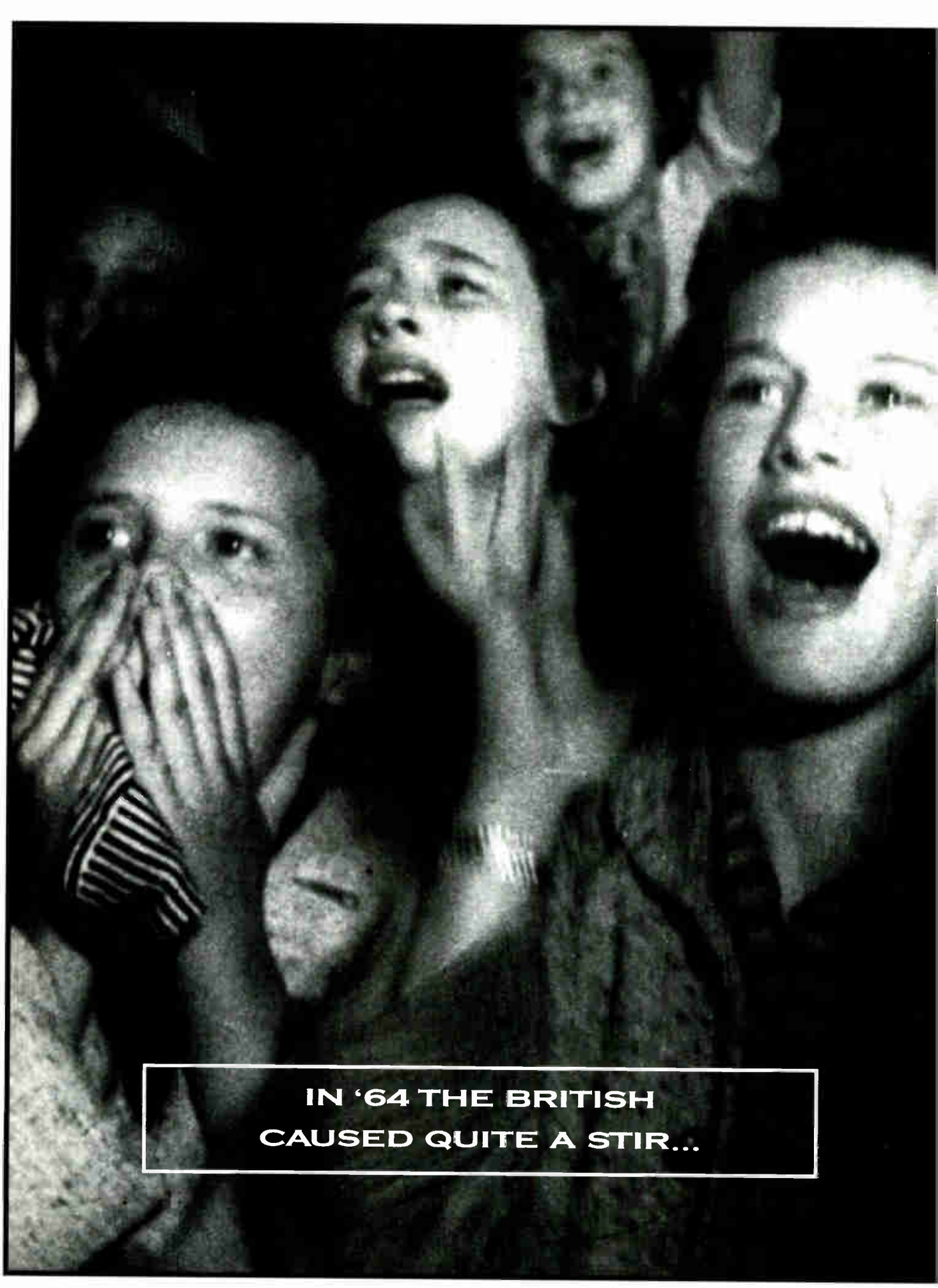
SAE has aligned itself with several manufacturers in the past year, including Digidesign, establishing "Pro Schools" at various SAE locations. Nicholson says the arrangement gives Digidesign "a wider base of educated users and someone who can offer educational possibilities away from the sales/dealer showroom."

UCLA EXTENSION
Recording Engineering Program, Los Angeles

Lisa Brewer, manager, Entertainment Studies and Performing Arts

Location is a big plus for UCLA Extension's Recording Engineering Program: The school relies on the expertise and resources of the wealth of commercial facilities based in the L.A. area. "Our mission is to provide professional training," Brewer says, "we depend on the studios and manufacturers to maintain state-of-the-art facilities." Several manufacturers have provided the school with equipment and facilities for training purposes, for example loaning gear for demonstration in classroom and studio workshop settings, and reps can easily visit at the school's invitation. The program has held training courses at manufacturers' facilities using the manufacturers' staff and/or its own instructors.

All instructors and advisory board members at UCLA Extension are leading professional engineers, says Brewer, and the school consults them regularly to ensure that its curriculum is up to industry standards and meets students' needs. The school's courses incorporate specific pieces of equipment, for which staff and instructors have contacted manufacturers directly to make special arrangements. ■



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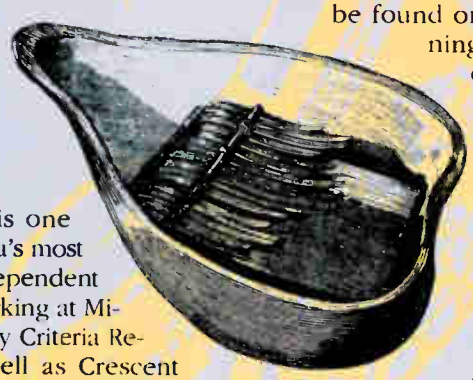
RECORDING Percussion

BY RICK CLARK

When most people think of drums, they think of the traditional trap set with the usual snare, toms, kick drum, hi-hat and cymbals. Rock 'n' roll, country and rhythm & blues may be great American musical forms that express many rich sides of our rhythmic sensibilities, but most records in those genres offer little more than a drum kit, tambourine and shaker of some type in the mix.

But there is also a world of countless exotic percussion instruments that subdivide time and define the rhythmic "pocket" with subtlety, amazing complexity and earthy directness. This feature attempts to touch on recording and mixing a very small part of all those sounds that add richness to our music.

For this *Mix* applications feature, we have enlisted four highly regarded engineers—Mike Couzzi, Rik Pekkonen, Eric Schilling and Allen Sides, all of whom have certainly done their share of capturing the spirit of great percussion performances.



MIKE COUZZI

Mike Couzzi is one of South Florida's most successful independent engineers, working at Miami's legendary Criteria Recording, as well as Crescent Moon, New River and South Beach. A native of Los Angeles, Couzzi worked at Wally Heider's studio in the '70s, before deciding to relocate to Florida in 1980. Besides working with artists such as Jaco Pastorious, Herbie Hancock, Rod Stewart and Jermaine Jackson, Couzzi has done extensive work recording Latin- and African-influenced music. Couzzi's work can be found on many award-winning albums, including ones by Paraguayan harpist Roberto Perera (Latin Jazz Album 1993—*Billboard*), Arturo Sandoval (nominated for six Grammys) and Vicki Carr (Grammy). Other Latin credits include Julio Iglesias, Gloria Estefan, Jose Feliciano, Chayanne, Roberto Carlos and Jon Secada.

"In dealing with recording most Latin music, I have the challenge of recording obscure and exotic percussion instruments from around the

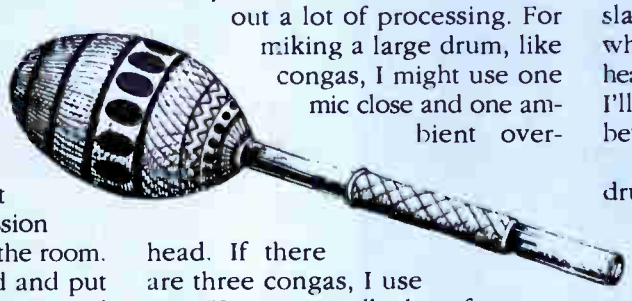
SIDNEY BALDWIN

Working on the Grammy-nominated Cachao sessions are (L to R) Eric Schilling, Francisco Aguabella (with shekere), Tony Rosa (with shekere) and Humberto "Nenge" Hernandez (with shekere).

world," Couzzi says. "A lot of the percussionists I work with travel all over the world and bring in some really bizarre instruments. A lot of this stuff is so primitive, it is like prehistoric recording; it isn't just bringing in a shaker and a conga.

"With some of these instruments, you don't know where the sound is going to come out. You hear it in the room, but you can't just stick a mic anywhere. The most important thing with recording percussion is listening to the sound in the room. You've got to walk around and put your ear close to the instrument and far away, and see where you really hear most of the sound and the harmonics taking place. The sound of the room, of course, is very critical. I look for a live, neutral-sounding room, usually, and I will always use an ambient microphone and vary the distance for effect. A very dead room will work also, providing it adds no ugly coloration or standing waves.

"Most of the time, the artist wants a fairly acoustic, natural sound without a lot of processing. For miking a large drum, like congas, I might use one mic close and one ambient overhead. If there are three congas, I use an X-Y setup, usually three feet directly over the drums. Congas sound best placed on a wooden floor. I usually use Neumann TLM193s or AKG 414 TLIIs, which is also my favorite mic for small hand-held percussion. Both of these new-design mics sound great and have a wide dynamic range and frequency response. If I know the instrument is to be the primary percussion holding the 'groove' together, I'll use some compression with a dbx 160 to add slap or attack. With congas, that is what most percussionists want to hear. Sometimes on small hand drums, I'll use a Sennheiser 421, boosting between 4 kHz and 10 kHz."



"Last week, I recorded some udu drums and Moroccan hand drums and an instrument called 'the box' [also known as a *cajon*], which the percussionist sits on and hits with his hands like congas. It looks like a big speaker cabinet with a hole in it. I miked it in the back, outside the box hole to get all the bottom end, but I put the mic close enough to the hole to get a lot

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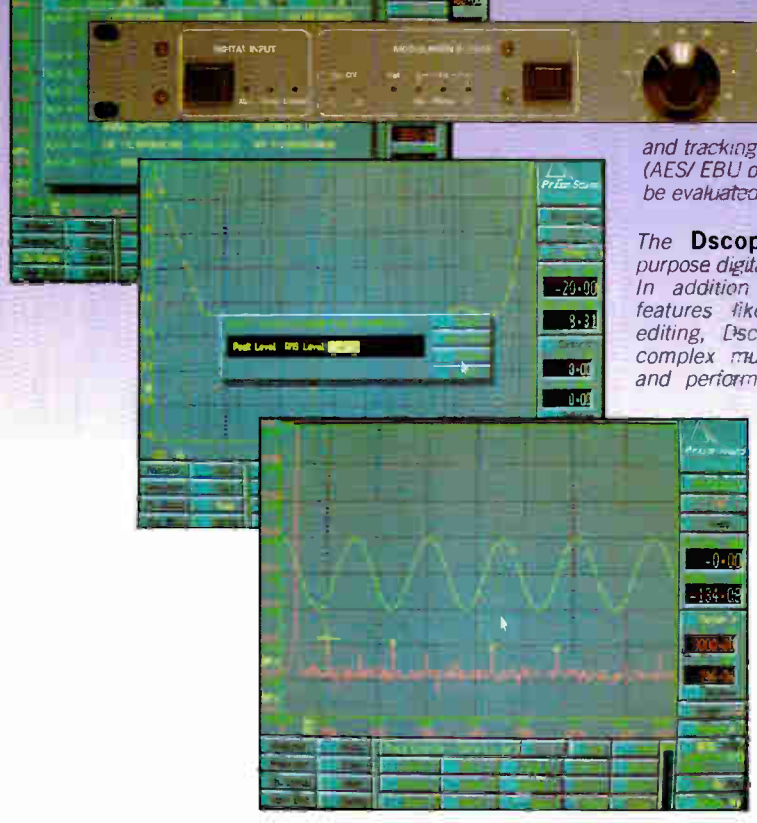

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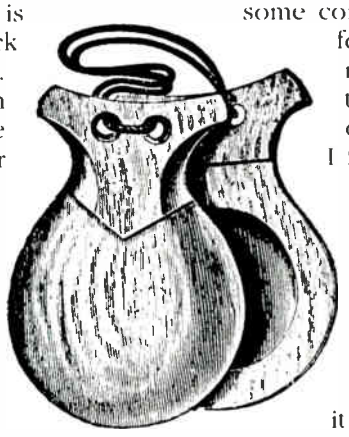
of punch out of it, too. I put the front mic about two feet away to catch the slap of the hands. Both mics were Sennheiser 421s. On the udu drum, I placed a 421 in the hole and used an AKG 414 overhead. You can get a very deep sound, almost like a huge drum, just by changing the mic blend.

"A bata drum is a two-headed drum that is worn around the neck and played with sticks. One side of the drum is bigger than the other, and the player hits both sides all of the time, making a rhythm. The larger head gives you more of a low impact, and the high one will give you more of like a flap sound. You can't really put a mic in the middle and get all of that. I found that for the most impact, it is better to mic both sounds, because it is kind of like two drums. You put one mic on each side, but when you do that, you usually get some low-frequency cancellation, so you have to flip one of the mics out of phase to put it back in phase, so you can get all of the low end out of it. If you don't, it will sound really small.

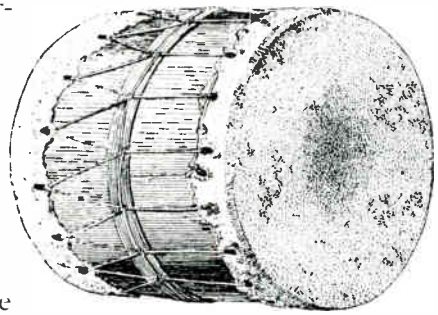


"The same is true with the Bombo, which is like a huge Andean bass drum that is played with a muffled rawhide mallet. You have to mike both sides, because they are hitting it with a mallet on one side and you are getting that big thud on one side, and on the other side, you are getting a boom coming out the back side, like a double-headed kick drum. In order to get the 'boom,' it is good to mike it from the back. It just gives you a big low-end sound.

"A berimbau is like a tree branch with a gourd attached to it, with steel strings coming out of it. You play it by striking the strings with this other tree branch that looks like a bow with steel wire wrapped around it," Couzzi continues. "You tune it by sliding this other prehistoric-looking piece of wood up and down the neck. It sounds like a huge Jew's harp, and it's really loud. For that, I use a really good tube condenser microphone overhead, like a Neumann U47, between where the musician is striking the instrument and the gourd, about three or four feet away. You're catching the room, and you're trying to get the whole instrument. If you close-mike, all you will get is this weird, stringy noise. You've got to get an overall picture.

"When I close-mike an instrument, I'm prepared for a percussionist to start wailing on the drums, so a mic with a huge dynamic range and some compression is essential for analog tape," Couzzi notes. "I don't really like to overload transients on analog tape, because I find that with a lot of percussion, the sound starts to get dull, even with the new formulation tape.

"As far as mixing goes, sometimes the percussion should be in your face, so I'll EQ it and compress it a lot. Sometimes, I'll auto-pan a shaker or other single instruments that are really thin or bright. Panning is very important, and I usually try to keep percussion as far left and right as possible. The reason being that if there is a singer or lead instrument, the percussion isn't going to fight with it.



"For more ambient sounds, I'll use an AMS 'room' program, which is very natural, or I'll use the newest software for the Lexicon 480 Ambiance programs. Sometimes, I'll use heavily gated reverbs for impact and blend in a room or bright plate."

RIK PEKKONEN

Ever since 1965, when he started as an engineer in Los Angeles, Rik Pekkonen has carved out an impressive track record that ranges from jazz and fusion (15 Crusaders albums, Dixie Dregs, Freddie Hubbard, Jeff Lorber), R&B and blues (Booker T & The MGs, B.B. King, Peabo Bryson, Sly & The Family Stone), country (Willie Nelson, Waylon Jennings, Nitty Gritty Dirt Band), rock/pop (Brian Wilson, Ringo Starr, Was [Not Was], Guns N' Roses, Joe Jackson, B-52's, Roy Orbison, Jackson Browne), and artists not as easily categorized, like Bob Dylan, Leo Kottke, Ladysmith Black Mambazo and T-Bone Burnett. From T-Rex's *Electric Warrior* to Joe Cocker & Jennifer Warnes' Grammy-winning "Up Where We Belong," Pekkonen has done hundreds of albums and dozens of film soundtracks, including *Backbeat*, *An Officer and a Gentleman* and *Brewster's Millions*.

"A percussionist used to always be a guy who could play vibes and marimbas, as well as all the toys," Pekkonen says. "Victor Feldman was a percussionist, in the old sense of the word, who was not only a great piano player but played vibes and all the percussion instruments. My favorite microphones for marimbas and vibes would be [Neumann] KM-54s. They are very smooth-sounding, old tube mics with these wonderful highs.

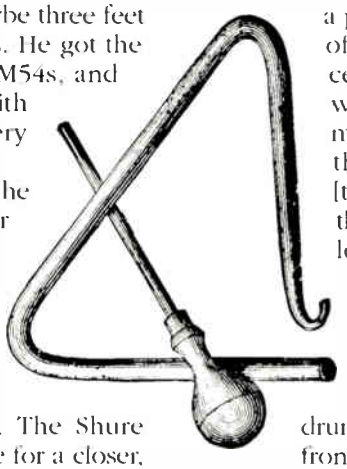
"Schoeps mics will work well, too. They would probably be brighter, but the KM-54 has this really nice smoothness to it, but with lots of highs and presence. Vibes can be very percussive. You can literally get too much percussion on them and be in-your-face too much. That is why you should move the mics away, maybe three feet above the instrument. That way you can get a much more even sound out of the instrument. In fact, for all the instruments that 'speak' and have all this super-clarity to them, the KM-54 smoothes those guys out and gives you a much more usable signal.

"Also, unless you are going for a special effect on vibes or marimbas, I wouldn't record with compression or limiting," Pekkonen points out. "I have a rule of thumb that I never compress it, because the producer might change his mind about the direction of the song or arrangement, and if you had compressed it originally, you might be in trouble because you can't undo it.

"I just used tympani on a Bonnie Raitt track that is a version of the Roy Orbison song 'You Got It.' It was for a new Whoopi Goldberg movie called *Boys on the Side*. Jim Keltner played the tympani on it. I used a Neumann M50, at least six or eight feet up above the kit. That was an omni pattern. The tympani has so

much sound that to capture the entire instrument, you have to get the room 'working' for you," says Pekkonen, who adds that Neumann U67s or KM54s are good choices, too.

"Andy Narell, a steel drum artist on the Windham Hill label, is someone I recently worked with," Pekkonen says. "He likes to use two KM54s and a transformerless AKG 414. The mics were maybe three feet above the [steel] drums. He got the stereo from the two KM54s, and he filled the middle with the 414. It worked very well."



Pekkonen adds that the KM54 is also good for instruments like chimes, timbales and glockenspiel. For tambourines, he offers a Neumann M50 as an ideal omni mic for capturing the instrument in a room. The Shure SM57 is one solid choice for a closer, in-your-face recording.

"Bongos are so bright and percussive-sounding that they will cut through anything," adds Pekkonen. "You can put on almost any mic and get a decent bongo sound.

"For gongs, a Neumann U47 FET, which is a cardioid mic, would probably be my first choice. It has a nice clear midrange with a lot of bottom to it. It also has pads, so you can pad it down," explains Pekkonen, adding that a U67 is also a good alternate choice. "I would probably put the mic a little bit to the side, instead of putting it directly at the instrument.

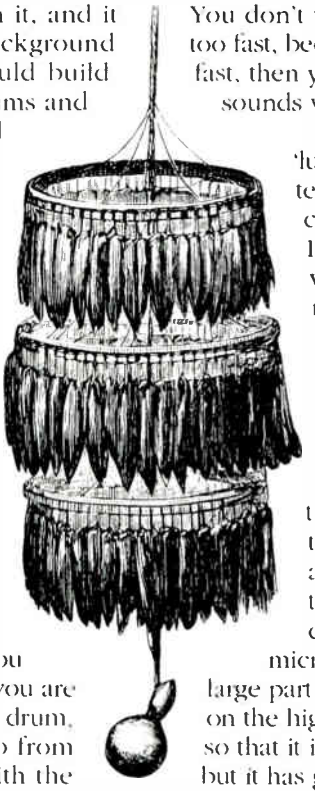
"I think what is interesting about this whole thing, is that there are no rules, no clear-cut way," concludes Pekkonen. "Even if you started every rhythm base the same way, you will find that you will have to change up here and there because of what is going on in the song."

ERIC SCHILLING

One of the most successful artists to synthesize Latin American musical sensibilities to mainstream American pop is Gloria Estefan. As a solo artist, and with the Miami Sound Machine, Estefan and her husband Emilio have created an impressive string of hits, including "Rhythm Is Gonna Get You," "1-2-3," "Get on Your Feet" and their first hit, "Conga." The man who has recorded and mixed 13 of their albums and runs the Estefans' Crescent Moon Studios in Miami is Eric Schilling. Schilling, a late-'70s Los Angeles transplant and former engineer for Bill Szymczyk, has also recently worked with artists such as Jon Secada and critically acclaimed Latin music legend Cachao.

"When I started to work with Gloria," Schilling says, "I was exposed to a lot of beats and instruments I hadn't heard before. I came from a place where I did a lot of rock, so there was a certain period of time where I had to rethink my approach, because there were no drums [trap sets] in some of this music. I also had to learn that you don't balance them the same way that you would a drum kit.

"With dance and rock stuff, the kick drum tends to be very upfront. Whereas in real Latin music, you tend to put it way back, because that part of the beat is not something they want you to hear a lot. It isn't emphasized," explains Schilling, who in 1993, recorded and mixed a successful all-Spanish Latin music album for Gloria Estefan called *Mi Tierra*. "Only one song on that album had a trap set on it, and it was used in a very background way. Normally, you would build your mix around the drums and bass and then piano and so on. In this case, I started with congas and timbales being the main part of the song. That is where you start your mix. Then I will start working on the bass and then the piano. After that, I may start to work on all the hand percussion. It takes awhile for you to rethink your approach."



Schilling says timbales are a special recording challenge, due to an extremely wide range of dynamics and sounds. "You have to think about how you are going to cover the whole drum, because it is going to go from some fairly soft stuff, with the drummer playing on the side, to playing extremely loud fills, or cow bell," he notes. "You've got to capture this all at the same time. What I tend to do is put a Sennheiser 421 in the middle of the bottom side of the two drums, about a foot away from the rim of the shells."

That way, Schilling captures the ambience of the wood coming through the bottom of the shells and the tapping on the sides. He feels that dynamic mics are preferable to condensers when recording that close to the drums.

"I will then put one tube mic, probably a Sony 800 set in a cardioid pattern, four to five feet above the kit, facing straight down at the cowbell, so I will get a lot of the top skin and get a more even sound," he says. "If I get too close, I won't get a good blend between the two side shells and the cowbell and, say, a crash. Sometimes, if the mic is up six-and-a-half feet or so, I might move it out two or three feet in front of the kit. It is just something you have to play around with, because each guy's kit has a certain sound, and he will play it a certain way.

"I really like to use compression on timbales," Schilling says. "Generally, I would use a [UREI] 1176. It has the attack and release time, so you can fine-tune it and get what you want. I might set it for a medium attack and a fairly fast release time. You don't want something that is too fast, because if the attack is too fast, then you hear it too much. It sounds very stepped on.

"I normally use an API 'lunchbox' for EQ. I would tend to mix the two mics, compress them and then EQ the whole thing, so I work on the sound more as a group, as opposed to one EQ on the low mic and another EQ on the top mic."

For congas, Schilling notes that most players come in with three drums, a high tuned one in the middle and two lower drums to the side. "I will tend to catch a lot of it with one microphone," he says. "If a large part of what he is playing is on the high drum, I'll put the mic so that it is facing the high drum, but it has got a wide enough field so that it can get the low drum that tends to be quite loud, as well as the medium drum. If one of those drums feels too far away, I will throw in a

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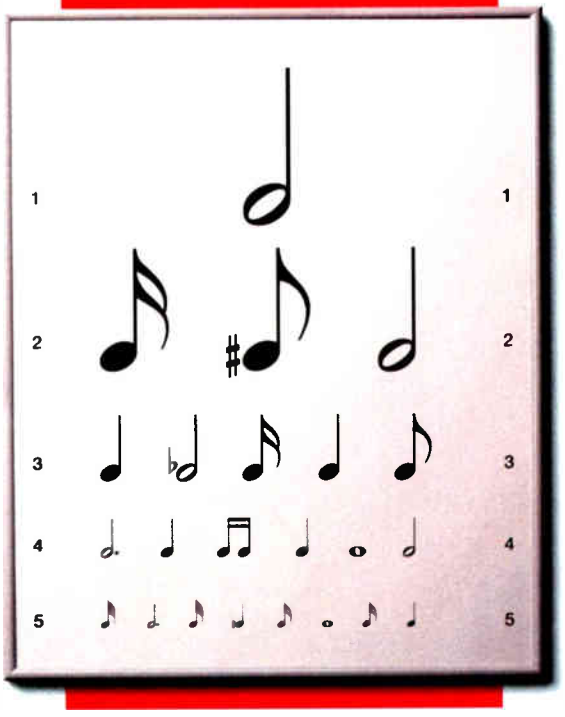

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421. I will use that to fill in the blend.

"If they want it to have a stereo sound, especially if it is for part of a song that is sparse, with only conga, a shaker and a timbale, then I will use two mics of a matched pair. I generally use the same mic that I use for timbales, the Sony 800. In some cases, I will use a Neumann U67, two cardioids at 90 degrees. I will just move them around until I get a good spread.

"For congas, you can't be as drastic with compression. I tend to use a different kind of compressor on them, like a Compex, which was manufactured by Audio Design. The Compex was the stereo version of the Vocal Stresser. It is a compressor that you can tune a lot, in terms of the ratios, attack time and gain.

"The UREI has got more pumping to it, and it tends to make the drum feel, when you hit it hard, more exciting to hear. It's great for timbale, but on a conga drum, the UREI would tend to pull down the attack a little too much for me and make the sound seem a little too small.

"I really like to get warmth from congas, and I will work a long time to achieve that. I don't tend to like those drums to sound real bright. Congas are probably the most work for me to record. I am always trying to find a balance. I want to hear some nice 'air' on them, and I want to hear some nice snap and attack, but I don't want them to sound thin. It's a matter of finding a balance of trying to make the drums feel fat but still have some attack up at the top. If you dial in a lot of 5 kHz and 10 kHz and all of that, then it will sound thin. On congas, I tend to do from 12 kHz and above for 'air.' I might just do a notch of 3 to 5 kHz, just to give a little snap to the attack. I probably wouldn't do more than +4 dB on any of those settings. At that point, if it still isn't sounding good, I would say that it probably isn't miked right, or I didn't use the right mic.

"In the case of the Cachao album, I had one piece where we didn't use congas and timbales. We totally abandoned that and went for a more street-level instrumentation," Schilling continues. "There was one guy who played a hoe, the same thing that you use in your garden. He had a steel rod and was playing the subdivision part of the beat, so I had to mike a hoe. You might say, 'How do you mike a hoe?' Well, basically you

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take a 414 and get about two feet away and point it at the hoe. He held it in a way that didn't dampen the steel part of it. He was hitting the metal part, so that the hoe had a really live sound. It was great.

"For mixing Latin music, I have found that where the percussion tends to be very dense, you kind of have to pick what is going to be wet and what is going to be dry; it can't all be one thing. You have to create a contrast. The toughest part, especially if you have ten things, like congas, timbales, guiros and shakers and cowbells and so on, is to create a space for all of this stuff. You kind of have to pick what is going to have a long reverb and what is going to have a short one. It is really a question of contrast. Typically, the stuff that is playing a lot of fast time is going to tend to be drier. Stuff that is a lot more sparse, I will make more wet."

ALLEN SIDES

Allen Sides is one of the recording industry's most respected engineers. His album credits run into the hundreds. Some of the artists Sides has worked with include Frank Sinatra, Count Basie, Ry Cooder, Sarah Vaughan, James Ingram, Nancy Wilson, Ray Charles, Fleetwood Mac, Sinead O'Connor, Neal Diamond and Herbie Hancock. He is currently working on a project with Brian Setzer. Sides also started and continues to run the legendary Ocean Way/Record One Studios, a seven-studio complex in Los Angeles.

"I am very big on stereo with percussion, particularly things like shakers," Sides says. "They sound so cool when you have a shaker in a space with a pair of great microphones. It can create such a presence, where a mono recording would not. It makes such a difference in size and space. If I want to position something, I will basically move the mics to the left or right of the instrument. That way, I can have a true perspective.

"Usually, I want the mics close enough to get an even stereo symmetry between the two. Obviously, if you get them too far apart, then you have a hole in the middle. With shakers, I would probably put the mics about eight inches to a foot away, right where the player is shaking it. The microphones would probably be about eight inches apart."

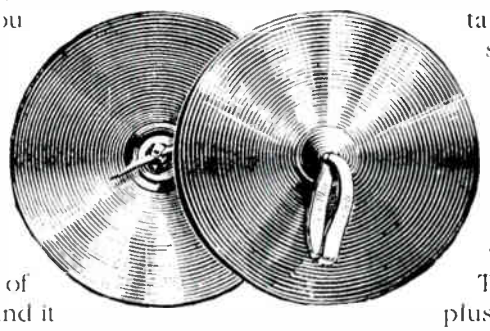
Sides' microphone of choice for cutting most percussion is the Neumann KM54. "The KM54 has tremendous punch and presence," he says. "It doesn't matter if you are using bells, congas, vibes, anything you can think of, KM54s are stunning. It sounds big, and in the dialog of recording, the one thing I always listen for is size. It is easy to make something small, but it is real hard to make something bigger-sounding.

"If I can't get some KM54s for recording percussion, then I will use a pair of Schoeps cardioids, which are among the most impressive phantom-powered mics I have ever heard. If you have never heard a pair, they have an effortless top end that is very present and clear. It isn't harsh. The KM54 is similar, but it is silkier sounding. There is a certain richness to it that goes beyond the Schoeps."

Another mic that Sides likes, particularly on timbales, is the AKG C-12A. "Sometimes, in a busy, thick track, you can hit a timbale and all you hear is the sound of the stick and the top, and not the tone of the drum itself," Sides says. "The AKG C-12A helps, because it has a lot of low-end proximity and it tends to make things sound fuller."

Sides feels that the highly transient elements of most percussion instruments require special considerations that differ between analog and digital. "In digital," he notes, "if you keep the signal out of the red, you are recording too low, because the dynamic range of a loud timbale hit is so staggering, it is like you are in the bad area of resolution. You are probably only getting about nine bits of resolution in the average program, because you are down so low in the spectrum. Usually, I think nothing of hitting a couple of reds, if I can't hear it, in order to bring the overall program level up. If you have a couple of great limiters on timbales, it is not unreasonable to limit the peaks. My favorite limiter is probably the dbx 160. It is a very musical, good-sounding limiter.

"If you record analog at a normal level, it does a wonderful job of limiting the peaks. Say you have a very good sample kick and you listen to Repro and experiment with different levels. There is a certain level, which is the *optimum level* of tape compression vs. noise vs. keeping as much punch as you possibly can. Let's say we are using Scotch 250 and set up for +3, and recording a kick. If you were listening in Repro and changing the levels and the peaks were hitting zero on Scotch 250 at +3, it would come back sounding very muddy. You would begin to drop the level and come down to -3 or -4 on the meter, and then all of a sudden, the kick would sound as clear as can be. Now the shelf noise on 250 is 2.5 dB lower than Ampex 456. On 456, the self-noise is higher. You could record at -1 to -2, and the kick will sound about right, in reference to noise. If you are recording on 3M 996 at +3 dB, you could actually hit zeros and the level of tape compression would be acceptable. So you end up getting a certain level of tape compression, but you want the absolute maximum impact you can get, and that goes right back to the timbales. There is a big plus in analog, because you have got some natural limiting."



* * *

Rick Clark would like to thank the featured engineers who gave their time, as well as Claris Sayadian and Victor Janacua (Ocean Way Recording), Susan Zekofsky (Crescent Moon Studios), David Wechsler (Qbadisc), Doug Beard (Studer Nashville), Jerry Bruck (Posthorn Recordings) and John Merchant (Middle Ear Recording). ■

Rick Clark is a writer and musician based in Memphis.

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by Dan Daley

BANG THE DRUM LOUDLY

PROJECT PERCUSSION WITH A TWIST

What do you call a drummer without a girlfriend? Homeless. What do you call someone who hangs out with musicians? A drummer.

How do we get away with the drummer jokes? Simple. No drummers! Project studios continue to be the primary petri dishes of nonhuman percussion. This has its advantages and disadvantages. True, there's less to clean up after, but using solely mechanical/electronic percussion can often produce a clinical, sterile-sounding track.

But the point of a petri dish is to develop new strains, and that's what project studio engineers have been doing when it comes to percussion. The most common alternative to live tracks is using a machine kit and overdubbing and mixing in real elements, the most prevalent element being the cymbal. One of the few things that everyone seems to agree on is that sampled cymbals suck. (Nicely alliterative, too.) Robert Agnello, whose On the Lamb Music is a single-room project facility in Manhattan with no separate recording space, finds himself taking that approach often. Listen for it on his incidental music on *The Maury Povich Show*.

"I have two basic ways of recording cymbals in the same room as the console," he explains. "I set up one or two AKG 414s or a Neumann TLM, or sometimes Sennheiser 421s, over the cymbal in a fairly conventional pattern. Then I'll either use headphones,

ILLUSTRATION: ED McCAULEY

which is the simplest way, or else put the monitors out-of-phase and record the cymbals in the open. That approach is time-consuming, and you get some [aural] shadows, and the control room environment can get pretty noisy in that frequency range with hard disks running and all. But you'll really hear what the cymbals and especially the cymbal trail-offs sound like in a way that you never could over headphones."

Agnello does the same thing with other percussion instruments that sound less-than-perfect when sampled. "The benefit is that you're getting a much rounder, complete sound and effect," Agnello says. "You have an opportunity to play with the percussion sound—especially the bottom and the midrange—before it's recorded. That's not the same degree of control you'll get on a sample; you can only affect a sample after the fact."

MAPPED-OUT SAMPLES

On a somewhat more complex note, Marc Mann, a partner in Music Production Services, a Burbank, Calif., project studio that does music tracks and cues for episodic television, says that he has accumulated at least one of every drum machine that's ever been manufactured. Over the years, he's learned, as we all have, that no one machine can satisfy every demand. What Mann and his partner Richard Aronson have done is organize all those sounds and mapped them out using either the MIDI capabilities of later-model machines like the Roland R-8 or using Opcode's OMS software and Studio 5 hardware for older machines like their original LinnDrum. Each sound source is assigned, via a MIDI note, to the studio's 88-note master keyboard, on which a Velcro strip holds printed charts of various percussion groups, including mapped bundles of traps, orchestral percussion and general percussion.

The mapping was the hard part, Mann recalls. The internally assigned MIDI notes of most of the systems were changed and reassigned to a networked MIDI map. For instance, the musical note D over middle C on the keyboard produces a plethora of cowbells from the various machines and modules. In situations where note-on/note-off commands are not applicable, the sources are run through a bank of Hill submixers and muted. Opcode's Galaxy librarian program is used to organize the assembled kits, bundled via their sys-ex file information. After selecting a prearranged group of percussion sounds, you just change the Velcro strip that holds their keyboard addresses.

"The whole thing winds up pretty transparent when you sit down to use it," Mann says. "You get to choose the best sounds from each system and use each machine or module for what it does best. Hats from the Rolands, snares from the MPC-60, and so on. What we've done is imposed our version of organization on where the sounds live. It's the MIDI mapping that allows you to do this. Otherwise, you'd go nuts trying to get certain sounds from each machine as you needed them. Now you wind up with the ultimate percussion system."

Engineer/producer Mark Mandelbaum, whose Anatomically Correct Music is in his Brooklyn apartment, also makes use of sampled percussion, but with a twist. And he says the home location is what lends itself to peculiar percussion: "I take one of those one-liter bottles of Coke and


[1954]


[1955]


[1956]


[1957]


[1958]


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fill it up with different amounts of water for pitch, then strike it on the side with a microphone over the hole, and record it to DAT. It gives you a very tonal percussive effect. Once you get the sounds you want, you simply sample from the DAT tape." Mandelbaum has discovered that many of the things you find at home can be turned into percussion elements—pots, pans, drumsticks on padded chair surfaces. "The great thing about recording at home is being able to look at your surroundings in a very different light, once you start needing something you used to cook with for a snare drum," Mandelbaum says.

NASHVILLE'S RAIN MAN

The most original project studio solution to sound-alike percussion I've encountered was at Mark Lambert's Profile Audio studio in Nashville. Lambert has become so fed-up with hearing the same samples over and over again (as have his clients) that he routinely runs snare drums through fuzz boxes and other guitar processors. He recently came up with a new approach to hi-hat sounds: As a gift, Lambert got one of those rainsticks—tree needles cascading through a partitioned, sealed wooden tube, producing a high-frequency, sustained "whoosh." "Sample that and you have one of the most interesting hi-hat sounds you can imagine," Lambert says. "It reacts exactly like a hat, and it gives you a lot more expressiveness even when played off a machine pad." Lambert also has used the rainstick to get high-pitched cross-stick sounds and cymbal effects, the latter by moving the microphone around the room while sampling the device.

"You get pretty tired of the same old drum sounds," Lambert says of his motivation to experiment. "Everyone does, especially clients. The sounds have become very identifiable on country and MOR records. That's why you get moved to try some really radical stuff, like snare drums through fuzz boxes. The key to that is to not make it sound too much like just a square wave. I mean, it's still a drum, right?" ■

Dan Daley is Mix*'s East Coast editor. He was once in a five-piece band: four musicians and a drummer.*

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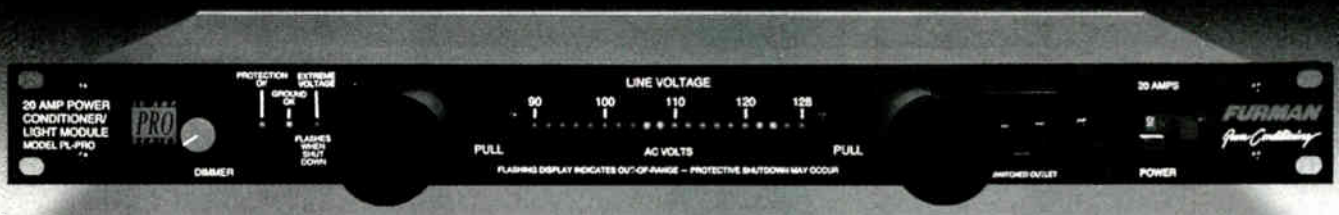

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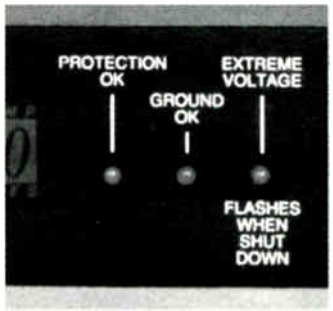

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L.A. Recording

Interesting Times

by Maureen Droney

An ancient Chinese curse reads, "May you live in interesting times." And interesting times have been what the '90s have been for recording studios in Los Angeles. Owning a studio has been a business for the [illegible] there have been periods since the '60s when it was fairly easy to set up an operation and make money. Today, most everyone agrees that those days are gone for good, along with generous album budgets and lax bookkeeping.

Los Angeles has always had an overabundance of studios, spanning the spectrum of styles and rates. Add to that the proliferation of home studios equipped with ADATs and DA-88s. Stir in generally smaller recording budgets for CDs, television and film, and the large number of projects now being recorded in secondary cities like Nashville and Seattle. And the result just might be a recipe for disaster.

But *Mix* spoke with a cross-section of the Southland industry and found that for many businesses, the climate is actually better than it was a couple of years ago. Everyone in the '90s works hard for their money, and studio owners are no exception.

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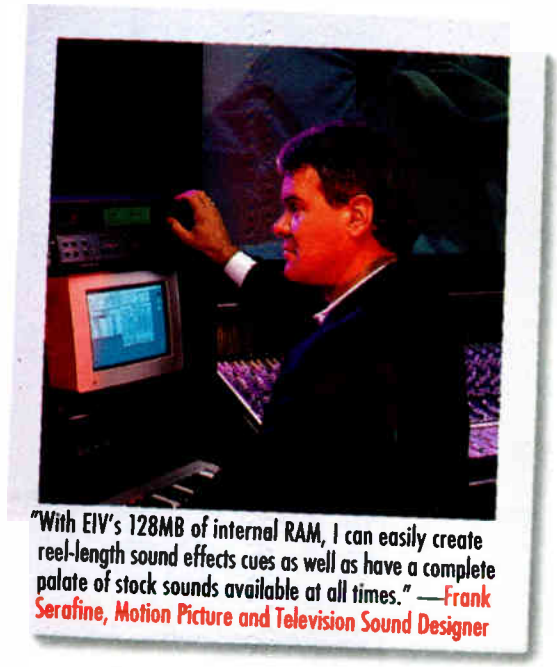

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There are many opinions about who will survive and prosper in the coming years. Some feel that the weeding-out process will occur primarily among the numerous mid-level studios. Others see a shakeout coming because too many studios are competing for the top-of-the-line slots. One thing everyone agrees on is that competition is fierce, and that rates have not really increased much since the '70s. Think about it: Top studios got $135 per hour or more 20 years ago, when their expenses were much lower than they are today.

Allen Sides operates a total of nine rooms as the owner of Hollywood's Ocean Way Studios and the Valley's Record One. "I think a lot of the problem for the last few years has been that, with the economy slowing, the record companies have been somewhat conservative with regards to doing new projects," he says. "At the same time, they've been laying off existing artists, just trying to reduce overall costs, even though their profits have never been higher. But I would say that in the last year, there has been a significant increase in new projects; I think things are improving. The established studio scene in Los Angeles will never be what it was before, I think, because the home studios have filled a huge niche in the recording market and will continue to. There are going to be fewer big commercial studios. And there is nothing wrong with that. There's more product now, but there are a lot more studios, and it will never be quite what it was."

Tom Murphy opened Track Record in North Hollywood in 1987, one of the boom years for the studio business. "From the jump," he says, "I had both rooms booked solid. But by '90 and '91, it became much more difficult. The kind of music that was being made had definitely changed, to where big, live rooms were not important, or if they were, people were going to places that had discrete, older consoles. I think it was polarizing, and we were kind of in the middle. Which was specifically what I had designed us to be, because I didn't have reserves of cash when I made expansion moves, so I always wanted to move conservatively. In the initial phases, we were making tremendous amounts of money considering our investment. And everything was rosy and wonderful. And then very quickly into the '90s, I guess the best way to put it is that it became overly competitive. And I was looking at not how to expand so much as how to spread my payments out longer and get better interest rates and manage the business tighter—basically just to extend my loans and make my monthly nut smaller."

Hollywood's Skip Saylor Recording has two rooms—an SSL suite used mostly for mixing and a multipurpose recording room. Says Saylor, "I don't think that there is as much business as there was two years ago. It's harder than it used to be. But there will be people who do well, and I'm looking to be one of those. I opened up the mix room and went from a one-room facility to a two-room facility in 1987. My first two years did qualify under the category, 'If you build it, they will come.' Not that it wasn't a lot of hard work. But I know that it would not be the same

today. Now seven years later, there are eight rooms instead of four competing for the same business. Many of the new rooms have corporate money behind them. That obviously has an effect. There may actually be more business, but there are a lot more people trying to place themselves on the top rung.

"Competing for recording projects has become an extremely costly business," he adds. "As studios spend money and need to recoup it, in anything short of a bull market studios begin to cut their rates to get people in. In 1987, you could have a $300,000 board and be a top studio. Now that same board is $700,000 to $800,000. And when rates sag for the big guys, then they sag for everybody. In this town, whether Michael Jackson is recording or not has a major effect on the business. He eats up two or three rooms for a year, and I go from having open time to being full 52 weeks and weekends. All because of one artist! You notice how New York is talking, 'We had a good year this year'? That's because Michael was using three of their top ten rooms, and it's enough to push the whole market one way or another. Not only does Michael use up three rooms and sort of shift the way the wind is blowing, but he's also bringing in everybody under the sun—Teddy Riley, Babyface. All these people in town to work with him also have their own projects going, and they book a studio next door for three days. Producers, songwriters: all of a sudden, restaurants on Ventura Boulevard are more busy because Michael is in town recording! It's that volatile, and it's that small of a market, yet that big of a market—a giant multi-billion-dollar industry and at the same time still so small that where Michael Jackson is recording affects how all the studios in town are going to do."

Rate-cutting in the studio business is nothing new, but with profit margins lower, it is a more serious problem than ever. When an artist can get a top room for a low rate, a lot of people get hurt. And experienced studio owners and managers know that rate-cutting is not some temporary stop-gap to fill slow time. It can be difficult or impossible to again command the kind of rates that were the norm before the discounts.

Hank Sanicola owns the two-room O'Henry facility in Burbank. He says, "It can't make financial sense to give a room with a 96-input SSL away for $1,200 or $1,500; you just can't! I can't do that because my wife and I put our life savings into this. It's tough out there. There's a lot of competition, and record companies beat you up on rates. There's a lot of work probably for $800- to $1,000-a-day studios. The problem is that with a studio at that rate, you can't have good staff. Even if you don't have that much equipment in there, a good second is $15 an hour, and if you go over 40 hours with them, you're paying them $22.50. You've got to have great seconds, which we have. When I used to engineer in the late '70s, I paid $100 to $125 an hour, and now it's about the same, and all you had then was about four or five pieces of outboard gear. Now you have a pile of outboard gear, and a lot of rooms have dual 24-tracks!"

Al Morphew manages Track Record for Murphy and says that al-

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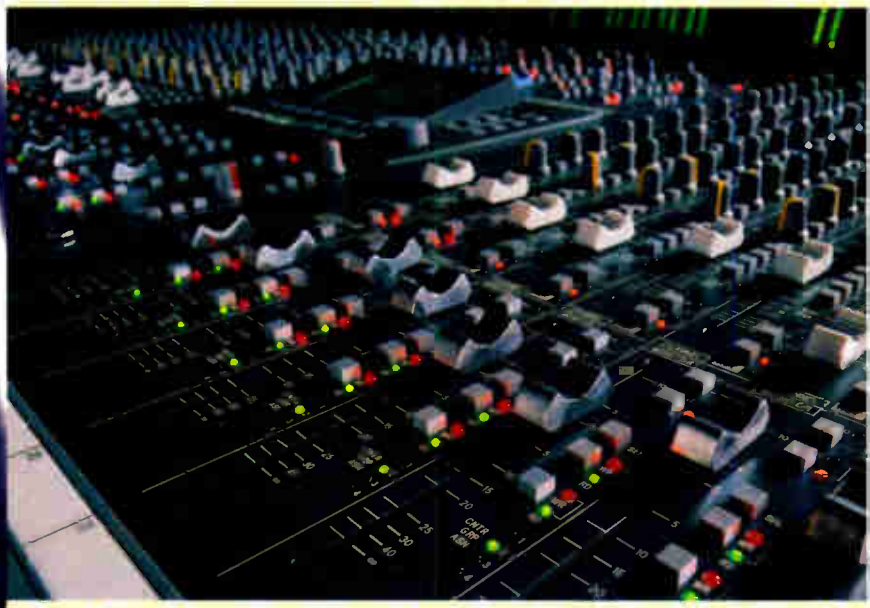

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though 1994 was a tough year, it was an improvement over the past two. He says, "Several times, I was really close to getting a project in, and they called me and said, 'Sorry, so-and-so down the street at Joe Massive studios will beat you by a 100 bucks, so we're going there.' Or maybe that studio will match my price and give them all the outboard gear they want. It's helped us a lot at Track Record that we have one room that's Neve and one room that's SSL, so we can accommodate a lot of different clients. But one thing that seems to have disappeared for us is overdubbing. We used to get a project in, they'd track for a week to ten days, and then they'd spend the next month-and-a-half overdubbing. Typically, it didn't pay as well as tracking did, but as a whole project, it worked well. But now, we get the tracking, and they go to some friend's garage to do the overdubs, and they come back to mix. A lot of the albums coming through take their pro engineer to the home studio, so if he brings a Neve or an API preamp and runs a nice tube mic through that, then you just have to hope that whatever tape machine they are using is something reasonable. Sometimes I think it would be nice if we had a garage on the property here, where we could build a little studio that we could give out for 400 or 500 dollars! But we wouldn't be able to make it the kind of place that we would be proud to call Track Record. So I doubt that's going to happen."

Allen Sides says he holds firm on his rates, knowing that once a record company gets a low rate, they will always expect that rate. He comments, "If you intend to operate a studio on our level, with the kind of maintenance and technical staff that we provide, it's just not possible. You can't have that type of equipment and that type of staff at $1,200 a day. You can't make ends meet. Because we have large, live rooms, and we have a lot of auxiliary equipment that just isn't available in most studios, we offer a little different formula than just a stock studio. Plus, projects have become so complex that the technical requirements where they have three- and four- and five-machine lockups—to have those sessions pulled off smoothly requires quite a sophisticated type of staff. So we get a lot of those sessions—the most difficult technically. In our place, my whole premise to the second engineers is that I expect every microphone to be checked and hung in the correct position, with all machines aligned and everything working at least 30 minutes prior to downbeat. We have clients who come in from their home studios, and there is such a sigh of relief on their part to have a level of professionalism again."

As owner of the high-end Record Plant studios, Rick Stevens faces some of those same problems. He says, "Although I see the start of the new year as being very strong, there was a very bad period August through November last year, and it had a pretty profound impact on a lot of people and resulted in a lot of rate-cutting. When you're in Record Plant's position, where our whole position is to have the biggest, baddest board and an extremely elaborate facility with very high levels of service, it's a very difficult environment to be wanting to cut rates in, simply because it's so much more expensive for us to provide the levels of service that we do. In the

As every performer knows, there are plenty of good musical instruments. But a truly great one is rare indeed. More than mathematically calculated pieces of wood and strings. Such an instrument becomes one with the artist. You know what we mean. So why are we bringing it up? Because now there's a unique piece of electronics that's making performers, producers and engineers feel that very special way. It's the Eventide DSP4000 Ultra-Harmonizer® brand effects processor.

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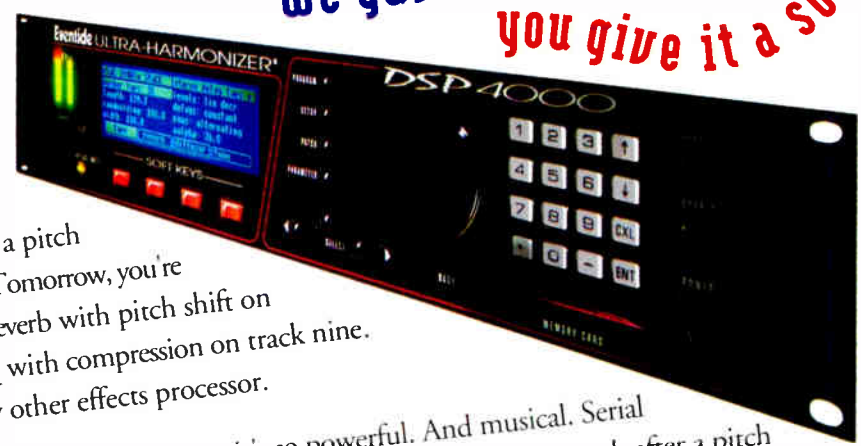

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meantime, the average control room of a very well-equipped studio in 1978 may have had $400,000 worth of equipment, while the average control room in the Record Plant today has over a million and a half. The margins have gone down.

"It's pretty ironic," he adds. "The record industry has for two consecutive years had both in units and in dollars some of its biggest years in history and has continued to have a decent growth rate. If you went back to 1980, there were $8.98 records. Today, CDs are $14.98 and $15.98 list price, with the corresponding increases in wholesale prices. Yet [the record companies] are paying about the same, or slightly more than they did 15 years ago for studio time. I think it's unfortunate that the record industry, which is very budget-driven at the moment, really diminishes in their mind the role that the recording studio can play in the process. That's an unfortunate reality, and the end result is that they, in many cases, are booking studios on the best rate rather than the best facility. The reason Record Plant has fared well throughout this process is that we are designed for the successful artist, where the artist rather than the record company makes the choice. And they make that choice based on quality rather than budget."

What about the music itself? After all, trends in recording follow the trends in music. Getting a grunge guitar sound probably doesn't require a fancy studio, and rap and hip-hop artists are notorious for making low-budget records. As a matter of fact, it seems like every musician is an engineer these days, or at least has chops enough to operate a home songwriting studio. And what about the numerous successful producers and artists who are building state-of-the-art home studios? Commercial studio owners may shake their heads in disbelief that anyone would want to take on the payments for an SSL console, but more and more people are doing it.

Michael Wagener, who has produced hits for artists from Ozzy Osbourne to Janet Jackson and Extreme, offers an interesting perspective on changes in the recording process. He says, "Creating music had, to some degree, gone into the hands of the engineers. The drum kit, for example, which is only one instrument, becomes a batch of separate sounds, with separate mics, and it takes the engineer to put it back together! Now, musicians are saying, 'I don't want that! This is what we sound like. And if the guitar doesn't sound "good," well, that's what it is, and that's what we want.' It's like the punk era, but grunge has taken it even further." The modular digital multitrack revolution has Wagener fielding phone calls from clients—whom he would formerly have recorded in a "real" studio, and whose projects he will be mixing—asking him, "Where should we set the threshold on this compressor?" Because he will end up mixing the project and wants quality sound to work with, he tries to help them out. However, sensing an opportunity, Wagener has made a video that will soon be available for purchase on how to get great guitar sounds.

Randy Nicklaus is senior VP of A&R at Impact Records/Left Bank Management, where he works with established artists such as Duran Duran, John Mellencamp and The Cranberries, and newer acts including Blush and Sass Jordan. He says, "I think the recording business, not unlike the record business, has changed dramatically. One of the big reasons is because there is a whole new crop of engineers and artists. And to them, the Record Plant, or the Hit Factory [in NYC], doesn't mean as much. They came up from the streets and they are making records cheaper and in completely different ways. They aspire to do their own thing, and I don't think their surroundings are part of the trappings. They just try to get a great record. A band doesn't care who engineered or produced Fleetwood Mac, or where it was done. You have to realize that a lot of the bands getting signed at this point are coming off indie labels, where they've been making $1,500 records, $7,000 records. A lot of these people are coming from the place where the producers they work with may be the studio owners in town, and they are comfortable in those places.

"Now, most of our acts [at Left Bank] are bigger and more established, and they are staying in the big studios. But even some of them, like Luther [Vandross], are not working exclusively at those big studios. He works at [producer] Walter A's home studio. And, of course, even with the way everyone is budget-

conscious today, certain records just cost a certain amount to do. You can't get away from union costs, you can't get away from certain engineering costs. And people are smart enough that if they do own their home studio, they want to pay it back. So, I would say that there are still the same amount of cheap to expensive records being made that have always been made, except that now a lot more of the inexpensive records are getting all of the attention. The music business has changed so much, and that's what has changed the studio business. I think the music business has changed as much from 1990 to 1994 as it did from 1960 to 1964. It has gone into the hands of another generation of music makers. It's not the in-crowd of recording that we all grew up with anymore."

Diversification is a word that comes up frequently when studio survival is discussed. Multimedia and post-production have been buzz words for a long time, but now all the extravagant predictions seem to be on the verge of coming true. You can now receive five simultaneous channels of HBO, three of Showtime, etc., delivered to your home by digital satellite systems. And, following the example of Fox Broadcasting, two new networks started running this year, courtesy of Paramount and Warner Bros. Stereo TV and sophisticated home theater systems contribute to the demand for good-sounding audio to go with all that video. It *looks* like a huge market, but how many studios are moving away from album work and how successful are they when they do?

At O'Henry, Sanicola found last year's work split 50-50 between post-production and records. He says, "We were busy all year. The strictly record studios had a pretty tough time, from what I hear. We were very busy, and I think the reason is, we are so multifaceted in the work that we do that we are able to keep the rooms steadily booked. Between commercials, TV, films and records, we do all things, and the reason we can do that is because of the way the facility is designed to handle the traffic. The combination of large control rooms, a spacious building, and having the big machine rooms so you can have a 48-track and a couple of 24s and the video machine in there, it just all works."

Another way is to buy your way in. Record Plant recently acquired

EFX Systems, a sound design house for film and television. Stevens says, "In addition to the new boards we are adding, we are going to create a multimedia room, where an artist can leave with music from one of our recording rooms downstairs and go upstairs to a room where he can incorporate that music and develop the rest of his own CD-ROM. We think that's a part of the business of the future. It entails being able to put the music in the appropriate digital format for use in a CD-ROM or any kind of multimedia application, and it requires a very specific expertise. One of the reasons we were one of the first people to go with the SSL 9000 J System is because it's got a 95-channel hard disk recorder, and it saves us one step in the process—it puts the information in a format we can dump straight into a computer. That purchase was part of the plan. We acquired our sister company, EFX, because we wanted to have a part of multimedia, not just putting the sound into a computer format, but marrying the sound to visuals."

Allen Sides has diversified in other ways, including his plan to open two rooms in Nashville. "A lot of people think they will go the audio post route, but there's a lot of competition," he says. "For us, we also have so many other companies that continue to roll on very well. George Massenburg and I are partners in AG Digital; then we have Classic Audio Rentals. Often, when our rooms are booked, we provide packages to our various clients—tube mics, Pultecs, API, whatever they want. Then we provide maintenance and technical support for a lot of home studios. We also design and build home studios. That's something that I've always done. And we also do monitor systems installation."

Most people seem to agree that even with the natural attrition, the studio business in Los Angeles will continue to be both crowded and competitive.

Says Skip Saylor, "I came to this town to make records, and that's what I'm doing. We've got our new lounges, I've bought a bunch of old Neve modules, and I'm building a board for my Studio B that will have Flying Faders. For the mix room, I've just taken delivery on Ultimation, so it'll be 96-in with 80 channels of Ultimation and 16 channels of old classic Neve. People that know the difference will continue to use me. I'll be around. If you're in the business because, 'This is what I have to do because I couldn't stand to do anything else,' then you're in it for the right reasons, and you'll probably be okay."

Says Tom Murphy, "It's a mature industry at this point. So I don't see any of my competitors going away. And I don't necessarily want them to go away, because, to a certain extent it's good. Because the better the facilities are in L.A., the more we all attract bands and keep L.A. vital. It's kind of a double-edged sword. We may not want the competition, but if enough of us withdrew from it, then L.A. wouldn't be the place to record anymore. So we need each other and we hate each other at the same time." ■

Maureen Droney is Mix's Los Angeles editor.

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by Mr. Bonzai

PAT METHENY

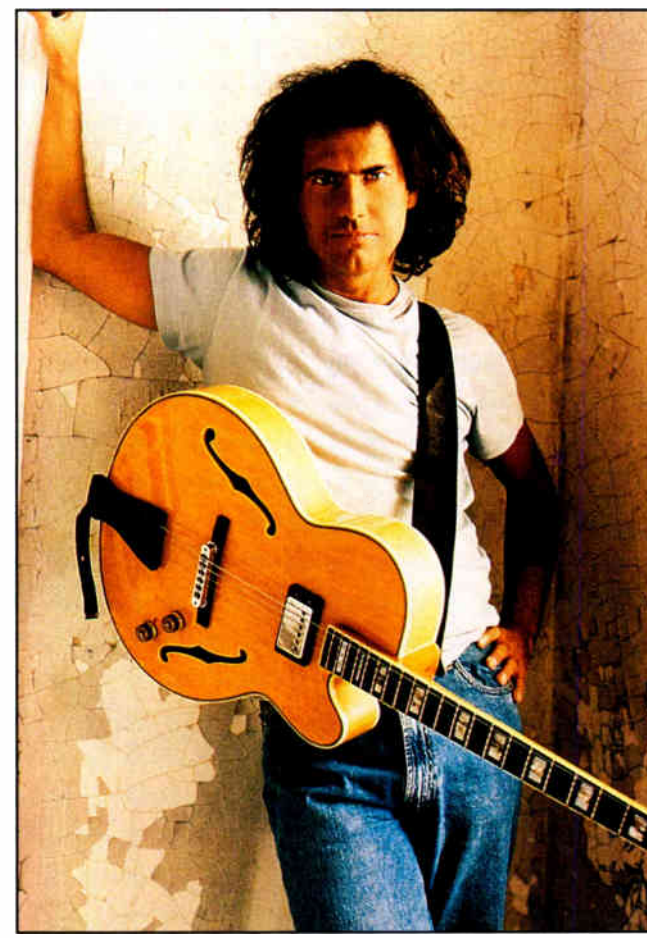
JAZZING IT UP

Guitarist, composer and bandleader Pat Metheny is a rare figure in these corporate times, a musician who plays exactly what he wants and gets paid well in critical praise and commercial dollars. Known worldwide for catchy and sophisticated harmonic tapestries, he returns this year from a sabbatical of diverse explorations. It's that good old Pat Metheny Group with their latest chapter, *We Live Here*. The core of Metheny, keyboardist Lyle Mays, drummer Paul Wertico and bassist Steve Rodby take their signature sound to seductive new levels of musicianship.

Coinciding with the PMG release is another album of newly interpreted Metheny/Mays compositions by Bob Curnow's L.A. Big Band. Hovering at the top of the jazz charts, Curnow's arrangements and 20-man band amplify the blast of the past with the edge of the '90s.

A gifted album-maker since his launch on ECM Records in 1976, Metheny surmises that his new album is his first record that "deals with backbeats in a substantial way." With just a dash of electronic sculpturing, essentially it's about the coolest of gigging groups, the *ensemble* sound of a band traveling on the same wavelength.

Bonzai: Is this new album a regathering of the forces behind your career?
Metheny: Well, the group has been the foundation of everything I've done. I've been lucky to have the opportunity to play in lots of different situations and have always made it a point to do lot of different things, as well as having my own band. But the group is really the one place where I can play all the music that I like under one roof. At this point, it's been 18 years Lyle and I have been playing together. And Steve Rodby, the bass player, has been in the band for 14 years. Paul, the drummer, has been with us for 12 years. Even the new guys, Ledford and Blamires, have been doing this for around eight years. It's hard to describe in a few sentences what the group means. There's a family vibe, and we've traveled all over the world together for half our lives.



MARK SELIGER

Bonzai: I was just listening to your live album, *The Road to You*. What was it like playing Italy?
Metheny: It's great there. The whole Italian listening environment is unlike anything else in the world. Especially Naples—by the time you get on stage, they've already been whipping themselves into a frenzy for two or three hours, singing all the songs.

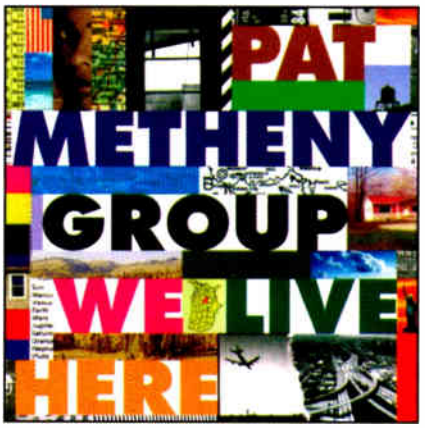
They break into these spontaneous jams of the tunes. There's nothing quite like it.

Bonzai: How is the chemistry of collaboration different after you've been working with the same guys for such a long period of time?

Metheny: Well, it's a lot more comfortable, a lot more efficient and a lot more fun. We really know each other now, personally and musically, and we can get to it without talking a lot. We all know when it's good enough for *us*. What we enjoy about each other is that we all have very high standards and are extremely critical.

We're one of the toughest crowds you'll find—us looking at ourselves and music in general. We're very particular about what it is that we want to get out of the music and the level we try to achieve. The rhythm section is the nucleus. We've played together so much, and what we have in common is that there is no real fear of anything stylistically. It's hard for me to imagine another rhythm section that has the range that this bunch does, in terms of getting inside of certain grooves.

If I'm playing a straight-ahead jazz gig or even a rock 'n' roll kind of thing, I can always think, "If I can't get so-and-so, I can find someone else." But with this band playing this



music, there are no substitutes. If one of us couldn't do the gig, we'd have to cancel it.

Lyle recently described it as like the bridge on the Starship Enterprise. There's a team who know what they are doing and have their individual roles. We all have areas in which we are good, and at this point, we have psyched out what they are. We shift very quickly and easily from one person to another being in charge.

Bonzai: Would you describe yourself as a tough boss?

Metheny: Yes, but only in the sense that I answer to the music itself, which is the toughest boss of all. For me, the music has always been the directive, and I've been lucky to get away with that as the directing force. I've never had to worry about how many records we sold or being on the charts. We've managed to carve out a little zone for ourselves within the music world that's unique and also completely based on what we play.

So, if there is any formula, it's been making the music sound as good as we can. For me, having been around the best musicians on the planet, if it's not happening, I'll be the first to talk about it. Many times it's my responsibility, and I am as tough on myself as I am on other people.

But as far as the group goes, it's not really an issue. What we have in common is an understanding of when the shit is happening and when it's not. When somebody new

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comes into the band, there is a long period of time where there is a lot of talking going on. When Paul Wertico joined, we would get together after every show for the first year and talk for two or three hours about every note that got played. Twelve years later, if I say five things to him during the course of a tour, that's a lot.

Bonzai: How do you compare the creative situation on the road and in the studio?

Metheny: The team that makes the albums has also been together for a long time, along with our engineer Rob Eaton. Our working process started when he was an assistant on *First Circle* when I was on ECM Records. He was about 22 then, and he's worked with us on every album since. He became our chief engineer on *Still Life Talking*. The team that makes the records is Rob, myself, Lyle, Steve and also David Oakes, who is our production manager and front-of-house mixer when we tour, and the person I trust most in knowing the group's music and when I'm really playing as well as I should be.

The process starts with me writing a whole bunch of stuff to get the ideas going and set the direction. Then I get together with Lyle and Steve to really come up with the notes. It's unusual in the jazz world to spend the time in the studio working on things from a detail standpoint. It's more like what you would find in a pop production, even though our goals are different. Since *Still Life Talking*, I've tried to make records that have a certain kind of detail and the capacity to be listened to over and over again, finding new things each time. There have been precedents to that in jazz production, but not a whole lot.

The contrast with going out on the road is like night and day. They are two completely different animals. Going on the road and playing gigs is definitely the most fun you can possibly have—you get this sense of immediate accomplishment, as opposed to sitting around in the studio wondering if there's enough reverb on the snare drum [Laughs].

Bonzai: How about computers and synthesizers—can you recap how you got involved with that technology and where it stands now?

Metheny: Within the jazz world, even now, there's a raging controversy about electric vs. acoustic, synthesizers or not, straight-ahead or fusion. None of these terms mean that much to me in terms of actual music. To me, what I've always loved about jazz as a form is that it was always the inclusive category. The musicians who have inspired me—people like Herbie Hancock, Wayne Shorter, Miles Davis, Ornette Coleman, Wes Montgomery, Paul Bley—what they all have in common is that they deal with whatever is happening in their world in a very immediate, spontaneous and creative way. My first musical act was to plug the guitar into the amp. Knobs and electricity, wires and cords are as natural to me as mouthpieces and reeds are to horn players.

Bonzai: Could you name a few pieces of gear in your rack?

Metheny: My main composition tool has always been the Synclavier. I've been a Synclavier guy from the very beginning of that company. My basic guitar rig has basically remained unchanged for about 15 years. I've started to update it, but it all revolves around an old Lexicon Prime Time, an MXR digital delay from about 1978, and a couple of amps.

I've recently started using this DigiTech 2101, the guitar preamp with a tube. I also use an old Roland guitar synth that came out in the late '70s that I really like—the GR-303. For me, gear is just stuff, and a guitar is something with some strings. The music is conceptual, and it's what you do with what you've got. In that sense, I really dig some of the things that happen in the alternative world, where somebody with not that much skill comes up with something very creative. I'm more interested in what people do with what they've got, rather than the gear they use.

Bonzai: What are your main guitar models?

Metheny: The main guitar I play is an old Gibson ES-175 that I got for a hundred bucks from this guy in Missouri when I was 13 years old. It was essentially my first guitar, and it still works great. That's the one I really like, and then I've got a million other guitars for particular needs. There's a fantastic guitar-maker in Canada named Linda Manzer, who made me a variety of special acoustic guitars. I've also worked with Ibanez for the last ten years to develop a PM model that's loosely based on the 175 but is an updated jazz guitar style that they will actually release.

Generally, I like guitars more after I've had them for a while. I encourage people to drop them and kick them around. New guitars have that uncomfortable five-year break-in period.

Bonzai: Did you have a guitar teacher when you were starting out?

Metheny: Well, I'm from this little town in Missouri called Lee's Summit, and unfortunately, we didn't exactly have any teachers out there. But when I was around 14, I started playing in Kansas City with the best players in town. They weren't guitar players—they were piano players, trumpets and drums, but those guys were really my teachers. I was fortunate to learn from playing with great older musicians. Whenever young guys ask me what they should do to get better, I always say try to be the worst guy in whatever band you're in. That's the secret.

Bonzai: Can we go back to your first recordings with ECM and Manfred Eicher?

Metheny: Manfred has produced 85 to 90 percent of all the groups that have come out on ECM, and he established its presence in the '70s and '80s when it became one of the most interesting jazz labels. I'll always hold him in high regard for giving me the opportunity to start recording when I was 19 years old with one of the premier jazz labels. I did 11 records there and basically the records from ECM are documentary records, as most jazz records are. You record for a day or two and mix for a day, and that's it. We recorded usually in Oslo, Norway, and Ludwigsberg, near Stuttgart in Germany. The engineer who worked with us in Oslo, Jan Erik Konshadt is great. Sonically, our thing and the ECM sound really fit together perfectly—a very clear sound, with some emphasis on cymbals and the high end of the kit. I was really proud to be part of that scene, part of that label.

Bonzai: Bob Curnow's L.A. Big Band recently released an album of your compositions which has stormed up the jazz charts. Is it a kick to hear a big band playing your music?

Metheny: Yes, it's very interesting and very flattering. It's kind of natural in that certainly one of the things that the group has increasingly got involved in over the years has been the sense of ensemble. Lyle and I have been concerned with the eternal quest of reconciling our improvisational interest with our compositional and arranging interests. The result is a bunch of tunes and an idea of what ensemble playing can be in jazz.

It does set up improvisation in a different way, and I can see how Mr. Curnow would be interested in expanding that to a big band vocabulary. Both Lyle and I have done a fair amount of big band writing over the years, and we kind of think like that anyway. There are certain aspects of our group that I have often compared to a big band in the sense that we often have an ensemble section or some kind of an orchestrated-out chorus or something, but we've always tried to do it using our own vocabulary. Certainly, there is a conceptual connection to writing for a large ensemble like a big band.

Bonzai: Did they do a good job?

Metheny: Yeah, and just the idea that they would even do it knocked me out. They got a lot of the spirit aspect of the music right, which might even be more important than the notes. Big band jazz at its best can be very exciting, but with any kind of ensemble-based music, there

is always the capacity of it just to be notes, and I felt they got the vibe right. I have to admit I was really touched by the whole thing when I heard it. I didn't quite know what to expect, and I was a bit apprehensive, but when I finally heard it—yeah!

Bonzai: What's the story with your playing with Bruce Hornsby?

Metheny: I've spent so much time as a leader, as someone who dreams up ideas and then gets a bunch of people to help me make it happen. [With Bruce] I welcomed the opportunity of working with someone who has a strong musical vision—I liked the challenge of it, and also I try to come into a situation like that with a lot of sympathy for what the leader of the date is trying to achieve and also knowing for myself just how hard it is to make good records, just what they're up against. I think in a best-case scenario, when you hire someone like me who is also a bandleader and a person who makes his own records, too, you not only get their musical expertise but you get their understanding and feedback. I know I always enjoy it when some strong individual comes in and contributes to one of my dates. It's not something I do a whole lot because I'm very particular about who I play with.

Bonzai: Why did you choose to work with Hornsby?

Metheny: I love musicians who are strong individuals, people who have a real point of view about music. In pop music, I feel that Bruce is one of the best songwriters and best musicians in the world. When that first song of his came out, I couldn't believe that somebody actually got some chord changes on the radio. Somebody infiltrated the masses, you know? It seems that every four or five years, somebody manages to slip some stuff in there, but Bruce has consistently done it throughout his career. He really messes with the forms, but it's still pop music.

Pop music has become so conservative harmonically, and just in general. It's really rare to find people who are looking to expand the harmonic language of what a pop song can do, and Bruce is one of the guys trying to do just that. The first record I did with him, *Harbor Lights*, has one of the most challenging sets of chord changes I've ever had to play. It moves all over the place, and he gets five stars from me for trying to

get that stuff in there. There is not enough of that going on now. When I think about Stevie Wonder or the Beatles, Milton Nascimento—that's great pop music. The same impetus that we have as jazz players trying to expand the form is present in that work. There is so much retro stuff, so many people looking over their shoulders at what happened in the '60s, the '70s. I dig it when I come across guys who say forget that—what can we do now that's different? I suppose someone might read this and say, god he's saying that about Bruce Hornsby? But, yes, I am saying that about Bruce, relative to hearing yet another E Minor/A Major guitar song. I'm shocked at the lack of imagination harmonically that exists in pop music—it makes me wonder if people are ever going to get tired of 2 and 4 on every single beat, and the usual progressions. It's the '90s—we should keep going.

Bonzai: Where do you live?

Metheny: I don't live anywhere. On my income tax statement, I am listed as Permanent Transient. When I have to be someplace, I go there, get a hotel and set up shop, and move on. I keep all my stuff in a warehouse. It's been like this for quite a while, which is kind of a weird way to live, but it works for me.

Bonzai: There's a signature in your music: the non-word, vocal element. What is the origin and influence?

Metheny: For me, it was a practical thing. I loved what we were doing with the group when we started, essentially a quartet of guitar, bass, piano and drums, but I always missed what we would get if we had a horn player, which is the element of breath in the music. There's something about having notes really sustain that are supported by breath. There's a certain quality that opens things up for me as a writer that you never get with a guitar because the note dies out after you hit it, unless it's an artificial thing like using distortion. Same with piano. Synthesizers for melodies are useful, but somehow it was never enough. I think this is true for both Lyle and myself. And when I looked around at the horn players out there, who I could conceivably have hired, I really couldn't find anybody. In terms of what the group was, and what we had been trying to develop as a sound, I couldn't find the answer.

Around that time, I ran into a guy named Pedro Aznar, a young Argentinian who is actually a bass player. He had this way of singing that was so beautiful—kind of inspired by Milton Nascimento and the Beatles. It became obvious to me that this would be a possibility for getting that breath quality without it being the usual guitar/saxophone front line which existed in so much music. We tried it, and it worked.

It made me realize that when I write tunes, I am constantly singing. I think of myself as a singer even when I am playing the guitar. It's just that the notes don't really do that thing after you hit them. They go away. Yes, you're right, it's now become part of our ensemble sound that people identify with. We've alternated back and forth between using Pedro for a project and then using these two guys who have an American version of a similar sound, Mark Ledford and David Blamires, who have been doing it since *Still Life*.

Bonzai: What about your album *Zero Tolerance for Silence* [a '94 album of difficult, noisy free-form guitar improvs]? Were you surprised when this became such a smash hit? Just kidding...

Metheny: Well, generally, when I make a record, I usually have a pretty strong need to express a certain angle of music. It's like a hunger to hear a certain type of sound. The sound of that record is pretty much the sound that I carry around in my head 24 hours a day. Everything else is a distillation of that, and I realized I had never effectively documented the essential impulse of what I do musically. The first track is one of the top four or five things I've ever recorded. It captures a certain feeling and a way of expressing myself. It's hard for me to articulate this because it's really there on the record. Whatever I could say would be nothing compared with what that is.

Bonzai: Wasn't it quite a departure?

Metheny: That's what everybody says, but for me, music is music. I hear people divide my career into the straight-ahead thing, the group, etc. To me, I've been making one long record from the beginning. If there is any aspect of what I've done that I feel satisfied with and almost proud of, it's that. All the records are of this one piece. I'm not trying to do a little bit of this and a little bit of that. I guess it's a little unusual, but I don't think it is. I can think of a number of musicians in my same age group that have a similar idea of trying to find themselves musically, separate from style.

There is so much emphasis on style and the superficial aspects of what music is. To me, that's never been the way I've responded as a listener or as a player. I'm much more drawn to what's happening right underneath the surface. The spirit, especially the first track on that record, is absolutely in line with the other things that I've done.

Bonzai: It strikes me as sonic sculpture rather than music in the usual sense.

Metheny: That's the way I think of all the stuff I've done. My main hero, in many ways, is the artist Paul Klee. There's a nice variety stylistically and texturally, and in the vibe of the paintings. But they all go together. One may be black with charcoal and lots of details, and the next one is very open, but they absolutely go together as a view of what his world was as an artist. I'm not trying to compare myself to Paul Klee or anybody else, because I'm nowhere near that level yet. I'm still working to get it together as a musician. That's what inspires me—the idea of looking at the world that I live in as a musician and expressing a larger picture of what I'm interested in over the course of a whole series of records.

Bonzai: How far along are you?

Metheny: Well, I'm not too far, and I just turned 40 this year. You'll never hear me complain about anything because I've been very lucky, especially being able to play with some of the best musicians in the world and having this great band that has lasted a long time. I get to play a lot—that's the luckiest thing of all. On the other hand, I wish I played a lot better. I still practice a lot, and I spend pretty much every waking hour thinking about music in one way or another. You just can't speed up, you have to hang in there and live your life, and let the events of your life feed what you are as a musician. And try to enjoy it all while it's happening—that's pretty much what my groove is. ■

Roving editor Mr. Bonzai plays a fire-engine-red plastic 1961 Mattel DynaSound guitar in an odd, nameless sextet that performs in shoe stores throughout Southern California.

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by Philip De Lancie

MUSIC MEETS MULTIMEDIA

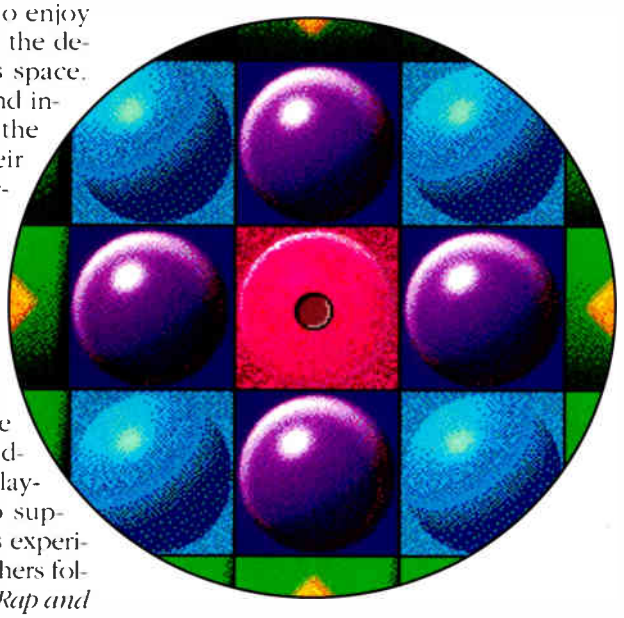
NEW TITLES FROM THE FRONTIER

"Enhanced CD" is the buzz word of the day at the frontier where the music industry meets multimedia. The concept refers to a hybrid combining CD-Audio and CD-ROM but without the problem of current "mixed-mode" discs, on which the data has to be track 1 (which can create problems for those who unknowingly play that track in a CD-Audio player). The enhanced CD enjoys broad support in concept (see "Tape & Disc News," February 1995). Sony and Philips, keepers of the CD standards, announced in a joint statement in mid-November that a specification proposal for a "stamped multisession" format for audio-plus-data CDs "will be available before the end of the year."

As soon as such a specification becomes public and appears to enjoy substantial industry support, the details will be covered in this space. But the marriage of music and interactivity isn't waiting for the standards gods to finish their labors. The number of music- and sound-related CDs continues to grow. Some titles are mixed-mode discs that might have been released as enhanced CDs had work on a new format concluded earlier. But others are straight CD-ROMs, "traditional" in the sense that they are not intended to also play in an audio player. Some use multimedia to supplement and enrich the user's experience of pre-existing music; others follow in the footsteps of *Rock, Rap and Roll*, *No World Order* and *Meet MediaBand*, using interactivity to allow the user to participate in the actual making of the music.

Because the field is so new and the record companies are really just starting to mobilize, resourceful independent producers, composers and engineers have the opportunity to come up with interesting ideas. To get a feel for what has already been tried and how well it has been done, we thought it would be useful to take another look at a cross-section of current and upcoming CD-ROM titles in which music and sound play a starring role.

Before we get into specifics, it might be helpful to mention a couple of general technical points. The first is that the requirements for the "target platform" (playback machine) continue to rise. More and more titles for both Macintosh and Intel-based machines now specify a minimum of 5 MB free RAM (over and above the operating system), which would have been considered very high-end for consumer products as recently as a year ago. QuickTime 2.0 (usually included for free on the CD) is also usually required for titles with video con-



tent, and it is important to know that you may need to update your CD-ROM driver for these titles to function properly. Also, many titles are being released in a hybrid format with Mac and PC on one disc. All the titles below were reviewed on a Mac but are (or will be) released on both platforms.

"SOUL EXPEDITION: THE 1960s," "ROCK EXPEDITION: THE 1960s"

These two titles are the first fruit of an attempt to combine the renowned reissue skills of Rhino Records with the multimedia marketing muscle of Compton's NewMedia. The titles were produced at Jouissance Productions in San Francisco under the direction of Nancie Martin, who cut her interactive teeth as project manager for Peter Gabriel's *Xplora 1*. Authored in the Apple Media Tool environment, the discs are designed to allow a single CD to play multimedia on both Macintosh and Intel-based PCs. Each disc also contains ten audio tracks that can be played in a regular CD player, which is why Compton's is billing them as "Audio-ROMs." I saw prerelease versions at Jouissance; the titles should be released in March.

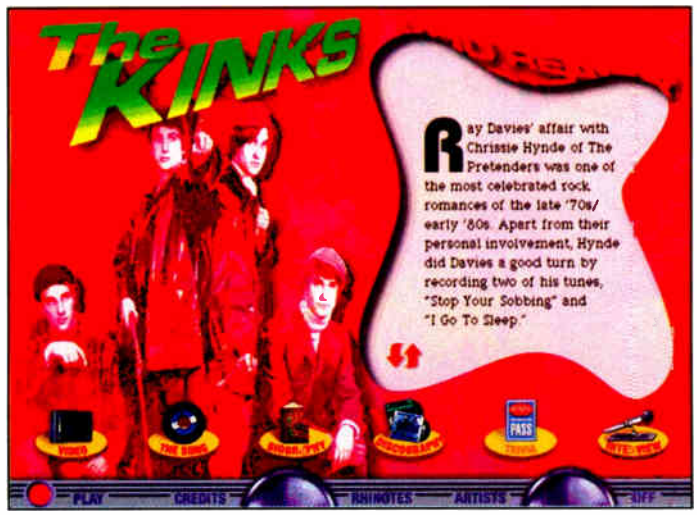


***Figure 1: The Kinks from* Rock Expedition: The 1960s**

***Figure 2: A peak moment onstage from* This is Spinal Tap**

Spanning the years 1962 to 1968, *Soul Expedition* is packed full of classics such as "In the Midnight Hour" (Wilson Pickett), "Respect" (Aretha Franklin), "Green Onions" (Booker T and the MGs), "Dock of the Bay" (Otis Redding) and others from artists including Sam & Dave, Eddie Floyd and Percy Sledge. The rock disc includes the Kinks ("You Really Got Me") and heavies Iron Butterfly ("In-A-Gadda-Da-Vida," of course) and Vanilla Fudge ("You Keep Me Hangin' On"), but also features lighter-weight fare from groups such as The Monkees ("Last Train to Clarksville"), The Turtles ("Happy Together") and Sonny & Cher ("I Got You Babe") that don't exactly spring to mind when pondering rock music of the '60s. (Some of these tunes might more appropriately have been saved for some future *Pop Expedition* offering.)

In auto-play mode, the discs display background art on the computer screen while the songs play through. To give the CD more of the feel of a stack of albums by the various artists, the art direction for each song was handled by a different artist. Using a simple interface common to all the songs (see Fig. 1), the user may skip at any point to a different song or switch to interactive mode for browsing through artist biographies and discographies, videos of filmed or televised appearances, interviews and trivia about the artist's life, music and career.

The two *Expeditions* aren't based on existing music albums, and they will be released as mixed-mode rather than multisession discs. But they provide a good illustration of what many in the music business have in mind for content on enhanced CDs. And the lessons learned from working on a series of titles of the same basic type relate well to the kinds of production efficiencies that developers of enhanced CDs should be able to achieve.

"The idea is to have a template so we can do more of this stuff," Martin says. "What we are currently developing is a template for something for a single artist that is even more basic than these titles. Because to me, what is really going to work in the music-multimedia field is something that can be put together not in three months but in three weeks. Something that you can add to an audio CD, that will be really simple and generic, in the same way that people know where to look for the track times on an album cover. It could be all kinds of things: lyrics, interviews, videos, whatever. But we are figuring out a way to do it simply and cheaply, because from our perspective as a company, we think we are better off doing ten $50,000 projects than one $500,000 project."

With their overall emphasis on fun rather than scholarship, the *Expeditions* aren't as deep or complex as some of the available music titles. But the discs accomplish a modest goal within a modest budget, which allows them to be modestly priced ($29.95). The screen art is attractive, and the commentary, while short of exhaustive, makes a fine introduction (or reintroduction) to a group of artists who contributed to what many consider to be the Golden Age of popular music. And, of course, the dual-purpose nature of the discs will help them keep their value long after the multimedia content has been thoroughly explored. If you are in the mood to move, you don't need your computer. Just stick *Soul Expedition* in your CD player and groove.

"THIS IS SPINAL TAP"

Voyager's CD-ROM version of *A Hard Day's Night* made history as the first full-length feature in the format. Now the company is offering another price-

less treasure of rock film history on CD-ROM: *This Is Spinal Tap*. As with *A Hard Day's Night*, the limitations of CD-ROM mean that this version isn't necessarily the best way to sit down and watch this cult classic. But the title shows how good interactive navigation can be for allowing those who are already familiar with a film to find and enjoy favorite scenes quickly. The approach lends itself particularly well to comedy, where interest is frequently linked more to short routines than to plot development.

Spinal Tap offers a multitude of ways to move around the film. A "find" feature allows you to enter a word or phrase in a dialog box and then locate to any point in the film where that word appears in the dialog or titling (presumably, the script has been loaded into a searchable QuickTime text track). You can also jump to a "map" view, which allows you to go directly to scenes in any of 14 cities on the U.S. tour that the film purports to document. A "snap" view takes you to a bulletin board of 18 snapshots, allowing you to jump to

Figure 3: Inside the Circus music tent

favorite scenes. The cities and scenes are also available on pulldown menus, as are the concert scenes of the band's classic works such as "Big Bottom" and "Rock and Roll Creation." The user interface (see Fig. 2) is simple to understand (and even allows guitar players to fiddle endlessly with knobs without everyone else getting mad at them). The volume knob goes up to 11, of course, and if you want to quit, you just click off the power switch.

The video controls on the far right of the control panel include basic "play/pause" (you can also toggle by clicking on the movie itself) and forward and backward, frame-by-frame,

You can scan, but the scanning is too slow to really zip through scenes to find a particular spot. You can also choose between large and small video display. The small is of passable quality when the scenes aren't too dark; the large is too blocky to be good for much of anything. Both modes use a theatrical screen ratio wider than the basic 4:3 TV proportions.

As the movie plays, you have the choice of listening to the original soundtrack or to either of two newly created tracks of commentary, one by the boys in the band (Harry Shearer, Christopher Guest and Michael McKean), the other by director Rob Reiner and members of the behind-the-scenes team. This multiple soundtrack approach is great when the commentary relates to the scene being shown; it makes less sense when there is no direct connection.

Surprisingly, I found the audio quality to be a disappointment. The packaging claims 16-bit Dolby Surround, and the stereo is a refreshing change from mono CD-ROMs, especially during the music scenes. But listening through a regular stereo hooked up to my Audiomedia II card, the ADPCM soundtrack was plagued with edgy noise riding on top of the audio program. I ended up preferring the 8-bit/22k output of my Mac through small self-powered monitors, which gave less emphasis to the flaws in the sound. Despite the marginal fidelity, however, the humor of *Spinal Tap* comes through loud and clear. For the devoted fan, the functionality added by interactivity makes this CD-ROM version ($39.95) a must-have.

"CIRCUS"

Most of *Mix*'s multimedia coverage to date has focused on music titles for adult or teen audiences. But the children's market is an important force driving multimedia's invasion into America's households. *Circus* ($49.95) is a good example of why the interactive medium is so popular with kids. It has the appeal of a cartoon, but kids become participants rather than just observers. The disc is colorful and active, packed with animated circus acts, games and surprises. To keep on track with the music-related focus of this article, I'll stick to talking about the "music tent" (see Fig. 3), out back of the main tent.

The main activity in the music tent is to experiment with various instrument sounds, although you can also listen/sing along with a seven-song jukebox. *Spinal Tap* devotees will enjoy the guitar: It lets you hear combinations of four levels each of distortion and effects. Other instruments include clarinet (complete with dancing shadow), tambourine, trombone and a drum kit. The instruments respond when clicked, but the feeling is more like starting a recording of a sound than actually playing the instruments with the mouse.

The only instrument really set up to make you feel as if you are playing is a set of color-coded vibes that let you try your hand at reading color-coded notes from sheet music on the wall. If you play the notes in the right order, the page turns and you get to play the next phrase. This is a great way for kids to learn to sight read; too bad there is only one song to play.

Overall, the sound in *Circus* is quite good. But while the music tent makes a nice addition to the program, the activities are not deep enough or rich enough to fully satisfy whatever appetite for music they may awaken. That's okay, though, because *Circus* (co-produced by Matra-Hachette Multimedia and Voyager) doesn't bill itself as a music title, and it has so much else for kids to explore in other areas.

"A SILLY, NOISY HOUSE"

Another children's title from Voyager that emphasizes sound and music, *A Silly, Noisy House*, has been out for about a year. Billed as "an animated audio toybox," *A Silly, Noisy House* is a colorful child's-eye view of sights and sounds around the home. Designed for ages three and up, the disc is a point-and-click exploration (authored in Macromedia Director) that requires no reading skills to enjoy. Kids can play in six parts of the house, rummaging through boxes in the attic, joining in a birthday party or singing along with one of 14 songs from a songbook.

As the title suggests, sound is an important part of the experience. Each room is full of objects that make a sound or play music when clicked, usually in concert with animation. The graphics and the animations are simple, but they are cute enough to keep the younger set interested (see Fig. 4). On longer animated passages, however, the sound and visuals become obviously out of sync, illustrating the dangers of relying on Director for synchronization instead of transforming animations into QuickTime movies. Also, there is no cursor change or other indication of which objects make sounds and which do not. That could be frustrating for kids who don't understand why everything is not responding to their clicks.

Unfortunately, for a title emphasizing sound, the audio quality isn't so hot: not terrible, but not great either. The sound is uneven; not enough attention was paid to using compression or other means to compensate for the limited 8-bit dynamic range, and the levels seem to vary noticeably from sound to sound (could be a job

***Figure 4: Inside the parlor of* A Silly, Noisy House**

for a mastering engineer). Whether these considerations have any real effect on the enjoyment of the title by kids is hard to say; kids are probably less sensitive to these things than parents who are audio engineers.

A Silly, Noisy House uses no buttons or other standard interface devices. The main "menu" is a cross-sectional view of the various rooms of the house. Once in a room, you use the basic walk-through navigation approach: Move the cursor to the edge of the screen, it turns into a left or right arrow; when you click, you go to a different view of the same room or into an adjoining room. Most views (but not all) have a picture of a house somewhere in them that you can use to get back to the main menu. I never found how to quit without using command-Q, which most kids probably wouldn't know.

All in all, *A Silly, Noisy House* offers some fun explorations of sound for youngsters and a good way to get kids comfortable with the computer. But given its limitations—the lack of onscreen lyrics for the 14 songs in the songbook, for example—the title looks a bit underdeveloped and overpriced ($49.95) compared to some of the other excellent children's titles on the market.

"SOUND TOY"

Sound Toy does not actually qualify as a CD-ROM title, but it is included here as an example of interactive music software. Distributed on a single data-compressed floppy, *Sound Toy* (also published by Voyager) is a graphical music-making interface whose only goal (admittedly, a laudable one) is amusement. The entire screen presentation is an arrangement of 25 colored squares (see Fig. 5). Rolling the mouse into a square triggers a musical riff, as does pressing certain keys on the computer keyboard. Most of the riffs are bluesy harmonica, with some African bells and other accents such as a low bass note thrown in. Once triggered, riffs continue even as new riffs are started, so if you move quickly, you can layer sounds.

In one mode, *Sound Toy* is simply an exploration of the possible combinations of different riffs. In another, you can play along with a simple bass/drums loop. The loop and the riffs all sound surprisingly good coming out of my little self-powered monitors at 8-bit/22kHz stereo playback resolution.

It's fun to play riffs along with the loop for a while, experimenting with all the various sound combinations. But in its current incarnation (I saw a beta version), *Sound Toy* is limited; even at a mere $14.95, the program's potential for lasting entertainment doesn't hold up well when compared, for instance, to a good audio CD in the same price range. I am all for programs that use interactivity to break down the walls that normally separate the active (playing) from the passive (listening) sides of the music experience. But for my money, *Sound Toy* would need many more different loops to play over, the capacity to combine short loops into longer sections and the capability to save and modify a session in order to offer an experience that users would want to come back to over and over. ■

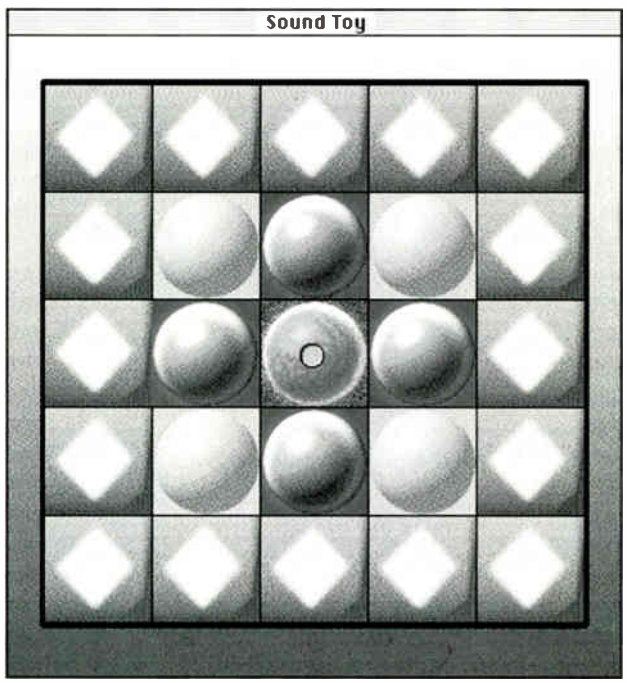


Figure 5: **Sound Toy's *music-making interface***

Philip De Lancie is a mastering engineer at Fantasy Studios in Berkeley, Calif.

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by Blair Jackson

BROOKS ARTHUR

FROM GIRL GROUPS TO "NEW STANDARDS"

Over the course of nearly four decades working in studios, Brooks Arthur has been involved in so many interesting and even historic sessions, a full book of his reminiscences would probably be more appropriate than this relatively brief interview/profile. In some ways, his is the classic tale come to life:

The Brooklyn-born Arthur started in the record biz as a teenager, working in the mailrooms of Decca and Kapp Records, absorbing every aspect of his surroundings. His Brooklyn "homeys" were aspiring talents like Neil Diamond, Gerry Goffin, Carole King, Barry Mann, Cynthia Weil and Neil Sedaka. While attending Brooklyn College, he managed to land engineering gigs at several New York studios, cutting records like The Angels' "My Boyfriend's Back," Little Eva's "The Locomotion," the Dixie Cups' "Chapel of Love," the Shangri-Las' "Leader of the Pack" and The McCoys' "Hang on Sloopy." He engineered for Ashford and Simpson in their early hit-writing days and even sang back-up on a few records. "It was an amazing time in my life," he says.

Arthur was the engineer on most of Neil Diamond's early Bang and Uni Records hits ("Cherry Cherry," "Kentucky Woman," "Sweet Caroline," etc.), and the late '60s found him working behind the board for Van Morrison (*Blowin' Your Mind*, *Astral Weeks*), Janis Ian (*Society's Child*, and then years later, her superb *Between the Lines*), Richie Havens, Tom Rush and the Blues Project.

Arthur co-owned two different studios during the late '60s and the '70s—Century Sound in Manhattan, and 914 Sound (where Bruce Springsteen worked on his first two albums) in the suburbs of New York—all the while engineering and producing a wide variety of artists. He moved to Los Angeles in the mid-'70s and has kept up a hectic pace ever since, producing such mainstream pop artists as Bernadette Peters, Michael Feinstein, Bette Midler and Peter Allen; various Broadway cast discs; albums with comedians like Robin Williams and Adam Sandler; and acting as producer and music supervisor for a number of Hollywood films, including three *Karate Kid* movies, *Lean on Me*, *All the Right Moves* and *A Chorus Line*. Arthur was on the jazz charts for many weeks last year for his pro-

PHOTO LESTER COHEN

FLYING THE EUPHONIX

5 MINUTES IN THE PILOT'S SEAT

Take a seat at the Euphonix CS2000. Seventy-two faders are in reach without stretching or moving your chair. The top knob on the channel strip is adjustable without bending your back. The surface is cool and comfortable and the large color flat screen casts a warm glow on your face.

Load the 'title' you started last week into the console from the removable cartridge disk. All those hours of meticulous work have been carefully preserved. Hit the console 'locate' button and select the top of the piece. Forty-eight tracks of digital tape are commanded to the cue. Press 'play' and the room instantly fills with the familiar mix - same EQ's, same dynamics, same reverbs and delays, same everything. Last week suddenly seems like a just few seconds ago. As you listen to your work you can't help thinking **"without a Euphonix, I'd still be twiddling console knobs and resetting my outboard gear!"**

Forget about SnapShot Recall and Total Automation for a minute and just listen to the sound. That's where the Euphonix really soars - that smooth, rich, high-resolution, analog sound. "How do they do it?" you ask yourself, **"Euphonix has built a high-end analog desk that has everything you thought you needed digital for."** You already know that Euphonix consoles are found in many of the world's finest studios and have earned a reputation for unbeatable sound quality.

Back to work. You make some minor adjustments to the overall balance. **Faders, pans, mutes, and solos are all where you would expect them to be on the desk in front of you - no awkward paging or techno interfaces.** This console feels like most traditional consoles for basic mixing. But when you need to get a little deeper into individual tracks there's nothing like it.

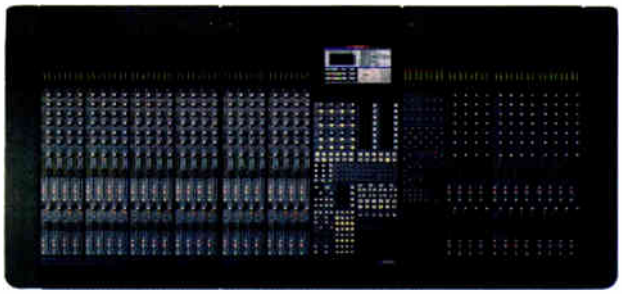
Without moving an inch from the center mix position you reach over and solo a track. The track needs a little improvement in this passage so you set the tape machines to cycle with a couple of key presses. It sounds wrong, too aggressive. Glance at the screen and you'll notice a sharp peak in the track's EQ response curve. Grab the 'HM gain' knob and back off the boost a little. Then take the 'HM Q' down a little. It sounds much better and the curve doesn't look so radical anymore. Now the smoothness is there but it still sounds a little squashed. Hit the 'Dyn' button and back off the compression ratio knob a little. The GainBall on the screen isn't pumping so hard and now it sounds perfect. With automated SnapShots enabled, those EQ and dynamics adjustments are automatically saved just before the next cue. **No tricky key press sequences are required - no hassle.** As the tape rolls through the next cue, a new set of EQ's and Dynamics are instantly recalled. They sound just like they did last week - perfect. How did you ever manage without this feature?

Next challenge. A track needs editing and you need to do it on the workstation. **Since your favorite workstation is communicating with your console this is going to be easy.** Without moving from the center of the mix position you locate the track to the problem spot, route the audio over to the workstation input and hit record at the appropriate time. Roll your chair over to the workstation and make your edits. As you play back the track from the workstation, both tape and console instantly locate and play exactly as they did when the track was on tape. Move back to the center of the desk, assign the workstation track back to tape, locate the machines, and drop it back in. It's Fixed.

Now you realize the plate reverb effect at the next cue isn't quite right. Again, you cycle the tape through the cue. **While the piece is continuously cycling you hit the program change button for your favorite digital reverb right on the desk in front of you.** Step through a couple of algorithms until the right one fits. Finally it sounds perfect so you turn off the cycling and let the tape roll into the next cue. The reverb program change is automatically saved.

Your five minute session is nearly over and you still need to fix that automated ride on the voice track. The moves were perfect but the overall level isn't up enough in the mix. Hit the 'trim' and 'write through' buttons and then punch in on the voice fader. As you trim up the fader on the channel strip you notice the central assignable moving fader playing the same moves, just offset a little higher. The overall level is now exactly where you want it. Hit the 'stop' button and your trim is automatically saved as a new pass.

Your time is up. Press the 'save title' button and your work is neatly buttoned up and put back on the removable disk. Congratulations! You've landed safely after completing more work in five minutes than you ever thought possible. The studio is now free for the next quick-turn project and you're free to go to the beach.



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duction work on guitarist/singer John Pizzarelli's exquisite *New Standards* LP. He's been nominated for 20 Grammys and won trophies for work with Janis Ian ("At Seventeen") and his own Brooks Arthur Ensemble (*Traces*). In this interview from last fall, we touched on a few historic projects and talked a bit about how he works in the studio.

What are you working on now?
I'm developing two or three new artists, and I'm working on my own album as a vocalist, singing some great standards and some of my own songs. I'm also finishing up two albums of daytime soap stars—a Christmas album and a Valentine's Day album. Before that, I produced the John Pizzarelli album, *New Standards*, and that's done very well. Then out of the blue, Lorna Luft asked me to do an album that is similar to the John Pizzarelli vibe. Speaking of Pizzarelli, we're getting ready to do another album together. I've created an interesting niche for myself.

How would you describe that niche?
It's somewhere between my youth—my early learning days as a recording engineer and then a producer—and the contemporary times. I've got younger people like Pizzarelli who have a love and appreciation for the American classic standard—and the new standards; that's the name of our album. It also allows me to do what I've always done best as an engineer and a producer. It enables me to, with some help from some friends, do a lot of these recordings live. I hire a studio where the musicians are there all at once. I use certain microphone techniques that I used in the '60s and reincorporate them with some '90s techniques.

Can you be more specific? What can you tell me about the Pizzarelli sessions?
They were at this old studio in New York that was the first studio I ever went into as a fledgling professional many, many years ago. It was called Nola Recording Studio. It used to be Errol Garner's penthouse studio, and it still has his piano there. It has a great sound. My friend Jim Czak owns it; I've known him for years. I needed a couple of "solids"; I needed a guy who owned a studio and who had co-engineering capabilities like myself. We're cut from the same kind of cloth—the '60s through now, and a sensitivity to the live-in-the-studio setting. He also has a pretty terrific collection of microphones: Neumanns and Telefunkens, and RCA 77s and 44s, old Altec salt-shaker microphones. For some air and some height and some depth, and some '90s, I introduced a lot of the FET mics and solid-state microphone technology, mostly as ambience microphones—three, six, eight feet above the drum kit and the string section. We had beautiful Sennheiser mics above the string and horn sections. As a result, I was able to blend a lot of old and new technology. What was great is Jim was able to help me out a lot on the budget because you don't get a very rich budget for projects such as this. It's maybe a third or less of what you'd get for an average rock 'n' roll record. I got a very strong, visceral feeling when I got into Nola that this was the place for this project, and it was.

> When a song knocks me out and the sound of an artist knocks me out, I love it. I can still be brought to tears by a great vocal.

This was all live to 2-track?
No, live to 24-track. I did a couple of small fix-ups, but it's still really a live record. If I was going live to 2-track, I couldn't have made those little fixes.

When you're recording live to 24-track, do you give yourself more latitude with the mix, knowing you can balance things later?
Yes. At the same time, though, Jim and I were in there with wonderful production sheets in the control room, and we had our hands on faders and we were watching for cues—if it was a string ride, or an effects ride or guitar ride, or kick drum, or tom-tom fill. We were nailing them on the spot. With a project like this, when you sit down at the console to mix or remix, once I find my level for the orchestra and I start to introduce the lead vocalist, things have to change.

Is the ambience we hear the room or processing?
I love the sound of the room, so it's mainly that, but Jim has an old EMT and I delayed it just like Phil Ramone and I used to do at A&R Studios, and then I took a REV7 and a couple of Yamaha things, sprinkled them in there and gave it that sort of 12k, 15k type of echo sizzle up on top. That lets you know that the record was cut in the '90s.

Are you a confirmed analog man?
Yes. I've worked with digital many, many times, of course. On this project, it didn't enter the digital domain until it went over to Bernie Grundman's studio [for mastering]. I also ran simultaneous DATs for two reasons: It works as a fabulous safety, and it allowed me to go back to my hotel with my DAT Walkman and a set of cans and check it out in some detail.

How did it sound in that form?
It sounded great, but it sounded digital. When I went back to the studio and heard it in analog, there was a pliability about it, a breathing, particularly in the low end. My multitrack was 15 ips Dolby A; I didn't even use SR. My quarter-inch was without noise reduction at 15 ips +6. I had a lot of headroom, and it was quiet as could be.

Where does your own personal taste run? Do you love the Michael Feinstein, Bernadette Peters pop-ish vocal music?
I love good songs. Certainly, I love the softer Whitney Houston type of things, but I don't get much call to do that sort of record. I'll either get an artist like a Pizzarelli or a Feinstein, or somebody from the neofolk movement, because of my Janis Ian and Melanie experiences. It seems like I've worked with almost every New York male and female folk singer at one time or other in my life, either as an engineer or a producer. And as an independent producer, I've even tried to track down and sign a couple of female vocalists: I tried desperately to hook up with Tori Amos very early on, and a few years ago, I tried to hook up with Suzanne Vega, knowing that the neofolk movement was coming in. But I lost out to record companies with tremendous amounts of money. But that's how it works. I would have loved to help develop those artists.

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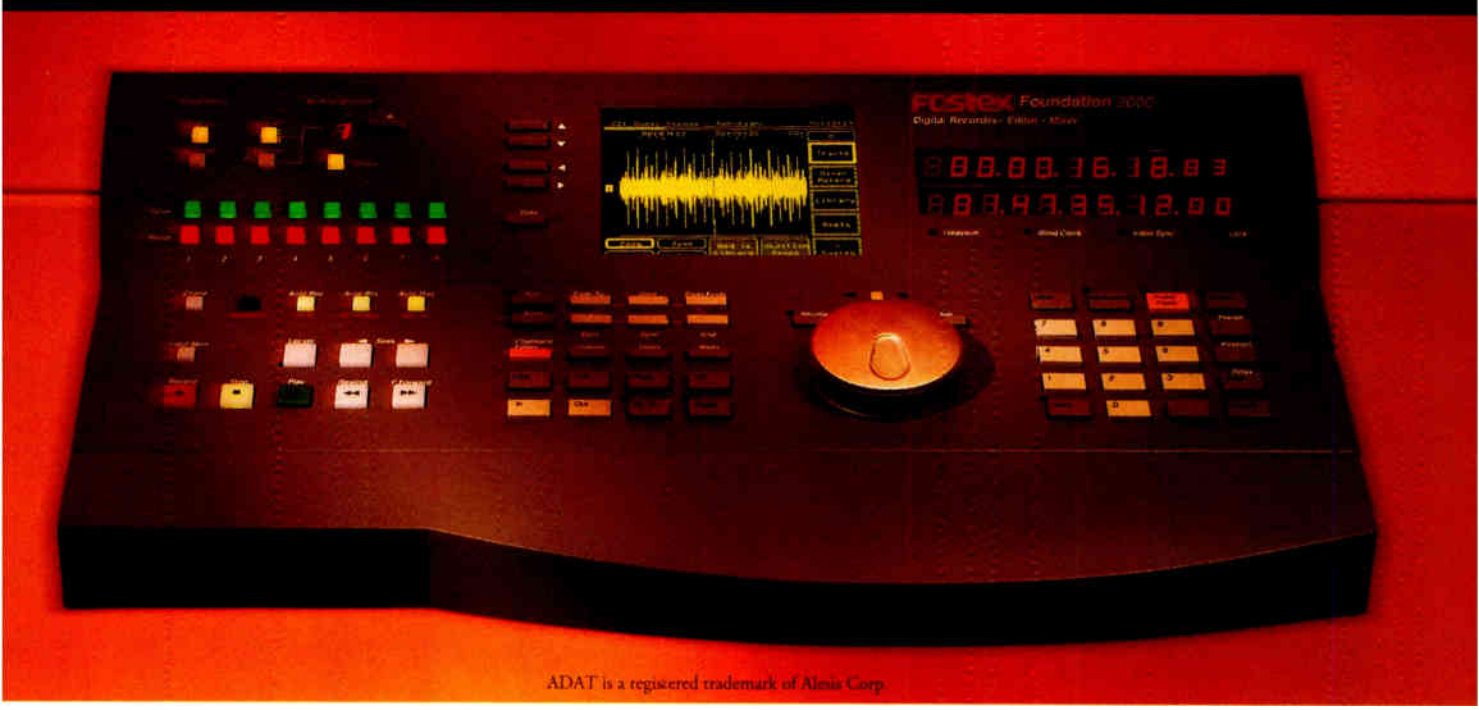

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Andy Montgomery - Owner of Villa Studios, London. And one of the first to purchase the newly released Ventura 85

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TRIDENT

You were involved with all the great early Neil Diamond records. Can you talk about those sessions? You must have been good friends with Bert Berns [of Bang records].

Bert was one of my mentors. I say to this day that had he not died, a lot of us would have had a different path in life. As well as we've done, we would have flourished more with him and through him. He was decades ahead of himself. He had major ears and a lot of guts. I think he would have kept the feeling of the old record business in the current record business. There are a few guys who have that kind of magic. It's not quite Mike Todd, and it's not quite P.T. Barnum, but they're definitely larger than life. David Geffen is a man like that.

The Neil Diamond sessions were always wonderful. They were in several places. The briefest run was probably at Dick Charles Recording Studio—a little demo studio which became Masters. Then I started working at a studio where Phil Ramone and I hooked up, called A&R, and I think I did three albums with Neil there, including 17 or 18 sides that hit the Top 20. All the sessions were live with the band. We'd use two 4-track machines. We'd mix the musical elements down and create the space for a vocal and then create a space for background vocals. The bottom drums, bass, piano might be on one track, maybe guitars, strings and horns on the next.

I think of those sessions as being groundbreaking: They were in that weird transitional time between the girl group and teen idol stuff and the Beatles' more adventurous productions. Neil was very distinct in that era. Sort of post-Spector without the clutter.

Yeah, that's well-stated. That's absolutely correct. The arrangements were very well-thought-out, and there was a certain youthful exuberance about those sessions. Great players, of course, all down the line. Neil was very much involved with the arrangements, too. I would guess that during the Uni era, he would go through every measure with the arranger—whether it was Artie Butler or someone else—prior to the actual session. But during the Bang era, I think he relied more on the arranger. He would talk about it with him. I was in many pre-production meetings with him. And then when we heard the arrangement on the studio floor for the first time, Neil was always quick to add or delete various things. Neil would actually sit on a stool and play the song down one time, so you'd get the feel of Neil—which actually turned out to be an album title of his later on.

The brilliant aspect of it all, though, was that Jeff Barry believed that less was more—less meaning you could sing it on a street corner, it was empty and something that the kids could sing and play. If it got too complicated, he felt we'd lose the young audience. He had the capability of deleting things on the floor and then further taking things in and out, playing various games with mute switches when we were mixing Neil's records. What I always loved about Neil's sessions was they were very, very professional. He was so prepared, and he always would stay hours if necessary to finish things. You could tell he meant business.

When you worked with these young groups like the Shangri-Las, the Dixie Cups or The Angels, did their relative lack of studio experience

pose any special problems to you as an engineer?

Yes it did. There was no great science or logic to cutting these young kids. It's only now that people are starting to ask about it. To be frank with you, on a lot of levels, we were all so young—some of us were in our teens, like the singers—that we were flying by the seat of our pants, just like they were. We were going with what we heard on the radio. We would determine what was right and wrong from the lessons we were learning through the radio, and lessons we were learning from some of the more sophisticated engineers and producers who were just prior to us. After a while, you instinctively knew what was right and wrong. If there were three girls singing backgrounds, you'd have to balance them on the microphone at the time and ask one to step up, one to step back, have them hit a chord and get that balance, and then stick to their places—mark their spots if necessary. Then, once the earphones went on and the song began, their adrenalin would start going and the whole balance would change so you'd have to readjust it. Sometimes, if we couldn't get the girl group or guy group in the first couple of passes, what we would do is, if we only could get two thirds of a three-part harmony, we would ask the last voice to do an overdub, and then we'd create the triad that way. That then gave birth to the notion of doubling and tripling background voices. We'd go machine-to-machine with the overdubs.

The technology at that time was sort of in its infancy. It was all small, custom-built consoles, with the rotary pots on some, unsophisticated echo chambers, so we'd use stairways and Altec boing boxes (spring reverbs). The boing boxes were under the console, and if you kept the beat too hard with your leg, you could trigger them. Or if a siren went by you might pick it up in one of your stairway chambers.

What did George Martin's ascendancy do to your life—all those incredible-sounding records?

Frankly, he knocked us out for the count of ten. He decked us! We loved him, and he was so musical, and I can't forget the Beatles as the greatest influence for me. We got a double-whammy back in '63-'64. When Jeff Barry had a group out called The Raindrops, they were flying high with a new record called "That Boy John," and then John Kennedy was killed and it was taken off the radio the next day. That was followed promptly by the British Invasion and the Beatles, and it turned all our heads around and sent us scampering for ways to find some new directions. Then, a couple of years later, they started going with the sitars and all these exotic combinations.

Radio and record companies basically said, "We're going British!" We'd sit around and try to figure out how George Martin did all that stuff. I had a good friend named Bobby Bloom, who was one of my assistant engineers, and I remember him walking through A&R Studios one night and playing "A Day in the Life," and we were all like, "Oh my Goddd!" We popped it through the big Altec speakers and then spent the next week analyzing it. For a while there, it seemed like we'd become unimportant in the music scene, but it passed, and we found our way again.

Shortly after that, you started working with Van Morrison, first on the Bang records sessions and then on one of my favorite records of all time, Astral Weeks. ***How was Van to work with in those days?***

Volatile and supremely creative. It's the Van Morrisons and Neil Diamonds that have shaped me into what I am today, because it made me want to only work with artists who sing great and write great. If they don't have that distinctive sound, I don't enjoy going into the studio with them because I don't really know who they are in a way. So as a producer it's always my quest to find that kind of artist.

At one point, Bang had both Van and Neil [Diamond], two guys from extremely opposite poles. Van was very explosive, both vocally as well as his personality. He had so much pent-up emotion, and he had a small language problem in the early days —he was *so* Irish—and he had trouble communicating his feelings. So what would happen is, he'd sort of explode, and it would look like a temper tantrum, but it was actually a creative frustration. He was looking for words to tell the band what he wanted, and he couldn't do it sometimes. But it was artistry at its finest. It was like working with a Picasso.

I gather that* Astral Weeks, *with those great string arrangements, was cut live in the studio in just two days.
Right. Most of it was live. That was done at my studio on West 52nd St., Century Sound. My one regret about that album is that his producer, Lew Merenstein, forgot to put my name on that album, and it's one of the records I'm most proud of. If I can puff my own cigar here for a moment, I was growing by leaps and bounds during this period creatively speaking, very much like some of the artists I was working with. And essentially, I produced *Astral Weeks*. I say that without any malice toward anybody or demeaning anyone. They got paid as producers and so on, but I'm here to tell you—that's *me*. I used that record as a prototype for what was to become the Janis Ian *Between the Lines* album a few years later. That's another of my favorites.

On both of those, it was a combination of personnel and intensity and intention that made those records so good. When you put on *Astral Weeks* or *Brown-Eyed Girl* or even *The Feel of Neil* or some of those other early Neil records, or even some of the mono girl group records—man, they have a great sound! So many things were working in our favor—even the leakage from microphone to microphone and section to section. We worked to learn that we could use that to our advantage. Also those tube microphones and tube amplifiers were just killer.

As someone who goes back to the days of 2- and 4-track recording and no-name consoles, has it ever been difficult for you to embrace all the changes in technology—the computerized mixing and all?
Not at all. As I said earlier, I prefer analog to digital, but that's not because I don't understand the technology or something. I've worked with digital. As far as computerized mixing goes, I like it. In fact, in the '80s, I started using this old computerized dinosaur automation system called the Allison System on an old API board at Record Plant. I love Flying Faders and computerized mixing because it enables me to get the mix that I love and make the fixes I need without changing anything else. What I don't love about it is that today's engineers—and most of them are really great engineers; I mean there are some real whiz kids out there, they know so much—they tend to set it and forget it. They get a sound, tell the computer they want it up half a dB or a dB-and-a-half, add some top end, and they think that's the fix. Some of those records lay flat to me; they don't have any ebb or flow or hands-on feel. What I like to do is get the first mix or two or three into the computer, as if it was a manual mix, and then try to fix. Some of these guys are making a hundred changes, but they don't feel like any changes were made at all.

I think the late '80s created a lot of boredom in music and sound. So many records sounded the same. It's a great sound, but how many records do you want to sound like Janet Jackson or Whitney Houston or Don Henley. Then, every once in a while you'd get a great-sounding record like that Bruce Hornsby record that Elliot Scheiner did, which was automated, but you could tell there was a hands-on urgency to it. I think you can hear it when there's some hands-on involvement in a record.

My take on why there's now a

retro vibe on so many records in terms of the sound is that its a reaction against all the records sounding the same. It's engineers and musicians saying, "Man, there's got to be more to it than these sounds we're hearing over and over again." It's ironic, because we've come so far, obviously, but we've had to take a step backward in a sense to keep things sounding fresh.

You've worked with big and small record companies, seen budgets rise and fall. What's your view of the current relationship between record companies and album budgets.

Oh, that's a loaded question. [Laughs] I'm going to get beaten up either way. I think the fact that record companies spend a couple of hundred thousand dollars for untested and unproven alternative bands just to get into the race is not a good idea—I don't think it's money well spent. The percentages are against them, and it affects the amount of money that's then spent making and promoting other records. I wish the record companies would do what they used to do, and that is sign and develop artists with the knowledge that it might take two or three albums to break them. They spend so much money before a record even comes out, between advances, tour support and videos that some of these bands are hundreds of thousands of dollars in debt before their first album is even released. And then, if the record doesn't go out the chute selling 100,000 copies or doesn't get into the Top 80 or 60 or 50, the next day they're looking at it as a record that went belly-up, and they start looking elsewhere for something that will be a hit. Conversely, if you have an artist who starts small and spends relatively little money, if you get an album that sells 40,000 or 50,000 records, a small-niche label or boutique label can make money and then really figure out a good way to develop the act. That's really one of the things I miss most about the earlier days and the record companies' philosophies.

A trend at the record companies that I do like is that they're starting to hire some very talented A&R people who have music as their specialty instead of law or business. That's changing the complexion of the industry. It's sorely needed, and I give them all a standing ovation. I love what Atlantic is doing; I love what Mo Ostin did at Warners. I love Ron Fair being at RCA. Columbia Records is making some nice moves, too.

When you go in the studio with a John Pizzarelli these days, do you still get goosebumps the same way you did when you made "Hang on Sloopy" with The McCoys all those years ago?

Absolutely. Quincy Jones is still making great records at 64, and I'm just entering my 50s, so if he still gets high from the music, I should be able to. George Martin and Phil Ramone are older than me, and they're still getting high. What you have to do, though—and this is me speaking for myself—is do the work that makes sense for you. You have to make the kind of music you feel honest about, because otherwise, it's like an apple and an orange. But when a song knocks me out and the sound of an artist knocks me out, I love it. I can still be brought to tears by a great vocal. There's nothing else like it. ■

Blair Jackson is the executive editor of Mix.

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BY TOM KENNY

POST·SCRIPT

SOUND FOR FILM

Balancing Film Sound on The Cutting Edge

PART 2

by Larry Blake

(This is part two of a four-part column discussing ways in which recent music-recording innovations such as modular digital multitracks and high-quality, low-cost consoles can be used in film and TV post-production.)

As I noted last month, one of the fundamental differences in stereo sound for feature films, vis-a-vis standard stereo music is that film soundtracks have a separate center-channel speaker. The problem arises when mixers lean too much on 2:4 matrix decoding during playback, such as that used in stereo optical films and at home via Dolby ProLogic decoders, to create center-channel information. The era of nonmatrixed playback is upon us, and I strongly advise that the master mixes of all theatrical films have discrete center information. I feel that I am somewhat getting ahead of myself, and I want to try to get everyone up to speed before going any further. First, a brief overview of the film sound post-production process.

In the broadest sense, a sound job is broken down into dialog, music and sound effects, although each category is of course further delineated: dialog into production dialog and ADR; music into source music and underscore; and effects into backgrounds, hard effects, Foley, etc. For the purpose of this discussion, I am assuming that although cut elements will be delivered to the mix stage on MDMs, the actual editing will be done on workstations and then copied (a.k.a. "regrouped") to an MDM. Despite the benefits of having elements "edit-accessible" as would be the case with mixing from workstations, their per-track-output cost is substantially higher than those of MDMs. (What little need one has in the long run for 35mm mag film will be discussed next month.)

I am also assuming that you will be mixing in stereo for release both in matrixed 35mm stereo optical and 6-track digital. Even if you will be primarily working on TV shows, an understanding of the needs of these processes will serve you well in the long run.

The additional speaker channels (center and surround) might not be that much of a problem if films were mixed like records: 24 to 48 channels of individual elements (2-track stereo groups at the most) playing back simultaneously to one composite 2-track mix that lasts a few minutes. Instead, the final mix of a stereo film today requires that dialog, music and sound effects (the latter two, especially, in LCRS stereo) be recorded separately but monitored simultaneously.

These separate recordings are individually called

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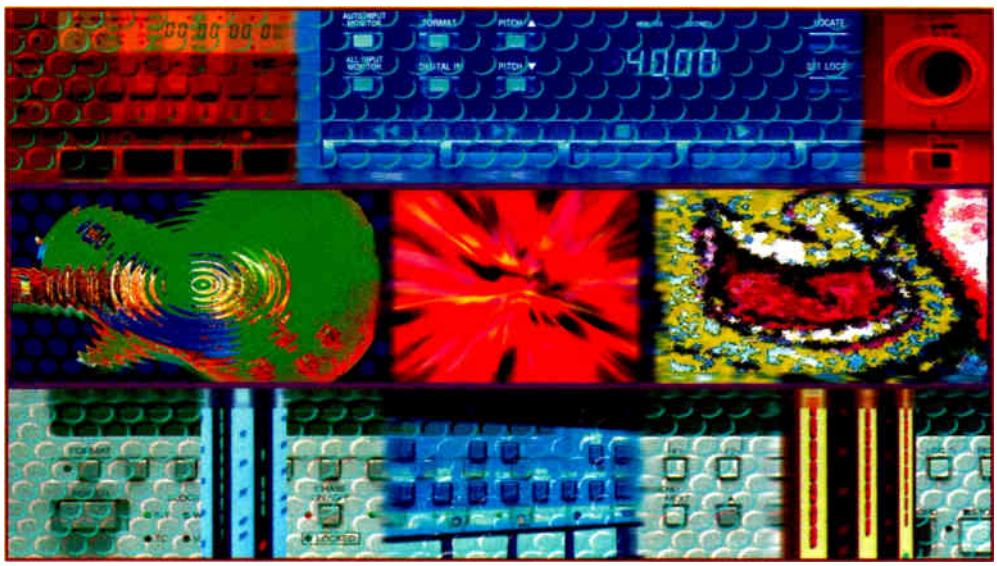

Sprocketless Altman

DIGITAL DIALOG FOR "READY TO WEAR"

by Tom Kenny

Lots of people are talking about sprocketless digital audio post for feature films, but few are actually doing it from front to back, on a big-budget project. In mainstream Hollywood, there is still something quaint and comforting about a roomful of Magna-Tech dubbers.

Robert Altman and crew, however, have made the plunge, and they did it in New York with the editorial assistance of C5 and the dub stages at Sound One. For *Ready to Wear*, Altman's take on the fashion industry in Paris, up to three Tascam DA-88s were used in the field and five were brought to the stage, along with a Sonic Solutions Sonic System that fired the music and was used as sort of an offline dialog editor for fixes. Lee Dichter mixed to a Sony 48-track. Except for dailies, the audio never touched mag film.

The last time *Mix* visited an Altman film was in 1992 for *The Player*. Then, production mixer John Pritchett was recording multichannel to a pair of Otari MX-5050 8-tracks, mixing down to a Fostex PD-2 timecode DAT for the picture editors. Pritchett was booked during the shoot for *Ready to Wear*, so Parisian Alain Curvalier, who last worked with Altman on *Vincent and Theo*, stepped in. Again, some scenes made use of as many as 24 radio mics, plant mics and booms, everything discrete and recorded flat. The Otaris were replaced with the Tascams, a third Sonosax mixer was added (along with a 24-channel Soundcraft for monitoring), but the Fostex remained, and this time the timecode function was used, becoming essentially the timecode generator.

"The DAT is the mix we use for dailies and to load into the Avid, and that has to be referenced to the 8-tracks," explains

—CONTINUED ON PAGE 112

PHOTO: E. GEORGES/COURTESY MIRAMAX FILMS

Left to right: Linda Hunt, Tracey Ullman, Danny Aiello, Sally Kellerman and Kim Basinger in Robert Altman's Ready to Wear

Wireless . . . Without Mirrors

by James D'Angelo

It happened in the comedy *Naked Gun*, but it was soon followed in reality. During a mid-October council meeting in Pensacola, Fla., Mayor John Fogg slipped out of the press conference and into the restroom. But he forgot to take off his wireless microphone—it's just 20 yards away. He does what he has to do, and he flushes, and immediately he hears laughter and screaming coming from the press conference. And when he returns to his place at the table, the laughter resumes. It isn't long before he realizes that he still had his wireless mic on.

For some, the world of wireless microphones still breeds fear. If the transmitter is turned off before the receiver, the receiver is tricked into thinking that the second harmonics of local radio stations or other random radio noise is the transmitted signal, and a super-loud noise burst results (a sound much worse than feedback), which can make an audience tremble or a soundperson deaf. If you tour with wireless, you need to clear the frequencies you are going to use with the local experts and authorities. If you go through New York on that tour, you are asking for problems, and who doesn't go through New York?

But for every audio professional who fears wireless, there is another who swears by it. And as problems like the above are being solved and the equipment itself is getting better, the number of believers is increasing. Fox Television uses dozens of wireless to broadcast foot-

—CONTINUED ON PAGE 180

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—FROM PAGE 108, SOUND FOR FILM

stems, which means that they can be played together at unity gain with an absolute minimum of gain riding and no further EQ or processing. Thus, your music stem will contain the music fading up and down to slide around dialog, just as your sound effects stem will be the internal blend of BGs, Foley and hard-sync effects that you and the director (or producer) feel best tells the story. While minor corrections can be made at the "print master" stage, which I'll talk about next month, the closer your stems are to a unity-gain, no-brain situation, the better off you will be.

Right out of the gate, you can see some things developing here: If you have LCRS stems for dialog, music and effects, that means that you will be recording on at least 12 tracks simultaneously, so let's assume a situation wherein you have two 8-track MDM recorders at the final mix. Number one will contain your dialog, comprising two center channels (being able to split stuff across two tracks will help you get out of all sorts of weird situations), plus a left-right pair for those occasions when you need to go to stereo, such as reverb sends in a large room or stereo group ADR. The other four tracks of your first deck might be LCRS music.

The eight tracks on the second machine can be divided up in any number of ways. You would probably want to keep the majority of the sound effects together as an LCRS stem. The remaining four tracks could be reserved for a separate Foley stem or source music stem. You might also want to leave a track or two open for overall sweeteners, such as ADR lines or sound effects that you want to add on top of the final mix without having to match levels and punch into a stem. For those of you unfamiliar with the idea of punching in, a little explanation might be necessary.

Throughout the mix, the MDMs will be in timecode-chase synchronization, with the master timecode coming from the videotape master deck. This machine is the master, so you can park the image with a shuttle knob and know where you are. Remember, you're not going back to the beginnings of verses or choruses in a two-minute song—your playing field is a 20-minute reel of videotape.

In the mythical re-recording stage that we're building for these columns, we have six MDMs that we'll use to play back either original cut elements or premixes, and two that we'll dedicate as recorders. The recorders need to be controlled with a full-function remote that allows you to switch between input and repro on each channel, and thus the only thing that is fed to the monitors is the output of the recorder. Everything goes back and forth together, and after you record a section, you can correct a mistake by matching the input to what is coming off tape. As long as you are matched, you can punch in and out to your heart's content to refine your mixes. Indeed, this is what film re-recording is all about: mixing and matching.

This all might seem very obvious, because everyone is used to punching in during overdubs. However, I'm surprised that so few stereo record mixes are made in this manner, either by locking up a timecoded ¼-inch deck or DAT machine or by using two tracks on an MDM. Anyway, back to the dubbing stage.

A couple of things are becoming obvious. First of all, one of the new crop of 8-bus boards will not cut it, because you need 16 separate buses. The solution is simple: get two boards, and let's make one a 32-in and the other a 24-in. Because everything is recorded separately, you only need to lay out your track assignments so everything "fits." If your film has extensive sound effects, you might want to dedicate four MDMs to them on the "big board" at the final mix. The other board would easily handle 16 tracks of dialog and music, plus necessary reverb returns, conveniently on 24 faders. An external meter bridge of the two recorders will be essential to monitor at a glance what is going on in the mix.

We should pause to realize that we're trying to hot-rod less than $10,000 worth of recording consoles to do what is usually the domain of purpose-built, $200,000-and-up film

C.A.S. to Honor Les Fresholtz

Two-time Academy Award-winning re-recording mixer Les Fresholtz was scheduled to receive the Cinema Audio Society's Lifetime Achievement Award in a ceremony coinciding with the C.A.S. 35th Anniversary Awards Banquet at the Beverly Hilton on February 25. Fresholtz has been nominated 14 times, winning the Oscar for *All the President's Men* in 1976 and *Bird* in 1988.

"Les Fresholtz is one of the prominent mixers in Hollywood—in a class by himself," says Don Rogers, executive vice president of Warner Bros. Studio Facilities. "He has more Oscar nominations than anyone working today. He is dedicated to his art and an asset to the entire sound community. And he's a real gentleman. We here in the Warner Bros. family—from directors Clint Eastwood and Richard Donner to the crews on the stage—are pleased and proud to have worked with him over the years." ■

re-recording consoles. One of the first traps you will run into will be that in a complicated film, the effects and music will have been divided into multiple LCRS premixes, meaning that VCA or moving-fader subgrouping is a must for gracious living. Taping faders together with a popsicle stick loses its charm quickly; immediately, in fact.

The other trap is monitoring. Even though your two consoles are separate insofar as the two recorders are concerned, for monitoring purposes everything needs to be combined to feed your LCRS monitors via a studio monitoring unit such as those provided by Dolby and DTS to their licensees. Next month, I'll delve into this matter in detail.

I have a sense that this series will probably raise more questions than it answers, so please send along your questions directly to me at PO Box 24609, New Orleans, LA 70184; fax (504) 488-5139, or via the Internet: swelltone@aol.com. ■

Larry Blake is a sound editor/re-recording mixer who lives in New Orleans for reasons too numerous to mention, although seeing Fred LeBlanc of Cowboy Mouth climbing the rafters of Tipitina's to tear down their Christmas tree would be a good start.

—FROM PAGE 109, "READY TO WEAR"
assistant picture editor Dylan Tichenor, who also served the "informal" role of technical systems supervisor and provided the necessary link between production and post. "The Fostex is the master clock simply because we could not prestripe the DA-88s with timecode, so the easiest way to get all the same code was just to loop it through. You don't want to use the DA-88 as the master because it's the Fostex that's running all the time. I mean, if you're in a taxi and you're just going to jump in and get a few lines, you take the Fostex. The DAT is what goes into the Avid [for the picture edit], which goes onto our cut list, and when the sound guys start loading from the 8-track to the Sonic, they have timecode they can lay into, and it's only a matter of a few perfs here and there to phase it up."

The Avid generated the edit decision list that included the timecode, take numbers, source tapes, etc. Supervising sound editor Skip Lievsay of C5 also received a cut list and 4-track work mixes, rather than the typical mono scratch track. Those tracks were loaded into the Sonic via a Mackie 16x8 mixer, using four of the outputs from the Mackie into the four Sonic inputs (using Apogee A-to-D converters); some scenes required multiple passes. It was then edited two to four tracks wide, creating large chunks for Lee Dichter to work with in the final. "A lot of the big scenes, with many actors, were mostly radio mics," Lievsay says, "but on the more intimate scenes, we were able to use the booms and radios together, which had a much nicer sound.

"It's done very much like a performance, like the stage almost," Lievsay adds, "where there are many scenes with many actors doing different things and being recorded by different cameras simultaneously. But, it's four tracks wide, sometimes up to—on many scenes—as many as three simultaneous events. So in any given scene, there might be three sets of 4-track audio, from beginning to end, all toned out with the appropriate material from that setup. And then we tried to create the equivalent of a 24-track tape recording of a live performance."

If you want to change reels, all you have to do is pop out the Tascam and put in a new tape. It's so much more versatile. —Skip Lievsay

The final mix took place in one of the new digital (i.e., sprocketless) rooms at Sound One in New York, not Lee Dichter's normal room. Dialog was premixed down to 12 channels—eight channels of mono dialog and two stereo pairs for production backgrounds. (About 80% of the film is production BGs, according to Lievsay, and most of the remaining came from wild tracks on location—one of the many advantages of recording multichannel is that you usually have a stereo pair free to capture sync location ambience). Effects and Foley, also played back from Tascams, were premixed in one pass, recorded to the 48-track. Music came off the Sonic, five tracks wide.

"We've been using the Tascams on the stage for about a year, in conjunction with the Sonic," Lievsay says. "We had been using the Sonic only, playing back dialog and everything, starting with *The Hudsucker Proxy*. But the problem is that when you want to start editing with the Sonic, which you naturally want to do to fix elements during the mix, then the mix has to stop and wait for you. But when we have the Tascam with the Sonic, you can play back from the Tascam and do changes in the background on the Sonic. Then, when you're ready with the fix, you just drop those channels from the Tascam and play back from the Sonic instead. That makes a big difference. Also, changes are very simple because you're running against video, so the picture goes very quickly, and the Tascams chase and lock. If you want to change reels, all you have to do is pop out the Tascam and put in a new tape. It's so much more versatile."

Working on an Altman film is not without its difficulties; typically, it's just the sheer amount of dialog to sort through, transfer and edit (the one saving grace, perhaps, is that he refuses to loop lines, so there's no ADR to record and match). But the systems are in place for dealing with multichannel dialog, and they have been for years, with many of the same crew intact. Perhaps the biggest challenge on *Ready to Wear* was the fact that half the film had to be shot at 25 frames per second, the European standard, and the other half at 24, the reason being that televisions appear throughout the film (Altman's comment on our modern lifestyle?), and to avoid flicker, they had to shoot at 25. So, I ask, you're shooting for 11 weeks in Paris, why not shoot the whole film at 25 fps?

"Good question," Tichenor says. "My original suggestion in the preproduction meetings was to go all 25. But none of us were real comfortable with that because it's a four percent slowdown once you come back to the States or once we get into post. And we weren't sure how that would affect the action. Bob makes these films where a lot of stuff happens and you're constantly

going from one place to another. So to have this internal drag...you may not notice it, but it happens slower. You would notice it immediately if you look at them side by side.

"So we did some tests, and we figured that about half the scenes have TV playback in them [including the scenes with ficitional TV reporter Kim Basinger]," Tichenor adds. "So we decided to go half and half. It was just a matter of making sure that everybody was clear—all the cameras set to 25, all the sound reports labeled correctly.

"Because most of the sound for the final mix was going to come from digital 8-track, we had to figure out how to get that slowed down four percent without going to mag and doing a 25-24 slowdown. I found this company in California—NVision in Grass Valley—that makes custom word clocks, did a little math calculation, and found that four percent of 48 kHz is 46.08. So we had them build a custom word clock, and it worked beautifully. I drew a diagram of our system and sent it to them, showing them where we needed to slow down. I used the box all during picture post, then sent it over to the sound crew and they used it for all the transfers. Never had a problem. But now I have this 46.08 sample-clock generator that I don't know what to do with."

"It took us awhile to figure out how to transfer everything," Lievsay says, "but it was a mechanical issue. People who understand timecode know there's really not that much to it. But people who don't understand timecode get completely freaked by the different options. There aren't really that many options when it comes down to it, and this box from NVision worked perfectly.

"One of the nice benefits in working this way," Lievsay adds, "was to have only three 48-track digital tapes for each reel of film. So we had only 21 rolls for the entire movie, including all the versions, and we made a lot of versions: SR•D, which is two versions, or printmasters, plus two M&Es (a 6-track and a 4-track), plus a mono and a printmaster. All of that fit onto three 48-track tapes, and we cut out all the waste of those film elements. Now we have a box or two of Tascam 8mm and Exabyte backups for the Sonic. That's it." ■

Tom Kenny is a Mix *associate editor.*

New Products For Film/Video Sound

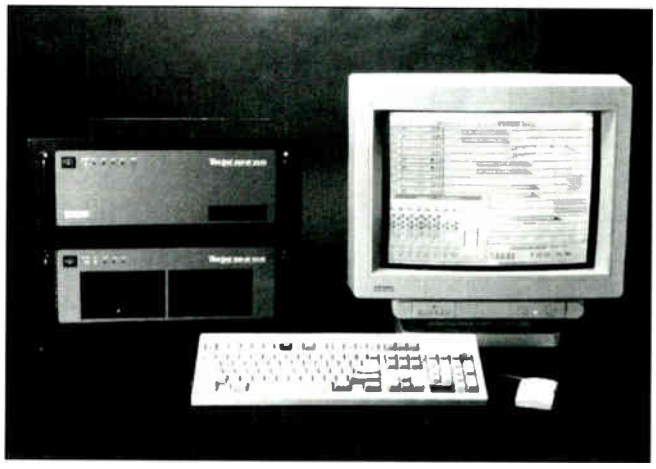
ASC VIRTUAL RECORDERS

ASC Audio Video Corporation (Burbank, CA) introduced six new products in its virtual recorder line (used for tapeless random access and for instantaneous digital picture). The upgrades and options include the VR PlayList (allows user-programmed seamless playback of non-sequential segments and stills); the VR NLE (an online, nonlinear editor); the VR Sports (a slow-motion controller with preselectable play speeds, cue points and pre-rolls); the VR LiveDelay (a two-VR system that allows simultaneous, variably delayed record/playback access to the same media); VR LiveCache (combines the functionality of LiveDelay and PlayList); and VR FiberNet (allows multiple VR systems to access the same storage media).

Circle 190 on Reader Service Card

SONY MXP-700

New from Sony Corporation (Park Ridge, NJ) is the MXP-700, a television production console series designed to expand the capabilities of the company's audio-for-video products. The unit has three frame sizes and 30 different modules (including monaural or stereo inputs, transformer or transformerless circuits, and metering and dynamic processing options). The series feature mix-minus outputs and clean-feed buses. Retail is between $30,000 and $70,000, depending on configuration.



PRO SPATIALIZER CINEMA SOFTWARE

New from Spatializer Audio Laboratories Inc. (Los Angeles, CA) is Version 5.3 of the Cinema Software for use with PRO Spatializer. With the new release, PRO Spatializer is fully MIDI-compatible. All of the features of the PRO Spatializer hardware (expansion, dynamic movement, localization of stereo sources, stereo synthesis of mono sources, etc.) can now be controlled from a MIDI sequencer. Other features include read/write up to 24 controller stations simultaneously, select all types of Spatialization (E, D & C), read/write mute status for all controller functions, etc.

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TIMELINE EDIT CONTROLLER

To increase the operational speed, precision and functionality of its Studioframe DAW-80 digital audio workstation, TimeLine (Vista, CA) announced the TimeLine Studioframe Edit Controller. Designed to provide users with a dedicated hardware control surface for a broad range of functions, the edit controller offers a high-res scrub/jog wheel for precise machine control and editing functions, as well as dedicated track access keys to all tracks.

Circle 192 on Reader Service Card

RSP TECHNOLOGIES CIRCLE SURROUND

RSP Technologies (Rochester Hills, MI) released a new version of its Circle Surround Decoder. The Circle Surround High Performance Decoder features rear-channel separation and full bandwidth, along with compatibility with all surround formats. The new version features XLR ins and outs, mode selection for reversion to conventional surround limitations, improved center-channel resolution and a remote functions jack. Retail is $1,299.

Circle 193 on Reader Service Card

SENNHEISER LONG SHOTGUN CAPSULE

Sennheiser Electronic Corporation (Old Lyme, CT) announces the ME 67 long shotgun capsule, the newest addition to the K6 modular condenser microphone system. Designed for capturing distant sound sources, the mic has been optimized for emphasis on high-frequency articulation. The unit has low self-noise (16 dBA), high sensitivity (35 mV/Pa), and it runs on AA batteries or phantom power.

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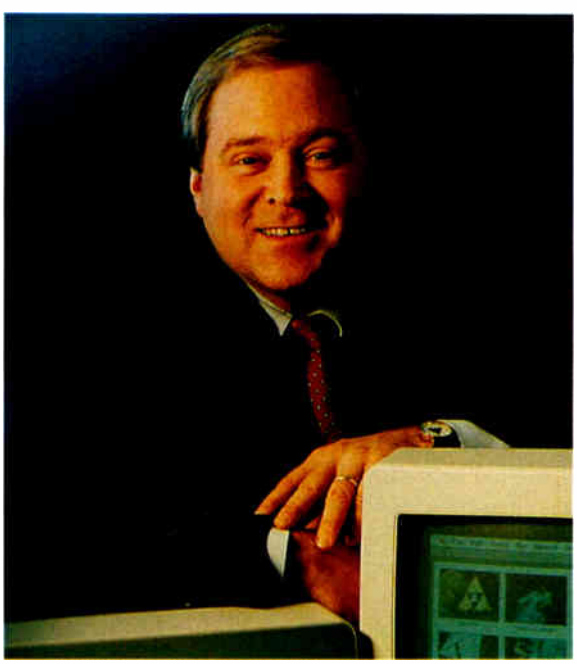
MERGER MANIA

BY DAN DALEY

THE MARRIAGE OF AVID & DIGIDESIGN

The 97th AES convention was held in San Francisco, where dreams are made of silicon and nightmares revolve around earthquakes and brake failure. The Bay Area's southern peninsula is bordered on the south by the myriad computer-related industries and to the north by the multimillion-dollar homes of the venture capitalists and bankers who finance them. Even the exterior wall of a newsstand in San Francisco's airport was a sheet of computer and entrepreneurial magazines.

Such a world once seemed quite remote from the purview of professional audio. Not anymore. Not for some time. And never again. The business of pro audio has become inextricably tied to that of the computer industry, both technologically and financially. An increasingly long list of mergers and acquisitions (and a few outright corporate failures) have characterized the recording industry over the past five years. Mutable data storage values are replacing the minutes and seconds of music recording, and the price of initial public offerings (IPOs) is



Left: Peter Gotcher, president and CEO of Digidesign; Above: Curt Rawley, president and CEO of Avid Technology Inc.

being talked about as much as hourly rates.

The list of recent business moves is long: To name just a few, Harman International, which owns JBL and other audio businesses, acquired Lexicon and Studer, whose two workstations, Opus and Dyaxis, are placed under yet another layer of corporate control via the Studer Lexicon Digital Systems Group. Studer got into DAWs by acquiring Dyaxis-developer Editech. But the biggest number of events are found under the rubric "Strategic Alliances." Alesis adds Panasonic to the ADAT army; Fostex is already a license holder. Tascam announces the same thing with Sony and the DA-88 format; Peavey will provide speakers for multimedia-computer-maker Dell. For many in the business, reading the *Wall Street Journal* and *Forbes* is as critical as reading *Mix*.

We're coming from a world where video and audio production have been very separate. They're now converging in a number of markets. My personal feeling about the product direction is that the future will be integrated audio and video systems that will be very powerful on both counts.

—PETER GOTCHER

The merger of digital video/audio workstation manufacturer Avid and DAW and peripheral-developer Digidesign provided a context to AES, coming as it did on October 26, two weeks before the show. The two companies are very successful in their respective markets, both are computer-based, and both are already public, stock-issuing entities (AVID and DGDN, respectively, both on the NASDAQ exchange; Avid will remain the sole name of the company and stock symbol, and Digidesign will become a wholly owned subsidiary). The digital revolution has long promised a merger of video and audio under a single protocol, and Digidesign's largest customer was Avid, which incorporated several Digidesign technologies in its workstations. Under the terms of the merger, Digidesign stockholders will receive 0.79 shares of Avid common stock for each share of Digidesign common stock.

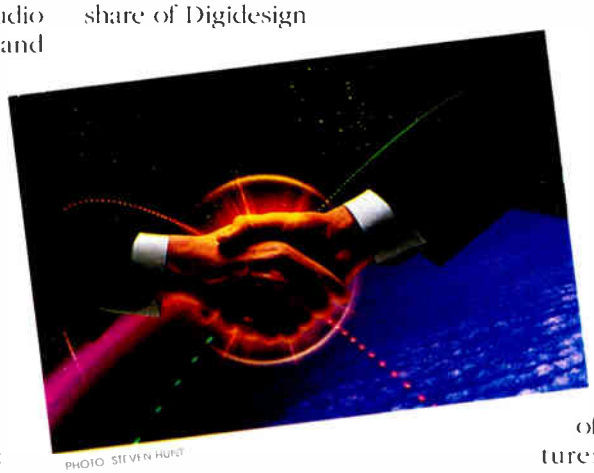


PHOTO: STEVEN HUNT

Avid, based in Tewksbury, Mass.—and ranked number nine this year on *Forbes*' list of America's fastest-growing companies—pioneered nonlinear film, video and audio editing from a single platform with workstation products such as the Media Composer, Film Composer and AudioVision. It also has encouraged industrywide workstation compatibility via its Open Media Framework (OMF) data-interchange program. Digidesign, based in Menlo Park, Calif., captured an early lead in low-cost DAWs that it has never relinquished; products such as Sound Tools and Pro Tools have proven robust enough to evolve technologically across markets.

Individually, Avid and Digidesign were paradigms of contemporary audio manufacturers, and in the process of announcing their formal nuptials, they created a template for the future. A conversation at AES with Curt A. Rawley, president and chief executive officer of Avid Technology Inc., and Peter Gotcher, president and CEO of Digidesign, provided a look at the factors that brought about the merger and some of the implications.

When things are going well, sometimes change is a bad thing. But we realized that by putting the two companies together, the chances that Avid/Digi emerges as the standard platform is increased.

—Curt Rawley

Rawley's large frame betrays his football days at Duke University, where he earned a mechanical engineering degree, moving on later to Harvard for his MBA. Rawley worked in various engineering, financial and sales management positions at a variety of high-tech firms, including Digital and CAD/CAM company Applecon. He joined Avid, which was co-founded by Bill Warner and Eric Peters, as a consultant in 1988 and as an employee in 1989.

Gotcher has a relaxed air about him, countering Rawley's buttoned-

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DAT Digital Audio Tape

down look with sport coats, perhaps as befits a University of California at Berkeley grad, class of '81. He went from college to the audio engineer's seat, working on records at Bay Area studios, including Bear West and The Automatt, before putting in a stint at Dolby Laboratories. In 1984, he left Dolby to start his own company with partner Evan Brooks; the company ultimately became Digidesign, now in Menlo Park.

Mix: Digidesign went public on Dec. 10, 1993; Avid went to market March 13, 1993. Who did you get to take your companies public? Is this something that the financial community is becoming more aware of?

Gotcher: There was nothing like us going public before ten years ago. Investors look for comparables, and that was the challenge. We had to explain the whole process of audio production to investors, and that wasn't an easy task. In the course of a public offering, there's a thing called a bake-off, where you get various investment bankers who pitch you on why they're the best one to take you public. You need to get a feel for the analysts at each one. We and Avid shared a few. The two for Digidesign were Robertson Stephens and Volpe, Welty, both in San Francisco, and both with strong reputations for high-tech offerings. [Volpe, Welty, for instance, did the IPOs for Wavefront Technologies and authoring giant Macromedia.]

Rawley: Both of us had strong representation in the venture-capital areas. That's what was critical in getting a high-tech banker to handle this. We used Morgan Stanley, Robertson Stephens, and Volpe, Welty.

Mix: Did it matter at that point that you were doing audio, or just that you were computer-based?

Rawley: No. But as Peter said, there really wasn't another similar scenario out there. People struggled for analogies.

Gotcher: We had one good one: We told them we were just like Avid but with sound. [Laughter] When you're the first in your industry, you get to set the tone for what follows. Sonic Solutions went public a while after we did. There are a few that are in the middle of their road shows. [A two-week period between submission of proposals and SEC approval, in which presentations are made to potential investors.]

Mix: A number of basic Digidesign designs have been used in Avid products. How did that relationship come about, and was it the basis for this merger?

Gotcher: In 1989, we had the 2-track Sound Tools system Avid had just incorporated, and I had a meeting with Bill Warner, who was looking around for an audio technology. Bill had just decided to go to the Mac from the Apollo workstation and found the Sound Tools approach good for a sound card approach for his system.

Our preference was to work with other people all along. We try to avoid having to invent everything ourselves. —Curt Rawley

Mix: Was it always the intent of Avid to look for an OEM to develop its audio aspects?

Rawley: Avid has its strengths at the system-design level. There are some things that we do that we're proud of and are unique to us, but our preference was to work with other people all along. We try to avoid having to invent everything ourselves.

Gotcher: We had a different strategy. In a way, we had a narrower mandate. Avid had to do everything we were doing plus video and data storage and video compression, and that's a daunting amount of stuff to have to do internally. In the audio area, we had exactly that opportunity because it was a narrower focus. They were the right strategies for the respective companies at that time in history. I helped Avid get to market faster. But those circumstances laid the groundwork for the merger because we got to know each other very well.

Mix: When did the merger concept first come up. Was there a flash point, a "walk in the woods"?

Gotcher: It was always in the back of our minds. At one point a few months ago, we decided to go through an exercise to see what it would take—what would it be like to operate together and what potential synergies are there. There were some obvious synergies—you put those two products together and you could see them. Then we wondered what more we could do and how efficiently. After we launched the exercise, we could see that this would work.

Rawley: There was no one flash point. It was a relationship that got richer as time went along. If there was a moment, I'd have to say it was after [the 1994] NAB. AudioVision was really well-received there, and right after that, I started thinking it would be easier working on an absolutely open basis—open kimono to open kimono.

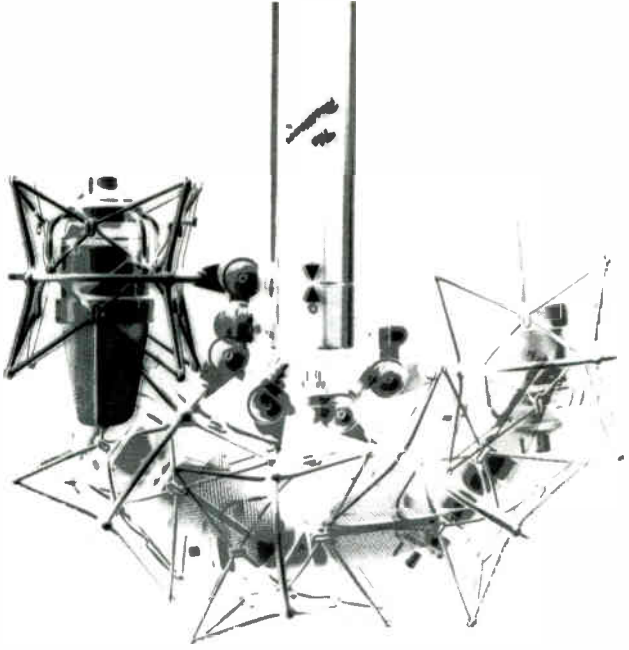
Mix: You look at some of the acquisitions that have gone on lately, and it seems that balance sheets took precedence over integration of various corporate components—marketing, R&D departments, product lines, etc. How and in what stages did this merger address those issues?

Gotcher: There's something very different about this merger. Most times, if one or both of the companies is not succeeding, a merger is designed to address that. You put them together to gain operating efficiencies. This is exactly the opposite. Both companies are quite successful. There's nothing to fix.

Rawley: The first thought I have about merging product lines is, we've already done it. When we ship an AudioVision or Media Composer, it already has a Digidesign component in it. The product line is already partially integrated.

Gotcher: The one place where there's competitive overlap is in AudioVision and Pro Tools, but they're also complementary. The reality is that they have pretty different feature sets. When we move forward, we'll be looking at ways to tune the

—CONTINUED ON PAGE 182



SOMETHING NEW ABOUT MICROPHONES

BY GEORGE PETERSEN

I have a love/hate relationship with articles about microphones. I'm genuinely excited about microphone technology and miking applications, but unfortunately, I don't really learn much when reading most articles on the subject. Everybody already knows that Shure SM57s are the standard snare mic; and reading that some artist actually used a vintage Neumann U47 for vocal tracks is hardly a major revelation. So for a decidedly different slant, I talked to a number of remote and studio recordists (culled from last year's list of TEC Awards nominees) and asked them if they had encountered any interesting new microphones or if they had any novel approaches to the science of microphony that they wanted to share. Their responses were enlightening and sometimes surprising.

GUY CHARBONNEAU

Owner of Le Mobile, a remote recording unit based in North Hollywood, Calif., Guy Charbonneau has recorded artists ranging from Metallica to Johnny Mathis. Recent Le Mobile clients include Rod Stewart, Eric Clapton, Bonnie Raitt and Luther Vandross.

"You have to understand that what a house engineer wants is different from what you're looking for in a recording. I'm always interested in listening to new mics, but if it doesn't work out, you need to have an alternative. Awhile ago, we tried a Shure SM91—that little PZM-style mic for kick drum. P.A.-wise, it was fantastic, but for recording it didn't work. The house engineer was pushing a lot of 18-inch subwoofers, and it worked great with that. But if somebody comes in with a mic that they say is great, that mic must then be plugged into a cable, which may be 300 feet in the case of a remote—which does affect it—and, of course, all console preamps sound different.

"Recently, I tried The Positioner [from Studio Techniques of Danbury, Conn.]. It allows you to move the mic and try new placements [using a remote controller] while you're listening to it, without interrupting the player or having an assistant run in to move the mic slightly. It works great.

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"My drum sound is based on the kick drum, snare and overhead; I add the toms later. You have to consider the drums as one instrument, rather than ten instruments, and the leakage of one mic can help accentuate the sound of the whole kit. I start with C-414 on overheads, with a -10dB pad and no roll-off, which gives me an idea of what the kit sounds like. I often use the AKG D-112 for kick drum, but a lot of the time, it's too large to fit into a small hole in the front head. For toms, I've used the Sennheiser MD-421 or MD-409, the Shure clip-on mics, or AKG C-409s. The results from those little clip-on mics can be amazing, but you still need the foundation from your kick, snare and overheads."

ED CHERNEY

Nominated this year for a Grammy Award (with Bob Clearmountain) for Rhythm, Country & Blues, *Ed Cherney is an in-demand independent engineer who frequently works with producer Don Was.*

"I just bought a Sanken CU-41, and I'm getting great results with it on vocals. When it first came out, I didn't think much of it. But when I was in Nashville doing *Rhythm, Country & Blues* [a duet with Travis Tritt and Patti LaBelle] I couldn't find a microphone that sounded exactly right. I asked [Tritt] what kind of microphone he'd been using, and he said Sanken, so I got one and put it up. It was great—no EQ, just a little bit of compression. And then I used it working with Shawn Murphy for Little Feat. That mic is a little different, but other than that, I'm using the same stuff as everybody else.

"I have a pair of B&K 4011s that I really like. I've used them up close, on snare—you can't overload the

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Ever wonder what that $6,000 Sony microphone sounds like? Or, how about one of those vintage Neumann or AKG classics from mid-century? Are you sure what the sonic difference is between, say, a U67 and a U47?

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Drawing from the vast microphone collection and talents of Ocean Way Recording's Allen Sides, *Mix* has begun assembling a reference collection of recordings documenting the sounds of 35 common musical instruments as recorded through frequently used microphones. These sound samples will be presented in Red Book Audio (16-bit, 44.1 kHz) on an interactive CD-ROM called "Allen Sides' Microphone Cabinet," to be produced by Light Rail Communications and released by Mix Bookshelf this spring.

The dual-format Mac/PC disc will be set up to investigate the various parameters and application tips of approximately 70 old and new studio microphones, as well as the sonic properties of many musical instruments. With the click of a mouse, the user will be able to listen to suggested pairings and instantly hear sampled recordings, and have the ability to A-B between several mics on virtually identical performances. The instruments, with a range of recorded sounds, will also be available for sampling into the user's computer, synth or recorder.

A word of warning, though. While these reference recordings are being recorded at Ocean Way using top session musicians and the highest-quality recording equipment and techniques, the sonic end result will be largely a function of the playback system. Sound cards, speakers and anything else in the signal path will affect the sound of the input as it travels to the end of the line. Serious users of this disc will want to beef up their reference playback system to get full use from this title.

—David Schwartz

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The biggest mistake that I see—and hear—is engineers who are too lazy to go out into the studio and change mics or experiment with mic placements.
—Biff Dawes

thing—and I have a rack of Neve 1073s that those things sound great through. It's the best combination of the new and the old. Also, the 4011 is great on acoustic guitar and percussion.

"I like to track at Ocean Way, and they have a pair of old C-12s that I love. The problem with most vintage tube mics is that no two of them sound the same; and they may sound different during the course of a day, depending on humidity and temperature. But the rule is to use what works. I've been to shows where a singer sounds incredible through an SM57 onstage, so what am I doing beating my head against the wall using some old $4,000 microphone that may shut down if you get a little spit on it or break up in the choruses when someone's singing hard? After a great deal of looking around, I've been using an [EV] RE20 for Bonnie Raitt. You don't always have to spend a fortune on mics."

BOB CLEARMOUNTAIN

Primarily known as a mixer, Bob Clearmountain occasionally makes forays into the field, typically on major concert events, such as Woodstock '94. Recent projects include Robbie Robertson, The Pretenders, Bryan Ferry, Bon Jovi, Collective Soul and Rhythm, Country & Blues.

"I'm probably not the best guy to talk about microphones, as I spend most of my time mixing. Generally, I use the standard, common stuff, such as the old Neumann M49 on vocals, or [AKG] 460s on overheads. But something I really like—that's getting more popular with TV mixers—is the [Shure] SM98 little condenser mic. They really sound good on toms, and on a large kit, they solve the problem of figuring out where to place the mic stands. On television they're fantastic; there's much less clutter.

"One thing I've always wished for is a weatherproof condenser mic for recording audiences at remote locations. Audience tracks always sound better with condenser mics, but when they start getting damp, they start crackling. We had a lot of problems with that at Woodstock, and you can't put condenser mics out if there's a chance of rain."

BIFF DAWES

The chief mobile engineer at Westwood One, Biff Dawes also does outside gigs, such as the Rolling Stones concert for VH-1 and studio work with Tom Waits. Dawes' recent Westwood One shows include the Moody Blues, Nanci Griffith, Hootie & the Blowfish, Collective Soul, Foghat, Stevie Nicks and Kenny Rogers.

"In the last ten years, the quality of the mics used by live sound companies has increased dramatically. About 15 years ago, you'd see dynamics on everything, with maybe—just maybe—a condenser used for a drum overhead. Now you run into stuff like [Stones' live engineer] Benji LeFevre using U87s for overheads and C414s on guitars—high-quality microphones.

"The first rule of recording is to go out and listen to the players in the room. Then you can go into the control room and listen to your initial mic placements. The biggest mistake that I see—and hear—is engineers who are too lazy to go out into the studio and change mics or move mics or experiment with mic placements. Instead, they immedi-

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ately start changing EQ to get the sound they need. I've heard about a remote mic stand adapter [The Positioner] that allows engineers to remotely change mic placements and positions. Imagine putting that inside a kick drum and sitting at the console, instantly checking out the sound of the mic pointed at the beater or the shell or whatever. It sounds like a very valuable tool."

RANDY EZRATTY

The owner of Effanel Music, a New York City-based remote company, Randy Ezratty says he's completing a studio "docking station," where his 48-track SSL control room on wheels can tie in with a recording environment. Ezratty's recent projects include Woodstock '94, the Barbra Streisand tour and loading up Effanel's portable rig to record Whitney Houston in South Africa.

"Remote engineers work on projects that typically last from one night to two weeks, so we're really exposed to a lot of ideas and techniques. Recently, I've noticed a lot more ribbon mics being used, especially on digital projects, such as Beyer 160s on drum overheads and Coles ribbon mics used on everything. Ribbon mics are a good complement to digital recording.

"Last year, I went to Atlanta to record Pearl Jam, and they insisted on using Audix OM-5 mics on vocals. Once I heard the mics and heard the isolation you could get with a loud rock 'n' roll band, I was impressed. Six months later, we were doing the *Jon Stewart Show* in a very reverberant soundstage, and we were having a hard time with the vocals. We went with the OM-5s; they're a hip live vocal mic, and a lot of the touring companies are starting to use them.

"I just did Bob Dylan's *Unplugged* concert, and his sound man put up a Shure stereo mic [VP88] over the drums. I told him that he could do his thing, I'd do mine, and placed a couple expensive condenser mics over the kit. I listened to the Shure and it sounded great—it didn't have any of the phase problems you encounter with separate mics. You can never get two single mics as perfectly positioned as you can a stereo mic."

DAVID HEWITT

David Hewitt is the president of Remote Recording Services (Lahaska, Pa.), whose recent projects include Woodstock, the Rolling Stones, The Eagles and Barbra Streisand tours.

"When we did the Three Tenors at Dodger Stadium, John Pellowe and James Locke had more Schoeps mics than I had ever seen in my life. It was magnificent to have those available. Schoeps makes longer capsules for the MK-21, which are great for reaching into specific areas, especially for strings and reeds. We were using Schoeps MK-4s and 5s on most of the reeds and brass, and MK-4s on vocals. This, of course, was done in an operatic style, with the mics at a distance, rather than close to the singers. Usually, I only use Schoeps mics on strings, as we did on the orchestra for the Streisand tour. They were spectacular.

"In terms of a reliable, utilitarian, small-capsule condenser for drum overheads, where you want to get in tight, I've been using the Sony 535s. They're smoother than AKG 451s, which have that rising high end.

"Vocal mics are an area of compromise, because on nearly all of the shows we do, we're dealing with stage monitors, and you have to find a balance that works for the artist, as well as the needs of the monitor

—CONTINUED ON PAGE 178

USE READER SERVICE CARD FOR MORE INFO

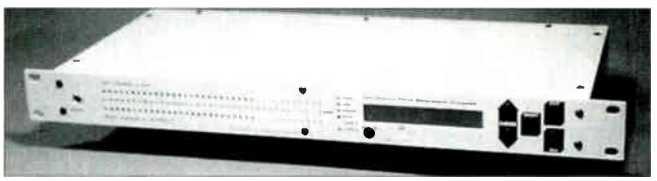
NEW PRODUCTS

APHEX
COMPELLOR SERIES
Aphex Systems (Sun Valley, CA) unveils enhanced versions of its Compellor series gain control devices. The units, which combine a leveler, compressor and limiter into a single package, feature frequency-discriminate leveling to isolate bass transients from all other signals for separate processing. The new A Series is priced the same as previous models.
Circle 226 on Reader Service Card

YAMAHA REV100
Yamaha (Buena Park, CA) announces the REV100 digital reverberator. With 99 editable reverb programs (including Stereo Reverb, Gated Reverb, Reverb plus Flanger, and Delays), true stereo processing, dual ins and outs, MIDI input, 16-bit/44.1kHz A/D and D/A converters and a full-spectrum frequency response, the unit is based on the REV7 and REV5 but priced at $299.
Circle 228 on Reader Service Card

TASCAM DA-30 MKII DAT
Tascam (Montebello, CA) is shipping its DA-30 MkII DAT recorder. The successor to the DA-30, the unit provides all the features of the original while adding a Data/Shuttle wheel, a Cal/Uncal select switch for the analog inputs, selectable Copy ID provisions, Standard and Long record modes, and next-generation AD/DA circuitry. The inner portion of the data/shuttle wheel enters program numbers and trims the ABS time display. The outer portion provides shuttle capability. Price is $1,499.
Circle 227 on Reader Service Card

TOPAZ AUTOMATION
New from Soundtracs (dist. by Samson Technologies, Hicksville, NY) is the Topaz fader and mute automation package. Using a PC (Mac version to be released shortly), this economical package enables the recording, replay and editing of VCA fader movements with frame-accuracy. Mute information is recorded to quarter-frame accuracy. With detailed graphic displays, track lists, offline editing, and MIDI Machine Control, the system is fitted to the Topaz console via a 1U rack control interface. Both 24- and 32-channel packages are offered.
Circle 229 on Reader Service Card



M&K SUBWOOFER
Miller & Kreisel Sound Corporation (Culver City, CA) released its V-125 powered subwoofer. Featuring 125 watts RMS and a wide dynamic range, the unit incorporates M&K's Active Headroom Maximizer amp circuit, magnetic shielding, phase switch, internal high-level highpass filter, and a new speaker driver. The subwoofer is 52 lbs., measures 18x15x20 inches and is priced at $695.
Circle 230 on Reader Service Card

SPATIALIZER DIGITAL
Spatializer Audio Laboratories (Los Angeles) released Spatializer 3-D audio processing technology in digital format. The Digital Spatializer is a real-time, 2-channel processor providing precise control of expanded stereo imaging and realistic stereo synthesis from mono sources. The unit features software-driven parameters, 24-bit processing, and interfaces with digital consoles, tape machines and converters.
Circle 231 on Reader Service Card

AUDIO PRECISION SYSTEM ONE PCMCIA

Audio Precision (Beaverton, OR) introduces a new PCMCIA interface card for the System One audio test set. The miniature interface card fits in Type II PCMCIA card slots provided on notebook computers and eliminates the need for an ISA bus slot on the host computer or the addition of a docking station. Price is $390, or $130 per interface upgrade when ordered with a new System One.

Circle 232 on Reader Service Card

MICROTECH GEFELL M300

Microtech Gefell (dist. by G Prime, NYC) introduced the model M300 miniature cardioid condenser microphone. Featuring a compact design, the M300's capsule consists of a ceramic chrome-plated back electrode and gold-sputtered membrane. The transformerless, hybrid-designed amplifier sees a gradual high-frequency rise between 2 kHz and 15 kHz in the order of 2.5 dB. Off-axis response is uncolored. The M300 requires standard 48-volt phantom powering. Price is $495.

Circle 233 on Reader Service Card

WAVES WAVESHELL

Waves (Knoxville, TN) offers WaveShell, a program that allows real-time processing of digital audio with any of Wave's Plug-Ins. WaveShell turns the Q10 Parametric EQ, the L1 Ultramaximizer and the C1 Compressor/Gate (a new plug-in for Digidesign or other TDM systems) into "outboard" digital processors for real-time applications such as DAT-to-DAT or DAT-to-CDR mastering, tracking and mixing. Users can select any one of the processors installed on their system and adjust all parameters in real time. The system runs on Digidesign DSP hardware for the Macintosh and is priced at $100.

Circle 234 on Reader Service Card

CEDAR DH-1 HISS REMOVAL PROCESSOR

Cedar (dist. by Independent Audio of Portland, ME) launches the DH-1 Real-Time Hiss Removal System. The rackmount device removes broadband noise in real time without using signal-destructive filters and without the need for encoding/decoding schemes.

Circle 235 on Reader Service Card

BARCUS-BERRY PLANAR WAVE PIANO PICKUP

Barcus-Berry (Huntington Beach, CA) debuts its 4000N Planar Wave Pickup System for miking acoustic pianos. This newly designed system is complete with a sensor and control unit. The sensor attaches to the piano sound board with nonpermanent adhesive. The technology eliminates hot/cold spots and feedback problems. The control unit is housed in a 5x3.75x3.125-inch aluminum chassis and is powered by a 9-volt battery that is said to last 2,000 hours. Price is $299.

Circle 236 on Reader Service Card

MILLENNIA MEDIA THE QUAD

New from Millennia Media (Sacramento, CA) is The Quad, a professional 4-channel microphone preamplifier employing circuitry identical to Millennia's acclaimed HV-3 high-voltage stereo mic preamp. The Quad is a single-rackspace device with dual stereo power supplies and precise channel matching. The unit provides front-panel phantom selection, gain control, and signal-present and overload indicators. Retail is $2,695.

Circle 238 on Reader Service Card

PMC MONITOR SERIES

Professional Monitor Company (dist. by Bryston Ltd. of Peterborough, Ontario) is now making its products available in North America. The company manufactures a range of both active and passive loudspeaker designs for a variety of applications. Models range from the new TBIS near-field to the fully active and configurable sub-20Hz BB5 main monitor system. PMC systems use transmission line loading technology to extend LF performance and achieve high SPL capabilities.

Circle 237 on Reader Service Card

LEXICON REFLEX

Lexicon (Waltham, MA) offers Reflex, an affordable MIDI-controlled, stereo digital reverberation system in a 1U rackmount case. Designed for live sound and project studios, it features eight reverberation algorithms, including Concert Hall, Inverse, Plate, Gate, Flanger, Chorus, Single- and Multi-Tap Delays, and a unique Resonator algorithm designed to simulate the acoustic effects of multistringed instruments. Reflex has 128 user registers and 112 factory effects.

Circle 239 on Reader Service Card

DIGITAL AUDIO LABS V8
Digital Audio Labs (Plymouth, MN) has announced its new V8 digital audio workstation for the PC. The audio processor card plugs into IBM-compatibles and records or plays up to eight simultaneous channels of audio. Equipped with two Motorola DSP chips, the system can be expanded to run eight DSPs. Optional digital interface cards include S/PDIF (coax and optical formats) and AES/EBU. The base price V8 is $1,495. DSP modules start at $395.
Circle 240 on Reader Service Card

NEUTRIK EASY PATCH
Neutrik (Lakewood, NJ) announces the Easy Patch system of panels and bays. The Easy Patch Panel features TT and ¼-inch Military-TB gauge jacks, programmable switching configurations via printed circuit board jumpers, a built-in wire stripper, spring-loaded terminal blocks or solder tabs for fast rear connections, and PCB wiring. The Easy Patch Bay features Elco, D sub-miniature, and spring-loaded terminal blocks and comes in a 14/18-inch configuration.
Circle 241 on Reader Service Card

BEYERDYNAMIC MPC 65
beyerdynamic (Farmingdale, NY) released the MPC 65, a low-profile boundary layer mic designed for a variety of applications such as conference tables, altars or musical instrument recording. It features low-profile, white or black color, barrel type preamp, and ¼-inch TRS or pig-tail termination. Prices range from $229 to $399.
Circle 242 on Reader Service Card

STUDIOMASTER P7 METER BRIDGE OPTION
Studiomaster (Anaheim, CA) now offers a meter bridge option for the P7, its 8-bus mixing console. The unit is available in 16-, 24-, 32- and 40-channel versions. It comes with its own power supply to eliminate loading down the main console, regardless of input configuration.
Circle 243 on Reader Service Card

MESA BARON AMP
MESA Engineering (Petaluma, CA) debuts the Baron, an all-tube, hand-built, dual-mono (separate power transformers and AC cords) amplifier. Intended for both studio playback and home audiophile applications, the Baron produces uncolored reference-quality sound and delivers 150 watts/channel. Projected price is $2,400.
Circle 244 on Reader Service Card

BAG END PACKAGED STUDIO MONITORING
Bag End (Barrington, IL) is offering a pair of prematched studio monitoring systems. The Bag End Studio System A and the Bag End Studio System B both include a pair of MM-8 Near Field Monitors (100-watt, 100-20k Hz) and a pair of D10E-S subwoofer systems (10-inch, 400 watt, 8 Hz to 100 Hz). The difference between the two systems is the integrators. The ELF-1 (with System A) is a 2-channel controller with concealment protection and high-pass output with curve limiter. Ninety micro switches offer reliable selection of control parameters. The ELF-M (System B) uses a simpler, lower-cost system integrator.
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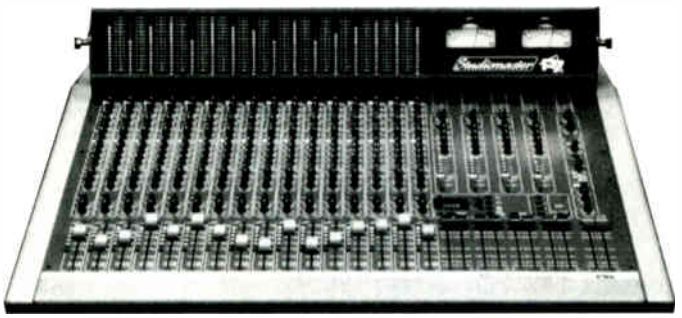

HOT OFF THE SHELF

Gepco International adds two new multipair digital audio cables for digital audio and time code applications (312) 733-9555...**Magnetic Shield Corp.** is solving magnetic interference problems with the LK-120 Magnetic Shielding Lab Kit; call (708) 766-7800...**Illbruck** introduces Sonex Techwedge, an open-cell foam wedge acoustical product. Call (612) 659-9535...**P-Touch PC** from Brother is a custom label printer that creates self-adhesive labels from your IBM-PC or Macintosh computer. Brother can be reached at (908) 356-8880...**Digital Informative Data** has developed a series of program and sample libraries for the K2000, Korg Wavestation, Yamaha TG-500 and E-mu Procussion; call (613) 821-4962...Version 1.5 of **ConcertWare**, a music composition and arrangement program for PCs and Macs has been released; (415) 917-7460...**FirstCom/Music House/Chappel**, makers of production music libraries, have announced the release of 60 new CD titles; (800) 858-8880...**Music Quest** announces MIDI-Engine 8Port/SE MIDI interface for PCs; (214) 881-7408...**Mitsui Toatsu Chemicals** (MTC America) announces that the new name for its recordable compact disc, Airy, will be Mitsui CD-R;(212) 867-6330...**Energetic Music** has released buyout music and sound effects #2 on CD-ROM; (800) 323-2972...**Pulizzi Engineering** is distributing a 16-page design guide of AC power distribution; (714) 540-4229...**Hit Rack** has released a deluxe wall-mount CD display system for recording studios and record companies; (800) 446-7677...**Twelve Tone Systems** announces Cakewalk Express entry-level music program for Windows ($89 list price); call (617) 926-2480...**TDK** broadens its DAT line with 180-minute tapes. At your dealer now...**Musicator Win** Version 2.0 for Windows is now available; (800) 551-4050...**JRF Magnetic Sciences** has introduced new Flux Magnetics A80-2R and A80-2PME ½-inch, 2-track replacement heads for Studer A80 tape machines; (201) 579-5773...**Analog Devices** has released a DSP reference book with 12 chapters of new applications for the ADSP-2100 DSP processor. Also available: *Linear Design Seminar*, a linear circuit design reference book. Call (617) 461-3881...**Opcode** is now supporting new synths and other products with its new versions of Edit One, Galaxy and Galaxy Plus Editors 1.2.9; call (415) 856-3333. ■

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by Michael Cooper

AKG C12VR

TUBE CONDENSER MICROPHONE

Ask today's top recording engineers to list their favorite microphones, and the AKG C12 is sure to be near or at the top. After only about nine years of production, the legendary vacuum tube mic was discontinued in 1963 in favor of the cleaner, quieter, more dynamic solid-state designs being developed at the time. But the recording community was reluctant to give the mic up. Over the ensuing years, the vintage C12 became a coveted collectible, with rare units surfacing in the used market for as much as $7,500.

AKG has taken notice of the C12's undying popularity and almost mythological reputation. The company is going back to the future with the reissue of the legendary C12 in a model incorporating a few modern updates that bring the mic into the '90s. The result is the new AKG C12VR ("VR" stands for vintage reissue).

YESTERDAY AND TODAY

Fans of the vintage C12 will no doubt want to know what's been changed in the C12VR. An important thing to realize is that no two vintage C12s were ever exactly alike. Inside the housing for the C12's two capsules, two laminated plates with staggered perforations formed the acoustic resistive network that, along with the tuned acoustic chamber between them, was largely responsible for giving the mic its distinctive high-frequency presence. Unfortunately, manufacturing tolerances were not tight enough in the early '60s to make the size and orientation of these perforations consistent from mic to mic. As a result, one C12 could sound quite different from another. With this in mind, AKG set out to find the "perfect" C12. Eighteen vintage C12s were analyzed, and the one that was deemed the best-sounding of the lot was chosen as a model for fashioning the new C12VR. The prevailing design duplicates the vintage C12's classic boost in frequency response between roughly 3 and 18 kHz, with two or three smooth peaks of varying intensity, depending on the polar pattern chosen (omni mode being the flattest).

To be sure, there are some subtle differences between the C12VR and its vintage predecessor. The VR is slightly shorter and a little wider than the classic C12, but the acoustical interplay between the mic's capsule, grille and body remains essentially the same. Like later versions of the vintage C12, the VR's 1-inch, gold-sputtered mylar, twin diaphragm is 6 microns thick. But the procedure for assembling the capsule has been

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modernized. The vintage C12's capsules were screwed together and tensioned by hand, which introduced inconsistencies that have since been eliminated in the VR by machine tensioning. According to AKG product manager Joey Wolpert, "the low end of vintage C12s tends to be not as linear as the VR." The componentry on the VR's circuit board, though quite similar to that found in the vintage C12, uses more consistent components to produce a more predictable performance.

If the capsule and circuitry are the heart of the C12VR, the *soul* of the mic is its 6072 dual-triode vacuum tube. The original C12 used only one of the 6072's triodes. However, the C12VR allows you to switch in the unused amplification stage, combining the outputs of both triodes for an additional 10 dB of gain. The result is a beefy increase in nominal sensitivity from a modest 10 mV/Pa to approximately 32 mV/Pa, which should be enough to handle your next field recording of gnats floating around on a muggy summer day. This increase in sensitivity is accomplished without any significant increase in the VR's self-noise, which specs out at 22 dB-A (not bad for a tube mic). You'll need a jeweler's screwdriver to remove the mic casing from the working innards in order to get to the three PC-mounted switches that adjust the sensitivity. C12 purists can choose to leave the second triode switched out. AKG has incorporated special internal shock-mounting elements into the C12VR's design in order to prevent damage to the fragile 6072 tube and to preclude potential microphonic effects from occurring.

The C12VR is a *huge*-sounding mic, lending a velvety warmth and smooth, rounded body to vocals.

FEATURES

The C12VR weighs in at a whopping 24 ounces and is an impressive 8.9 inches long and 1.65 inches wide. A double-layer, gold-plated wire mesh grille surrounds the capsule. The mic can be pre-attenuated by either 10 or 20 dB via a switch mounted on the outside of the solid-brass mic body. Being a side-address, double-diaphragm pressure gradient transducer, the C12VR can be switched through several polar patterns—nine to be exact. These range from omni to cardioid to figure-eight, with six intermediate response steps between these archetypal patterns.

The polar pattern is switched remotely (and silently, I might add) from the separate N-Tube power unit, which connects to the C12VR via a large-sized, 12-pin Tuchel connector and 10-meter connecting cable to supply the capsule polarizing voltages. The N-Tube also offers a rotary knob for two-position bass roll-off (same cut-off frequency, different slopes), a power switch with associated LED and an XLR output for the mic's audio signal.

The remote/power unit and 10-

meter cable are included in the C12VR's price, along with the H 15/T elastic shock mount, the W42 foam windscreen, and a foam-lined, aluminum flight case (lockable, with keys) for storing/transporting all of the above. It's good to see such a generous offering of standard accessories, especially considering the C12VR's hefty $3,999 price tag. If I have one complaint about the setup, it's that the N-Tube's nondetachable AC cord is only six feet long, which limits its placement without an extension cord. The swiveling shock mount, on the other hand, is completely hassle-free and quick to set up. It requires neither a latch nor screw to secure the mic, yet it holds the C12VR securely enough to suspend it upside down.

TESTING 1-2-3

All of my critical listening tests were performed using a Millennia Media HV-3 mic preamp, chosen for its extreme accuracy. First up was a test of the mic's off-axis frequency response in Omni mode. The response at 180° is excellent. However, I did notice a significant roll-off of very high frequencies at 90°/270° in both Omni and Cardioid modes. Perhaps this is what gives the C12VR its focused, "forward" sound. The Cardioid mode offers excellent rejection at its 180° null point.

In Figure-8 mode, the C12VR offers outstanding rejection at its null points but seems to lend less upper bass/low mids to signals arriving at 180° than at 0°. The downside of this is that two similar-sounding singers facing each other would end up having different timbres. The upside is that you could balance out the timbres of two dissimilar vocalists somewhat by sticking the darker-sounding one at the rear of the mic and the brighter-sounding one at the front. This is just another example of why it's always a good idea to familiarize yourself with your mics' polar responses.

The C12VR has a slight tendency to overload at loud SPLs, especially in directional modes—omni can take considerably more punishment. Maximum SPL handling capability is rated at 128 dB SPL at 1 kHz for 3% THD, unpadded. The C12VR is not overly sensitive to popping plosives, and the supplied windscreen enables the mic to handle all but the most fulminatory singers.

IN SESSION

The C12VR is a *huge*-sounding mic, lending a velvety warmth and smooth, rounded body to vocals. Yet its high end is prominent and articulately detailed. That's a dynamite combination. In one session, I put up a Neumann U87A, an AKG C414B/TLII and the C12VR in front of a female vocalist who has a voice akin to a soprano Karen Carpenter, and the C12VR blew away the competition! But lest all you tube fanatics shake your heads all at once and say 'of course,' the C12VR proved to be the wrong mic for another female vocalist with a very dark, woolly-sounding voice (partially caused by what I call "lockjaw technique"; i.e., singing with the mouth too closed). Here, a more open-sounding mic was needed, and the transformerless, solid-state TLII was just the ticket. The C12VR is a warmer-, thicker-, bigger-sounding mic than the TLII, but both mics have a very similar high end.

Similar results were obtained using the C12VR on male vocals. The C12VR also sounded awesome on mandolin, providing needed warmth and body while clearly defining the pick hitting the strings. Fine-tuning the polar pattern halfway between omni and cardioid allowed me to capture the entire instrument with one mic while tuning out just the right amount of room ambience.

The C12VR also lent a wonderful warmth to recorder. And it is clearly the most beautiful mic I've heard on wind chimes. The transients were extremely well-defined, and all the complex overtones were ineffably rich and smooth, and not at all bitey. Finally, I put the C12VR to use on an acoustic guitar. The mic's warmth and detailed high end were flattering, though the sound could have been a tad more open for my tastes.

Clearly, the C12VR's main claim to fame is as a vocal mic. The combination of warmth, body, presence and detail that it lends to vocals has got to be heard to be appreciated. This is one helluva mic, one that I can safely predict will become a classic in its own right.

AKG Acoustics/JBL Pro, 8500 Balboa Blvd., Northridge, CA 91329; (818) 894-8850, fax (818) 830-1220. ■

Michael Cooper is a producer, engineer and owner of Michael Cooper Recording in Eugene, Ore.

by Mel Lambert

TACTILE TECHNOLOGY

M4000 AUTOMATED MIXING SYSTEM

Tactile Technology is a relatively new company that was set up two years ago to develop and market the M4000 Automated Mixing System, which comprises a digitally controlled rack of analog circuit elements and an assignable hardware controller. Often described as a "poor man's Euphonix"—if only because all of us are prone to developing simple descriptions of complex hardware—that particular accolade is both appropriate yet highly misleading. Yes, in concept, the M4000 Automated Mixing System does incorporate the same basic design approach as the CS2000 (which I reviewed in the March 1994 issue of *Mix*), but the two consoles represent different manifestations of the digitally controlled analog design approach. Specific applications for the console range from conventional recording and production facilities to theatrical and live-sound spaces, where the M4000 provides assignable control from a central location.

The M4000's compact Digital Controller worksurface features two signal paths per channel strip—each with its own fader, mute and solo switch—and connects via a simple serial control link to the remote M420 Mixing Engine. The control surface provides access to 24 dual-channel signal paths, divided into upper and lower sections. The upper bank of 24 features 60mm faders,

while the lower section offers a conventional 100mm fader per channel.) Within the M420 Mixing Engine, various gain control, EQ and summing functions are modeled in digitally controlled analog circuitry, which is updated every subframe to produce the required console topology. Internal routing is provided to a total of eight bus outputs, six auxiliary sends, two independent monitor paths, and the normal complement of solos, AFL and PFL outputs.

Unlike the CS2000, however, the M410 Digital Controller can communicate with up to five M420 Mixing Engines (or "APC," as Tactile Technologies puts it), and hence control a total of 240 assignable channels! And while the basic M4000A configuration provides snapshot/scene automation of all routing, level and EQ functions—and offers "next/previous" sequencing of scenes during live-sound applications—a more advanced M4000C configuration will soon offer moving-fader recall of all upper- and lower-channel, bus and master outputs. (For those of you keeping track of such things, the M4000B configuration offers dynamic automation of all fader settings, mutes and channel pan against an internal or external SMPTE timecode track.)

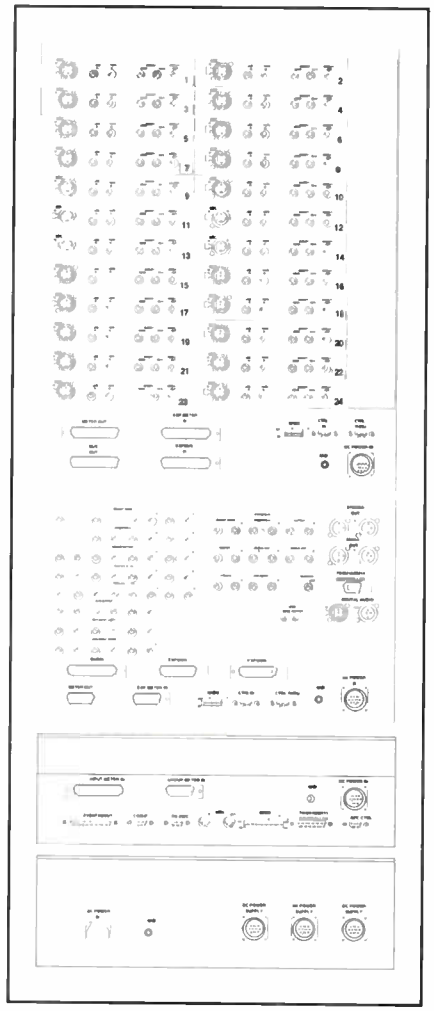
On the immediate horizon is an all-digital version of the M420 Mixing Engine, which will be released at the end of 1995 and will offer AES/EBU-format individual inputs and outputs, plus ADAT- and TDIF-compatible I/O ports, the latter for Tascam DA-88 modular digital multitracks. It also will be possible to connect both analog and digital engines to the same M4000 digital controller for mixed-format installations.

But the real difference between the M4000 and the competition lies in its cost-competitiveness. A basic M4000B with storage/recall of up to 480 timecode-based snapshot/scene automation (faders, mutes and pan) plus control surface costs $36,000; additional 24-channel sections with companion power supplies sell for $19,000. Moving fader automation adds another $9,000 to the cost of a basic remote controller. (Existing users can exchange a conventional M410 control surface for the M411, which features servo-driven faders, for the same price.)

All systems come complete with a floppy drive for loading system updates and snapshot automation setups; dynamic automation versions, because of the amount of data involved, come with a 250MB hard drive. (An M4000 floppy is DOS-compatible, which means that simple, tab-delimited data can be edited using a conventional word processor. Now session data can be accessed by an accounts program, for example, and session invoices prepared directly from the system information.)

SYSTEM OVERVIEW

The M4000 Digital Controller measures about 44 inches wide, by 32 deep, by 9 inches high, including meter bridge. The M420 Input Unit

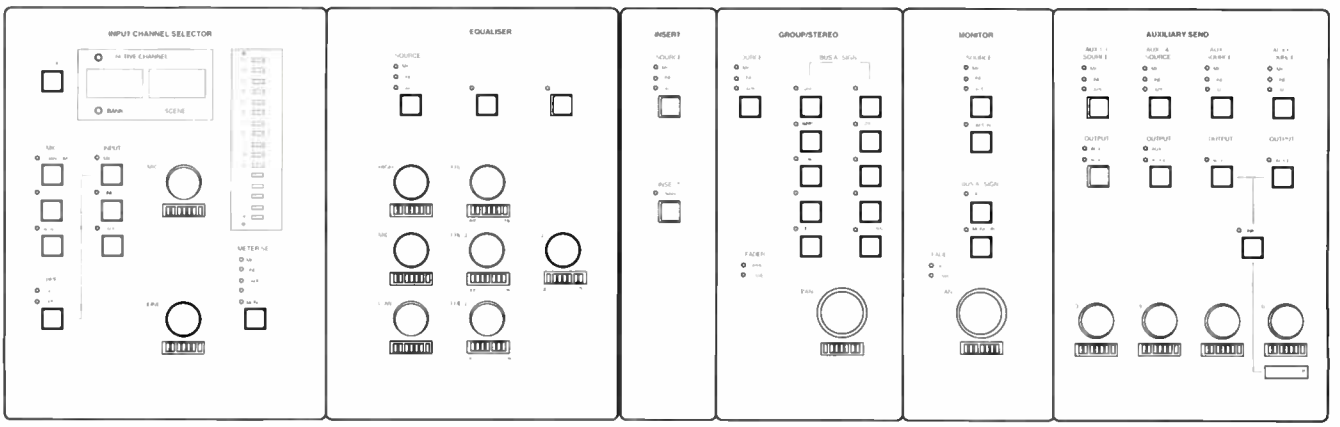


Rear detail of rack system

occupies 12 rackspaces (21 inches), while the M430 Group/Monitor Unit measures six rack units (10.5 inches). The M440 Main Control unit, which houses the memory storage and system floppy drive, measures three rack units (5.25 inches). The companion M490 Power Supply units can

connect to a maximum of three system units; a typical stand-alone configuration powered by a single M490 would comprise an M420 Input, M430 Group/Monitor and M440 Control Unit.

The M440 connects to the M400/410 Digital Controller via a simple RS-422 serial connection. For distances up to 300 feet, Tactile Technology recommends the use of conventional twisted-pair interconnects; for longer distances, the firm can supply a fiber-optic link. (A future version of the fiber link is being developed for live sound and related applications. In addition to a serial data connection for the M4000, the company says the link will incorporate a digitized audio connection for monitoring/cue purposes, a compressed video feed, and a serial port for Lone Wolf's MediaLink or Crown's IQ System interfaces.)



Master input control strip

Each M420 Input Unit features separate ports for 24 mic, line and tape inputs; separate send and receive inserts; and a direct output is also provided per channel. The M430 Group/Monitor Unit features eight group inserts on TRS jacks; eight main group outputs and two pairs of isolated, parallel tape-machine outputs for tracks 9 through 15 and 17 through 24; auxiliary sends and receives; stereo L/R send and receive I/Os; and monitor outputs. The M430 also features separate AES/EBU and S/PDIF-format I/O ports. The digital inputs can be blended with a digitized version of the console's main stereo output and then connected directly to a DAT or other digital recorder. In this way, a set of premixed

tracks from an external hard disk recorder, for example, do not have to be redigitized prior to being blended with a mix from the M4000. Handy stuff indeed!

In addition to the bank of 24 upper and 24 lower faders, the assignable control surface features a bank of eight group faders, master monitor and two mix-output faders. Above the bank of group faders is a small, 320x64-pixel LCD window and controller buttons for selecting system setup parameters, along with a host of other functions. The LCD window also displays numerical data, such as precise level and EQ settings, as well as—with the new software release—a graphic display of channel EQ as amplitude vs. frequency, for fine control of specific sections of the audio spectrum. Mixes can be numbered and labeled, and channels assigned simple titles, using a data-entry wheel that selects one character at a time (much like arcade games). I would have preferred a standard QWERTY keyboard, but this can be overcome with some patience. Dedicated LED meters are provided for each signal path, plus others that follow the stereo and eight bus output levels.

Having "signed onto" the system using a simple button array and function keys clustered around the LCD window, the user can select previous mixes or initialize the system. Password protection means that it's possible to lock out unauthorized use. Within permanent sound installations, for example, the system designer or contractor can enable level control on certain predesignated channel faders but lock out output routing and EQ adjustment.

As mentioned previously, it is possible to use a single M4000 Digital Controller with up to five M420 Mixing Engines; a front-panel switch routes serial control to the appropriate chassis. Each M420 is capable of running by itself without a Digital Controller—a feature that will prove useful in unattended applications, such as theme park attractions.

All system functions are MIDI-compatible, enabling a MIDI-based sequencer or recorder to edit automation data and/or interrogate control of external effects units using conventional MIDI commands and data access. Also available is a built-

in Events Controller, which provides automated operation of eight relay closures, four TTL-compatible logic ports and four opto-isolated outputs; events can be triggered against MIDI scene changes, for example, or standard timecode designations.

ASSIGNABLE MIXING CONTROLS AND FUNCTIONS

In addition to a dedicated fader, mute and solo button per signal path, an assignable section that runs along the top of the M4000 handles all other functions. After the orange "activate" button mounted just below the upper fader bank is pressed, the assignable section is live and ready to extract settings for that channel path. (Holding down a pair of adjacent "activate" buttons selects Stereo mode, whereby the various settings of the left-hand, or odd channel, of the pair are mirrored into the right-hand, or even channel.)

On the input channel selector, you can choose mic, line and/or tape inputs to be active on that channel, as well as select 48V phantom power, 20dB pad, phase (polarity) reverse and 75/150Hz lowpass (12dB/octave) filter for the mic input. An LCD window can be set to display an alphanumeric title for that channel (as well as its channel number), as well as bank/scene designations for the 480 snapshot configurations. (The scene memory can be configured as 15 banks of 32 scenes, or set up as a single array of 480 scenes.)

Individual gain trims are provided for both mic and line inputs (50 dB and 40 dB, respectively), along with a multisegment, peak-reading meter for accurately monitoring selectable signal sources for that channel: mic, line, tape, direct out or monitor path. Because of the dual-fader configuration, two simultaneous inputs can be selected per strip and assigned to the upper or lower fader bank. All switch and knob settings can be scanned, memorized and recalled from internal RAM, hard disk or floppy.

The 3-band EQ section offers 45 to 1.5k Hz adjustment on the LF band; 400 Hz to 12 kHz on the MF; and 800 Hz to 20 kHz on the HF band. The mid-frequency band is fully parametric, with variable Q (bandwidth). Gain cut/boost is ±15 dB for each section. Characteristics of the LF and HF EQ bands can be changed from shelving to peaking response from the central control section; changes also can be automated to provide, for example, an LF shelf during a song's introduction, switching to a bell-type during the first chorus.

The M4000's equalization is remarkably smooth in operation and worthy of that much-vaunted accolade of being "musical." Within a couple of minutes' use, you realize that you need far less cut/boost than might be the case with other analog designs—this certainly is a *sweet-sounding* EQ section—with plenty of overlap.

There is no appreciable lag in turning a cut/boost, center-frequency or bandwidth control and hearing the result. A really useful feature is offered by a pair of multiply keys (one on each side of the Digital Controller), which speed up action of the optical rotary encoder controls by a factor of four. At power-on, the default is a "turbo boost," or high-speed mode, which, as I discovered, is more useful for pan, auxiliary sends and similar controls. For other, more precise settings, such as mic/line gain or EQ center-frequency, it is very handy to start off in high-speed mode, then switch to normal speed as you fine-tune each setting.

The single EQ section per input strip can be assigned to either the input signal (mic or line, depending on the signal source) *or* the monitor signal (normally the tape input). An EQ-null button sets the gain settings of all three bands to 0 dB; unfortunately, it is not possible to toggle between null and the current setting, but you can't have everything. A dedicated insert send per channel can be set to follow the mic, line or tape input signal; normally, the insert point is post-fader and post-EQ.

A group/stereo section assigns the post-fader signal from the corresponding fader bank—either upper or lower—to one or more of the eight group outputs, or directly to the L/R stereo bus during mixdown. A pan control adjusts relative levels across the L/R soundfield, or between odd and even bus outputs. In addition, two sources can be selected and summed to a corresponding section. A monitor section sets up the assignments to the selected upper or lower monitor fader bank, with pan selection and adjustment. Finally, an auxiliary send section selects either the mic, line or tape signal path to one of six auxiliary buses.

(In reality, you have four independent mono aux outs, because #1 and #3 are paralleled from the same fader, as are #2 and #4; sends #5 and #6 can be linked to provide stereo operation with pan.)

GLOBAL ADJUSTMENT FOR SPECIFIC CONFIGURATIONS

With so many available combinations of signal sources to the upper and lower sections, EQ in either path, plus output assignment via subgroup buses and/or group outputs and routing to the final stereo mix bus, it is very easy to get a shade confused while exploring the M4000's myriad operations. But this is where the global functions come into their own. The console is supplied with several factory-set snapshot defaults available from a designated front-panel button. (You can also edit the snapshot settings and then re-store the amended configuration onto the same key.)

Tracking mode automatically selects mic/line to the lower bank and tape inputs to the upper, with output from the lower bank to the eight group buses, and from the upper bank to the stereo bus—the "traditional" in-line recording/overdub format. Mixdown mode selects off-tape signals to all faders, with output routing to the stereo bus. All Mix mode selects mic/line inputs to all faders during, for example, live-mix applications. Four user-programmable keys are also available for storing favorite snapshot configurations, along with a couple of "scratch-pad" areas for temporarily holding, for example, EQ settings that might need to be compared during mixdown, or which might be copied from one channel signal path to another. A dedicated "input copy" key allows all EQ, fader and switch settings to be duplicated to other input channels; an "EQ copy" key copies only the equalization data. Finally, a "link" key enables two input-channel or group faders to be assigned as a stereo pair; operation of the mute and solos are now interlocked.

The insert I/O can also be programmed to be active during Tracking mode and inactive during Mixdown mode. This prevents the possibility of "double printing" outboard effects and eliminates the need to repatch or use the bypass switch on an effects unit during remix.

Resetting fader levels to match a previous snapshot or dynamic mix is achieved by using a pair of green triangle LEDs mounted above each fader. Correct fader position can be verified by moving the fader and pressing the channel "activate" key; the position where both triangle LEDs disappear indicates the fader's true position. (Audio adjustment is disabled during this mode.) When the activate key is released, the fader position becomes consistent with the stored setting. The audio volume will change smoothly when the fader is moved.

THE BOTTOM LINE...

All in all, the M4000 is relatively easy to master. The front panel is laid out with simple, clear legends and controls that can be reached from a sitting position. The provision of global system settings helps you get up-and-running within a couple of hours; mastering the console's full intricacies will come during the first day or two, as you become more familiar with the high degree of customization available. In every respect, the M4000 Automated Mixing System is a powerful, great-sounding device, one that will find ready acceptance in a variety of recording, production, live-sound and related applications.

The company has promised that, in the near future, it will offer specially developed Mac-compatible software, which will provide both offline editing and online operation of the M4000 controller and digital engines. Also under development is new system software that will enable two controllers to be online at the same time, which should expand its use into film/video mixing suites and similar facilities that need to provide simultaneous access to mix functions.

Postscript: If you have the opportunity, check out the M4000 Automated Mixing System's price list. Within the accessories section, you'll find the following item: "M0000 Shoulder Strap for M410/M411 Digital Controller; $2,500 with rhinestones and engraved with the phrase, 'Real Men Don't Use EQ.'"

Tactile Technology, 13855 Bentley Place, Cerritos, CA 90703; (310) 802-1500, fax: (310) 802-7330. ■

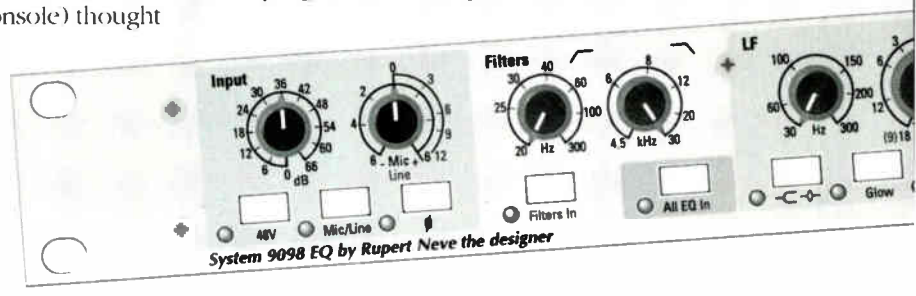
Formerly editor of Recording Engineer-Producer *magazine, Mel Lambert currently heads up Media&Marketing, a consulting service for pro audio firms and facilities.*

by Ted Brunelle

AMEK 9098 EQ

DESIGNED BY RUPERT NEVE

It's finally here. The first 9098 Rupert Neve console has just been completed, and the people at Amek (manufacturers of the 9098 console) thought that the EQ sections of the modules on this new console were so phenomenal-sounding that they decided to put them in a rackmount unit for everyone to enjoy. The module is an exact replica of the EQ sections used on a 9098 mixing console. Each unit is designed and approved by Rupert Neve himself.



The 9098 RNEQ (the hip way of saying Rupert Neve EQ) module is a single-rackspace, single-channel device with two distinct sections. The first section is a microphone preamplifier using a discrete component circuit to provide an electronically balanced input based on TLA (transformer-like amplifiers) principles (developed by Rupert Neve and Amek, they provide the benefits of transformer coupling without the disadvantages). The second section is a 4-band parametric equalizer. The output of the microphone amplifier is connected directly to the input of the equalizer, but the two parts can also be used separately (each having its own rear output jack). Included with the 9098 is an owner's manual (complete with circuit schematics), the module's brochure and a certificate of authenticity signed by Rupert Neve (the personal touch).

The EQ has an internal main power supply that is screened to minimize any leakage of electromagnetic fields. Also, the chassis ground and analog ground are both brought out to the rear of the unit, making it easy to connect the unit to a technical earth if required. The AC cord comes with no wall outlet end. Amek claims that you must fit your own plug ends to the power cord because power standards/outlets vary so greatly from country to country.

On the front panel, there are the familiar parametric EQ controls, very logically laid out, and also a few new controls for those of us not used to Rupert Neve products (such as "sheen" and "glow"), but nothing complicated.

After plugging in my own universal IEC power cord, and connecting the balanced lines in and out, I took it for a spin. It was phenomenal. On the EQ section, you could section out any frequency you wanted cleanly and easily; the low- and high-cut filters were powerful and accurate (the low control really touching only the lows with no distortion), the mids and highs were clean and sharp (with no harmonics generated at all), and the functions like "glow" and "sheen" do magic. Glow and sheen have a very gradual slope and alter the overall tone without touching any specific frequency drastically.

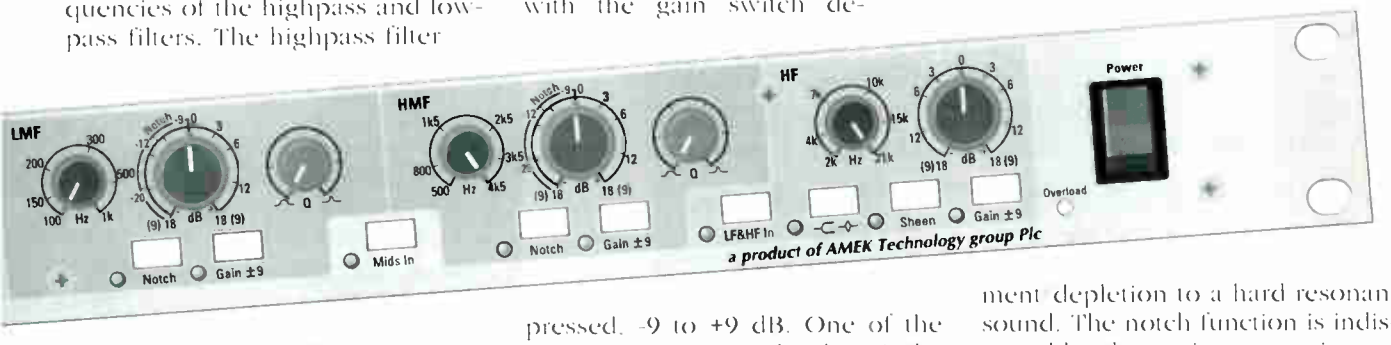
On the mic amp section, the input gain can be increased in 6dB steps between 0 and 66 dB, and if even more gain is desired, the trim control in the equalizer section can increase the maximum gain to a total of 72 dB. The microphone amp is comfortable in producing output levels in excess of +25 dBu. However, the gain should be adjusted to produce

an output appropriate to the equipment being fed. There is also a 48VDC phantom power switch and a phase (polarity) inversion switch. The preamp section offers transparency and clarity, with a cleanliness you'd expect to find in any world-class unit.

Going to the EQ section of the module, we start with the filter section. There's a switch used to take the filters in and out of line, and two pots used to control the cut-off frequencies of the highpass and lowpass filters. The highpass filter ranges from 20 to 30 Hz (well beyond the conventional audio band), and the lowpass is variable from 4.5 to 30 kHz. The steep cutting (18 dB/octave), continuously swept filters are extremely powerful and effective tools, so tasks such as wind noise reduction and de-essing are a snap.

Controls on the low-frequency section include the frequency selector and level pots, a shelf/peak switch, a ±9dB gain switch and a switch for the "glow" function. The frequency potentiometer (selects the frequencies at which the LF EQ is effective) ranges from 30 to 300 Hz. And the level control (which is the same for the remainder of the EQ sections) ranges from either -18 to +18 dB or with the gain switch depressed, -9 to +9 dB. One of the more interesting switches here is the glow function, which alters the steep-sided EQ curves to a more subtle curve for greater warmth, tailoring the overall sound without changing its characteristics.

The LMF and HMF (low-mid-frequency and high-mid-frequency) sections are the same except for the frequency selectors range. The LMF's ranges from 100 to 1k Hz, and the HMF's ranges from 500 to 4.5k Hz. There is a gain pot, a "Q" control (defines the bandwidth over which the EQ action is effective) and two buttons, a notch function and a ±9dB switch for each of the two sections. The "Q" pot controls the EQ curve from subtle enhancement depletion to a hard resonant sound. The notch function is indispensable when trying to zero in on a frequency, especially when used along with the frequency, "Q," and level controls (another important tool in the EQ'ers tool box). Between these two sections, there is a switch to in-



sert or pull both mid-frequency sections from the signal path if so desired.

Controls on the HF (high-frequency) section include an LF and HF "in" switch for putting them in and out of line, a shelf/peak switch (so frequencies above the peak are either maintained or attenuated), a sheen switch (a mirror image of glow in the LF section), and a ±9dB switch, again to increase the gain control's resolution. The frequency selection ranges from 2 kHz all the way up to 21 kHz.

Additional front panel items include an illuminated power switch, and an overload light to let you know when signals are too hot. The EQ has very high headroom, somewhere around +6 decibels or so, but where are the meters? I don't think that just an overload light is adequate. An output meter would help let you know when levels are getting too hot to handle and are ready to clip, or are too low and should be boosted to maximize the signal-to-noise ratio.

SUMMARY

I think that the 9098 RNEQ will set new standards in analog equalizers, and I highly recommend it as an addition to any studio in need of a good, solid, clean equalizer. It does wonders for vocals, percussion, woodwinds, brass and any other instruments. We brought out a richer, smoother sound in a vocal track of an older song sung with a $300 microphone—made it sound very close to a $3,000 Neumann mic.

One of the unit's drawbacks is that the EQ section is not stereo. So if you plan on placing this on the stereo bus inserts or using it for mastering, you must have two units for stereo.

I've never heard anything like the sheen and glow functions before; I'd buy it for those alone! These functions have the ability to lift your sounds to a more exciting and pleasing level. And with a list price of $1,800, how can you afford not to have one...two?...three?

Amek/TAC U.S. Operations; 10815 Burbank Blvd.; North Hollywood, CA 91601; (818) 508-9788; fax (818) 508-8619. ■

Ted Brunelle is vice president of Endless Mountains Productions of New Milford, Pa.

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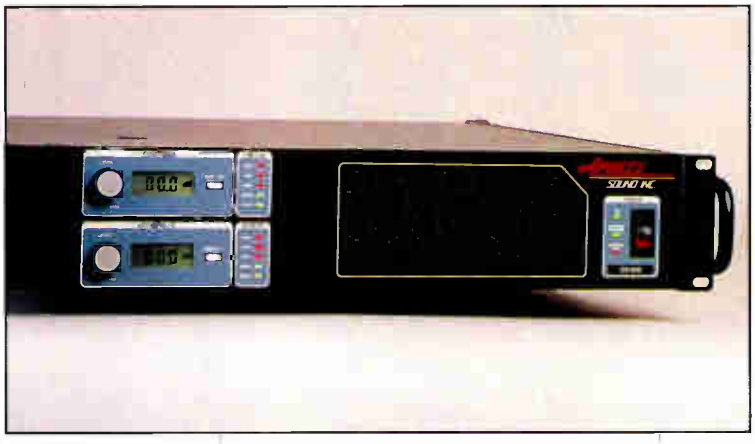
CREST CONSOLES CENTURY SERIES

BREAKING NEXT MONTH

by Mark Frink

SOUNDCHECK



Apogee DA-800

AES REPORT, PART 2

[Last month, Mark Frink reported on new sound reinforcement products from the November AES show in San Francisco. There were so many new releases for live sound applications that we decided to run his report in two parts.]

Designed as the ultimate DI for recording musical instruments, the Evil Twin Tube Direct Box stands out in a year when tube DIs and other tube products became fashionable once again. The variable output gain, adjustable in 3dB steps from +6 dB to +36 dB, provides line-level output, allowing engineers to entirely bypass consoles and preamps and go directly to tape. It also offers live engineers optimum transmission of an instrument signal down long snake lines with multiple splits at line level. The list of Evil Twin owners includes names like Lovett, Scaggs, Massenburg and Becker. Listing for $895, the DIs are lovingly crafted at **Eclair Engineering** of Florence, Mass., by Bruce Seifried, who offers a lifetime warranty and a satisfaction guarantee.

A switchable 8dB peaking filter is included, at either 3 kHz or 9 kHz, and, because they are hand-built by the engineer, these filters can be custom-ordered to other frequencies. Long tube life and high performance are promoted by fully regulated filament and high-voltage B+ that are applied slowly at turn-on. Use of a Jensen JE-11-EM transformer provides low distortion and frequency response from 3 Hz to 250 kHz. The robust execution throughout is audiophile-quality, right down to the blue, jeweled power light on the front panel.

Evil Twin DI

Apogee Sound (Petaluma, Calif.), celebrating its tenth year, took a bold step forward by introducing the new DA-800 amplifier. The company has brought amplifier manufacturing in-house, which has allowed for lower pricing from previous models. This is also the first amplifier to be purpose-built for integration into networked control and monitoring systems. The two-space amp outputs 940 watts per channel into 2-ohm loads and features an onboard microprocessor and two large LCDs for readout of not only attenuation, but also temperature, load impedance, AC line voltage, output voltage and output wattage by toggling a display switch. The two potentiometers are "soft knobs," so for the first time front-panel levels always agree with manipulations made remotely via computer. The two channels can be linked, and the front-panel level controls can be disabled. The amp enjoys low distortion and noise specs by employing the MTA 1567 VCA, renamed the Apogee Analog Attenuator 1 (AAA-01), for which Apogee has acquired worldwide distribution rights. In other Apogee news, The AE-9

—CONTINUED ON PAGE 152

Live Alive!

Ed Kowalczyk of Live

by Mark Frink

The new band that caught everyone's attention at Woodstock last August was Live. We caught them at Seattle's Moore Theater during a string of sold-out shows. The venerable Monty Lee Wilkes mixes FOH on a Yamaha PM-3000, with a 36-channel Soundcraft Venue for the support band. Effects include two Lexicon LXP-1 reverbs, a Yamaha REV7, two SPX-990s and two Roland SDE-3000 delays. Wilkes uses a Lexicon MRC with the LXP units. "Large Room" with a reverb time of 6.1 seconds is used on kick drum for a special effect on one song, and "Bright Hall" varies from .93 to 2.9 seconds on the other LXP for snare. The REV7 is used on the toms with "Echo Room" set at varying times. The two 990s are both for vocal effects, with one as a "foundation" pitch change with a slight delay. The other 990 changes from "ER Room" to "Large Reverb," and even a sweep phase change on one song and distortion with parametric EQ on another. Inserts are eight channels each of Drawmer DS-201 gates and BSS DPR-402 compressors.

The coolest new touring production accessory seen on this tour is the Brother P-Touch labeling printer, seen at both FOH and onstage. It has a street price of about $260 and runs from either a Mac or an IBM. P-Touch labeling is heavily in evidence. All essential equipment is labeled, including the stool at the monitor position, in case there was any doubt about its proper place or who belonged there.

Monitor mixer Brendan McCabe

The band is carrying consoles and monitors, picking up "racks and stacks" locally at each gig. In Seattle, ProShow provided four EV MT-4 highs and two MT-4 lows per side for the main P.A. Crown amp racks power the ProShow MT-4 stacks, each with an MA 5000 VZ, an MA 2400 and an MA 1200, all running on the IQ control system. The front-of-house drive rack includes a KT 360, two dbx 160X system compressors, two EV MTX-4 crossovers and two BSS DPR-404s on the four-way outputs, providing individual band limiting and drive capabilities. The IQ Interface also resides in the drive rack, and ProShow runs Macintosh IQ software Version 1.4 on

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!"

...After 40 million records, you don't have to succumb to the "cool guy" factor.

Check out Foreigner's new release, "Mr. Moonlight," at your local music store–check out N/DYM® Series III at your local EV dealer.

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an SE/30, offering instant control and monitoring of the amplifiers from the mix position.

The monitor system, provided by Firehouse Productions of Brooklyn, N.Y., is one of the cleanest rigs I've seen, with immaculate packaging and well-thought-out design. Brendan McCabe performed the chores, using a Ramsa with five BSS FDS-960 stereo equalizers. Other auxiliary gear included two Yamaha SPX-990 reverbs (set to #8, "Concert Hall"), used for drums and vocals. Two "four-mix" racks power the monitors with Crown MA 2400 amps and BSS FDS-360 crossovers. The monitor enclosures are exclusively loaded with TAD drivers. The horns used in the enclosures have a triangular-shaped design, providing a unique coverage pattern as one moves closer and farther away from the speaker. The sidefills are double-15s with a 2-inch, and two double-15 floor slants are used at the stage right position. Single-15 wedges are used at center and stage left, although the center mix is used only for the support band, while acting as a backup for lead singer Ed Kowalczyk's in-ear wireless system.

The Sony ear-bugs used with the system are inserted into custom ear molds. Drummer Chad Gracey also uses a Radio Station mix, and the wedges on his riser are also there for backup. McCabe pans the drums around Gracey's stereo mix "as he sees them, providing a natural sound, but the snare mic is not necessary, due to its loud volume in the other mics." Two of the three BSS DPR-402 stereo compressors are for the two Radio Station mixes, placed in-line after the equalizers and before the transmitters. By carefully tailoring the EQ in the critical upper mid-range region on those mixes, McCabe is able to finesse the sound of those mixes and give the two musicians the sound they want. Further use of low-mid cut gives Gracey the kind of EQ contour he is used to hearing from drum wedges.

Microphones include an EV RE-20 "for that older, pillowy kick sound, along with a Shure SM91 in the drum for clack," Wilkes comments. "I tried a 409 on the snare, but there were not enough lows, so I changed to the 57 we're all used to, and there's an EV 408 on the bottom for snap." There are Shure SM98s on the toms, AKG 414s on overheads and 451s on hat and ride cymbals. The bass guitar cabinet is miked with a Sennheiser MD-421, along with the XLR line out of the Trace Elliot. Wilkes mikes the center guitar rig with two Sennheiser 409s for smooth highs, along with a 408 for its punchy mids. The other guitar rig also uses a 408 and a 409. The acoustic guitar is a Washburn with an XLR output, and it has a BSS DPR-402 inserted on its channel. Shure Beta 87s are used for vocal mics, with a wireless for Kowalczyk (along with a spare and a hard-wired spare); the other vocal is also hard-wired. ■

—FROM PAGE 148, AES PART 2

won the TEC Award for sound reinforcement speaker technology. The AE-9 is a three-way, biamp, trapezoidal enclosure with a front-loaded 15-inch woofer, a horn-loaded ten and a ferrofluid-cooled 1-inch compression driver on a small horn mounted inside the mouth of the midrange horn. Auditions in the company's demo room confirmed a sweet, smooth sound provided by the use of the midrange device for the majority of the vocal range; the AE-9 offers low distortion and consistent pattern control down to 300 Hz. A less-familiar Apogee speaker, shown at the Anaheim NAMM show, is the 8000, in the "Artist" line. Its design is similar to the AE-9, but it houses two 15s instead of one, in a taller and deeper trapezoidal cabinet.

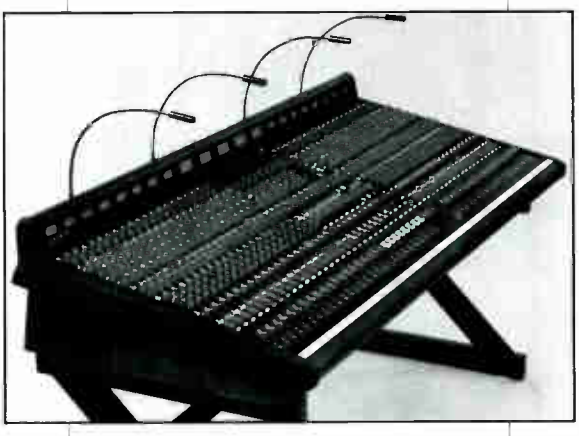
Allen & Heath (Sandy, Utah) incorporated suggestions from thousands of users to create one of the most flexible mixers available at any price—the GL4. Available in 24 channels and expandable to 32 and 40, its features include eight groups, ten aux sends, eight aux returns, two matrix outs, eight manual mute groups and MIDI control of mute scenes. Subs, auxes and aux returns are all mute-assignable. Input channels include a redesigned mic preamp, 4-band sweepable EQ, a highpass filter sweepable up to 400 Hz and individual direct channel outputs. The green, yellow and red LED signal-metering on each input includes dynamic indication, with the green LED getting brighter starting at -20 dB. The master section is in the middle of the console, and its three-way "fader-swapping" option allows the bottom row of group faders to be either the aux master or aux return faders instead. The "wedge" switch sends the AFL/PFL solo signal to the mono output for reference cue-monitoring. Another switch connects the last two auxiliaries into the 11x2 matrix. Options include an auto-switching PST monitor and a VU meter bridge. The best feature is that the 24 lists for $8,000 and the 40 lists for $14,000.

Wireworks (Hillside, N.J.) was showing its 160i/G5 multipin connector, an upgrade for the old G-4 plastic "latch connector," which has been discontinued. The pin-blocks accept the same pins, allowing conversion without re-terminating the multicore, and the connector fits the same-size panel cutouts. Also shown was the TEN-4, the only cable tester for testing NL-4 Speakon cables.

At Rupert Neve's suggestion, Amek co-founder and chief designer Graham Langley's name was used in the creation of a new brand-name last year, to make him better known to the industry and honor his contributions. The new **Amek/TAC** 501 "by Langley" console is the baby brother to the Recall console introduced at last year's NAMM show. The 501 has an interesting twist on traditional console architectures, whereby each input can be routed directly to its four matrices, besides the eight subgroups and the stereo bus. The 4-band EQ has sweepable mids, with switchable Q of either 0.7 or 2. The highs are switchable between 6 kHz and 12 kHz, and the lows either 40 Hz or 80 Hz (along with an "x3" switch). The highpass filter is 12 dB per octave below 120 Hz. In the master section, each of the four mute group switches is located over one of the four VCA master faders. In another departure, the other four VCA groups are called "free" groups, and any four input-channel faders can be assigned as the remaining four VCA masters. Eight auxiliaries, eight VCAs and eight subgroups are fairly standard in midpriced consoles, and the auxiliary output knobs and the subgroup faders have the popular "fader-swap," or mix-path reverse feature, found on most FOH consoles to facilitate their use in mixing monitors. Auxiliaries 1-4 switch between pre and post together, and auxes 5-6 and 7-8 switch as pairs. The

same lavish extras found in the Recall console make the 501 a very attractive mixing system: the Showtime automation, the Recall software (including the voice-prompt) and use of the VCAs in each channel to provide onboard Virtual Dynamics. Virtual Dynamics algorithms include three compressors, three gates, a limiter, expander and a 2-channel auto-pan. The chassis had four blank panels for the stereo input modules, which will be available by the time you read this; the frames are only 46 or 66 inches wide. Available in 24 or 40 inputs, they list for $32,300 and $43,301, respectively, including all software.

Lexicon's (Waltham, Mass.) new PCM-80 includes in its 200 presets some of the PCM-70's classic sounds, such as Concert Wave. It has stereo inputs and a new front-panel interface that allows the user to quickly scroll through a "row" of the ten most logical parameters. Full editing for sound designers is available



Crest GTx

in Pro mode. There's also a user-assignable soft-row to store your own choice of ten parameters. Taking Dynamic MIDI one step further, Dynamic Patching allows up to ten different parameters to be mapped and scaled to 143 different control sources. Other features include timed parameter switches and manual tap-in or MIDI tempo control. Maximum delay time is 2.6 seconds of stereo, and there are two slots for 70-nanosecond SIMMs that can increase it to 42 seconds. That's no delay, that's a postponement! It also sports S/PDIF RCA connectors on the back and a Type I PCMCIA memory card slot on the front. It lists at the PCM-70's price of $2,499.

The new GTx console from **Crest** (Paramus, N.J.), available with 32, 40 or 52 inputs, was shown. Features include eight groups, an 11x2 matrix, eight discrete aux sends with individual on/off switches, and four mute scenes. The meter bridge has up to 21 VU meters, and the console has true LCR panning. The 4-band sweep EQ has switchable Q on the mids, and the high and low EQ is switchable between peaking or shelving. The high-pass filter sweeps up to 400 Hz

—CONTINUED ON PAGE 185

New Sound Reinforcement Products

QSC POWERLIGHT AMPS

QSC Audio Products (Costa Mesa, CA) announces its PowerLight Series of lightweight professional amplifiers. Weighing under 18 lbs. and only two rack-spaces high, the amplifiers are designed for sound applications where reduced weight and size is desired. With three different models providing 2-ohm power points of 500, 700 and 900 watts per channel, the series features enhanced thermal performance, detented gain controls, Neutrik Combo input connectors, and LEDs for signal-level metering and status indicators. Prices range from $1,298 to $1,998.

Circle 212 on Reader Service Card

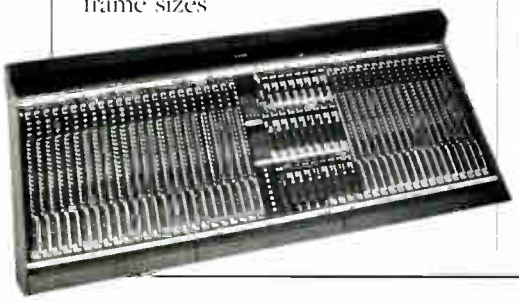
RE AN CABINET HARDWARE

Re an (Fairfield, NJ) offers a broad selection of cabinet fittings and hardware. These include recessed carrying handles, strap handles, corners, stacking corners, plastic extrusion for cabinet edges, recessed jack sockets and ventilation covers.

Circle 213 on Reader Service Card

SOUNDCRAFT SM24 MONITOR CONSOLE

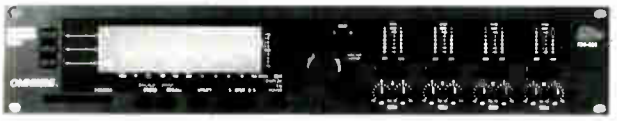
New from Soundcraft (Northridge, CA) is the SM24, a top-end, pro touring monitor console. Featuring 16 mono or up to eight stereo sends and an additional dedicated stereo sidefill send, the SM24 can be reconfigured at the touch of a button to give almost any combination of mono and stereo mixes with up to 26 buses. With three frame sizes (32, 40, and 48 inputs), the unit can also double as a full-featured FOH board. It features eight VCA groups, eight mute groups and long-throw faders throughout.



Circle 214 on Reader Service Card

BSS OMNIDRIVE

BSS Audio (Northridge, CA) introduces the Omnidrive loudspeaker management system, digital signal processing for loudspeaker control. Combining two channels of four-way crossover, parametric equalization, phase correction, delay line and limiters in a compact 2U chassis, the system features 60 user-programmable memories for storage of system/venue setups that may be password-protected. A unique facility automatically adjusts delay times as ambient temperature changes and corrects high-frequency response with humidity variation.



Circle 215 on Reader Service Card

SA ENTERTAINER SERIES

Stage Accompany (Cincinnati) offers the Entertainer Series E 24 loudspeaker, a trapezoidal, compact design capable of producing high sound pressure levels and handling 1,000 Watts peak power with a 60-30k Hz frequency response. It combines one SA 1202 (12-inch LF/MF driver) and the SA 8535 Neodymium Compact Driver (HF ribbon driver). With a sensitivity of 96 dB and a dispersion pattern of 90 x70 (HxV), one E24 can replace four typical loudspeakers.

Circle 216 on Reader Service Card

GOLD LINE SOUND LEVEL CONTROL SYSTEM

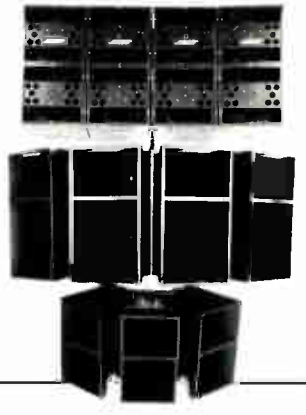
New from Gold Line (West Redding, CT) is the Sound Level Control System, a single-rack-space SPL meter that can trigger a relay when sound exceeds a specified level. The relay can be used to notify the manager, light a light, ring a bell or activate a limiter. It can also activate a counter to determine how often sound exceeds a specified level. An additional relay allows the SLC-1 to reduce sound levels by 20% for three seconds. SPL measurements can be made in flat, A- or C-weighted curves.

Circle 217 on Reader Service Card

BOSE PANARAY LT

Bose Corporation (Framingham, MA) introduces the Panaray LT (long throw) series of professional loudspeakers. The Panaray LT systems are capable of reaching distant listeners with clear, intelligible, high-fidelity sound and are designed for use in venues with speaker-to-audience throws of 75 feet or more. The Panaray LT product line includes the 3202 narrow mid-high loudspeaker, the 4402 wide mid-high loudspeaker and the 1802 subwoofer.

Circle 218 on Reader Service Card



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(Big Head Todd and the Monsters, Los Lobos, Michelle Shocked)

Mr. Cat Productions – Long Beach California

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(The Bone Daddys, Harry James Orchestra, Don Henley for the Walden Woods Benefit, Toyota Grand Prix, Billy Mitchell, Coco Montoya, Pancho Sanchez)

Musician Support Services – Los Angeles California

"Stewart has a great power amplifier with very clean powerful low end and high end that cuts through beautifully. We have worked these amps into the ground and put them through hell for almost two years now and they just keep going and going and going."

(Chick Corea Elektric Band II, Herbie Hancock, John Patitucci, Stanley Clarke, Keiko Matsui, Terri Lyne Carrington, Wayne Shorter, John Novello)

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PHOTO: CAROLINE GREYSHOCK

The Chieftains

WITH A LITTLE HELP FROM THEIR FRIENDS

by Blair Jackson

Thirty-two years down the line, The Chieftains are much more than just the world's most popular purveyors of Irish traditional music. They are musical goodwill ambassadors who have traveled the world, built a large and devoted following, and successfully dipped into a tremendous variety of stylistic bags, all the while retaining their essential character. Put together fiddles, flute, harp, uilleann pipes, a tin whistle and that distinctive drum called the bodhran and you're probably going to get music with the lilt of an Irish reel, or as mournful and moving as an Irish country ballad. But what happens when you add Van Morrison or Emmylou Harris or Frank Zappa or Sting or the Rolling Stones to the equation? This is territory The Chieftains have been exploring for the past several years, culminating in their brilliant and ambitious new album, *The Long Black Veil* (on the RCA Victor label).

PHOTO: DAVID MAHER/SPORTSFILE

Such is the respect that The Chieftains are accorded by other musicians that they can almost pick and choose with whom they want to play. Their 1991 Christmas record, *The Bells of Dublin*, brought the sextet together with the likes of Elvis Costello, Canada's McGarrigle sisters, Nanci Griffith, Rickie Lee Jones, Jackson Browne and others in a lovely collection of traditional and new songs, carols and spry Celtic dance numbers. The next year, on *Another Country*, The Chieftains traveled to Nashville to explore the link between Irish traditional and American country music. A cast that included Willie Nelson, Don Williams, Ricky Skaggs, Chet Atkins and others romped through such classics from the American country-folk canon as "Cotton Eyed Joe," "Wabash Cannonball" and Leadbelly's "Goodnight Irene," as well as tackling "Heartbreak Hotel" and an ageless Irish reel or two.

Mark Knopfler and Paddy Moloney (left). Moloney, Sinead O'Connor and Ry Cooder (below).

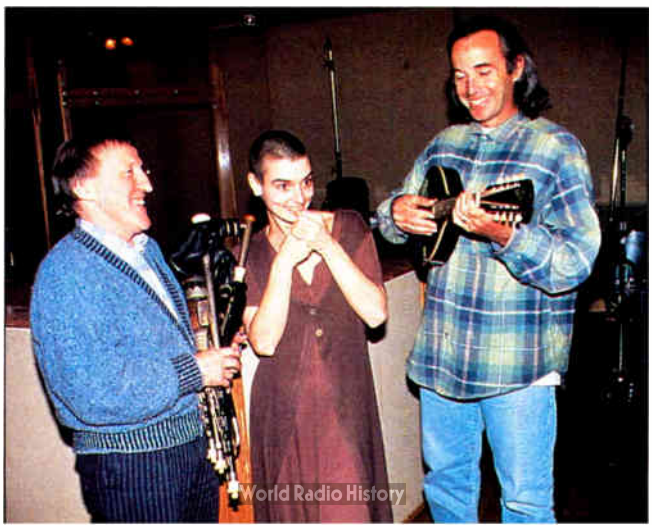

PHOTO: CHUCK PULIN

The Long Black Veil brings The Chieftains together with Sting, Mick Jagger, the Rolling Stones (*sans* Jagger), Sinead O'Connor, Van Morrison, Dire Straits' Mark Knopfler, Ry Cooder, Marianne Faithfull and even that ol' Welsh belter, Tom Jones. The songs run the gamut from "The Foggy Dew" (with Sinead), a song written to commemorate Ireland's Easter uprising in 1916, to the old English street ballad "Lily of the West" (with Knopfler), to the country classic "Tennessee Waltz" (with Tom Jones), and Van Morrison's lovely "Have I Told You Lately That I Love You."

—CONTINUED ON PAGE 159

Lisa Germano

FEELING GEEK

by Adam Beyda

A feedbacking guitar screeches, then violins resonate dolorously; drums thud along drunkenly yet maintain a powerful, sloppy groove, while the bass tugs the whole package forward. On top of it all, a bratty, childish voice drawls insinuatingly, "I'm not getting well." The song is "Cancer of Everything," one of the highlights of Lisa Germano's mesmerizing new outing, *Geek The Girl*.

As this description suggests, *Geek The Girl* is loaded with intimate, sometimes disturbing music. The album is a wonderful instance of sonics in the service of emotional expression, for Germano deftly creates tones that evoke emotional timbres. She uses sounds as colors and textures: "I really do think of these songs like paintings," she says, and her palette includes everything from mandolins and zithers to screams. (Pulsing through the background of the song "...A Psychopath" is a loop of an actual 911 call a woman makes as a man is breaking into her house—a harrowing listen.) But it's the violin, Germano's chief instrument, that best captures the emotional range of the album, sounding at turns plaintive and melodic, atmospheric or downright grating.

Germano first emerged when she began playing fiddle for John Mellencamp's band in the mid-'80s. An Indiana native, she trained classically at the renowned IU School of Music and later ended up in a regular gig at the Little Opry in Nashville, Ind. (outside Bloomington). One summer, Kenny Aronoff, Mellencamp's drummer, came to the Opry to play, and inspired by Aronoff's example, Germano began to work harder on getting her attitude and her playing together. A year later, when Aronoff called to tell her Mellencamp wanted to put some fiddle on a B-side, she was ready for the opportunity.

Some might say that she had arrived, but for Germano this was just the beginning. She went on to tour and record albums with Mellencamp, which led to gigs with other artists, including an '89 tour with Simple Minds. Although the success was gratifying to her, she felt limited playing second fiddle (yeeesh)—she had more to say. As a child, and later in a band with her brother, Germano had written her own songs; so, as horizons opened up for her, she began writing again, recording songs on her cassette 8-track.

The first fruit of her renewed creativity was 1991's *On the Way Down From the Moon Palace*, a largely DIY album she released on her own Major Bill label (so-named because the cost of

—CONTINUED ON PAGE 162

CLASSIC TRACKS

The Beatles' "Strawberry Fields Forever"

by Blair Jackson

The 1966 album *Revolver* had prepared us somewhat for the mindblowing directions the Beatles were headed in at the dawn of the Psychedelic Age, but still, it's safe to say that no one—not even the Beatles themselves—was expecting anything like their incredible double-A side single of February 1967, "Penny Lane" "Strawberry Fields Forever." For my money, this is the most revolutionary single of all time, and George Martin has said he believes it's the greatest record he ever made with the Beatles. There were no real precedents, and there's been nothing quite like them since, either. "Strawberry Fields," in particular, is utterly unique in pop music, and, not surprisingly, an interesting recording story.

The Beatles

A couple of things happened to John Lennon in 1965 and early '66 that changed the way he wrote songs. First, he fell under the spell of Bob Dylan, whose output during this era was truly staggering: *Bringing It All Back Home*, *Highway 61 Revisited* and *Blonde on Blonde*, albums overflowing with poetic brilliance and flights of imagination. Lennon credited Dylan with opening him up as a songwriter and letting him step away from the standard pop songwriting subjects of the day. At the same time, Lennon was taking a lot of LSD, smoking pot almost constantly, and generally exploring some of the

—CONTINUED ON PAGE 164

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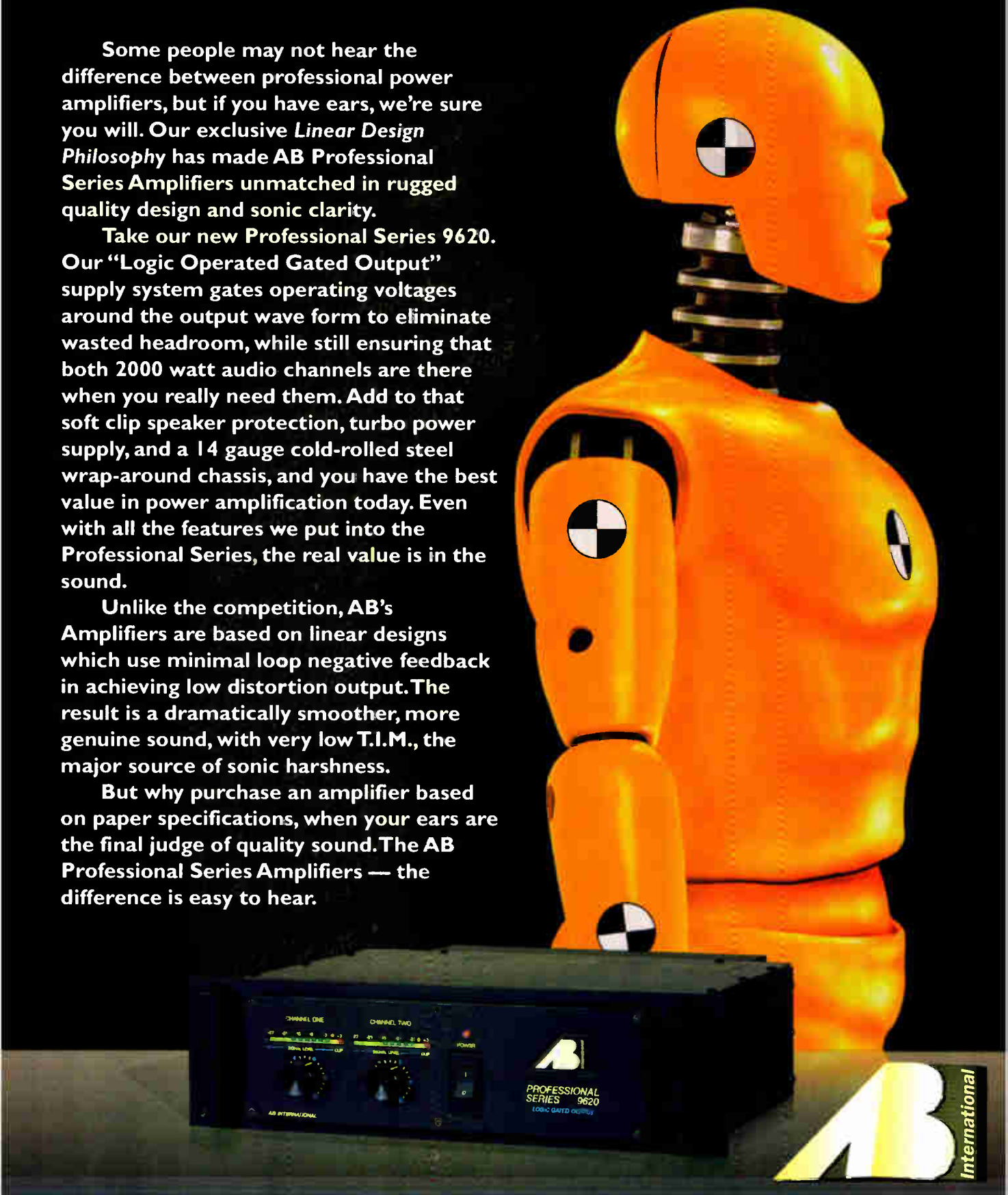

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—FROM PAGE 156, THE CHIEFTAINS

"The Long Black Veil," sung with twangy authority by Jagger, is a 1959 ballad originally recorded by country legend Lefty Frizzell, and to spice up the collaboration with the Stones, the traditional Irish song "The Rocky Road to Dublin" now contains a dash of "Satisfaction" in it.

What all the singers and guest players have in common is that they are distinctive and soulful song interpreters, more interested in getting *inside* of a lyric or melody than putting down a technically perfect performance. That is also true of The Chieftains themselves, though they are so skilled and precise that it's easy to forget this is essentially improvised folk music. It is their strength as a unit, providing unwavering support for all the singers and players, that ties the disparate elements together and takes the music to such a high level. It's no wonder that musicians line up to play with these guys—indeed, among those who have already said they want to record with The Chieftains on their *next* disc are Bob Dylan, Peter Gabriel, Joni Mitchell and Jerry Garcia.

"The key to all these collaborations is that we never lose The Chieftains' sound," says Paddy Moloney, the group's warm and gregarious leader, producer, piper and tin-whistler. "That sound is what we are, and it's still there on every track even though we have guests. You go to different studios and different places to record or mix, but The Chieftains are The Chieftains. I'll spend a lot of time working with engineers making sure that we get the backbone of The Chieftains down on tape, and then the rest is fairly straightforward."

It helps, too, that The Chieftains have maintained a long relationship with one engineer—Brian Masterson, owner of Dublin's Windmill Lane studios. Masterson has worked in some capacity on most of The Cheiftains' records since the late '70s, whether it was engineering and/or co-producing with Moloney, or just mixing. On *The Long Black Veil*, he contributed to six of the album's 13 tracks. New York-based engineer Jeffrey Lesser worked on five songs, Chris Kimsey tracked the numbers with Jagger and the Stones, while Simon Osborne (Sting), Andrew Boland (Faithfull), and Spencer Chrislu (Jones) handled other tunes.

"It's nice having someone like Brian who we know we can rely on," Moloney says. "Brian has grown up with us, and we've grown up with him around us, and it's like family. He's someone who totally understands what we're looking for and who'll tell me when things aren't right. It's great to have an engineer who is also a musician, which he is, and sympathetic to the sounds of the instruments, which are fairly specific. We've been working together since 1977, and he knows how the pipes are supposed to come across.

"The way we recorded [*The Long Black Veil*] was pretty much the way we've always done it with Brian. It's very much live in the studio with little separation. It's usually just one big semicircle, with each of us miked individually. On this album, almost all the lead vocals were live, and there was none of this in-the-booth business. One, two or three takes and that was it."

Comments Masterson, "I think the most important point is that I consider recording traditional music in general, and particularly The Chieftains, because of the harp and things, more akin to classical recording than rock 'n' roll recording. The idea, obviously, is to capture the natural acoustic sound of the band, while obviously still being able to call upon the tricks and techniques that are useful in multitrack recording. For example, Paddy plays the pipes and the whistle, but he obviously can't play the two at the same time. But depending on the piece, it might be better to put the pipes down first and overdub the whistle, or vice versa. That's a very simple example.

"They sit in a semicircle, and the only thing I find I have to isolate is the bodhran, the hand drum, which is very resonant, particularly the way Kevin [Conneff] plays it, which is so full of life and energy. But I don't lock him away or anything; just screen it off a bit and make sure he has a full view of the band, because playing together is all-important for The Chieftains. There are subtle little gestures going on the whole time between the players, particularly from Paddy to the rest of the band, and if they don't stay closely in touch with each other, then the whole thing won't work at all.

Masterson says he typically uses one mic per player. "But the pipes are a special case in that there are two parts of the pipes—the chanter, which produces the melodies, and the drones. They need to be miked separately. Different pipers have different sounds, and Paddy's sound is quite strident, but I find the Neumann KM84 gives me the detail I want while playing down that stridency a bit. The harp I also look upon as a stereo instrument, very akin to a piano in terms of the spread of sound, and I use AKG 414s on that. The fiddles and flutes and such would be one mic each—AKG 460s. Then I also use an overall ambience pickup, which contributes at least 50 percent of the final sound. In that way, it's very much like a classical orchestral pickup. I tend to use three B&K 4006 spaced omnis in that context, and that picks up the sound of Windmill Lane very well.

"We go for performances and then edit together the final stereo mix, again very much like the classical way of doing it, rather than trying to get into serious overdubbing or punching in or anything like that."

Jeffrey Lesser didn't have any experience working with The Chieftains going into the sessions he engineered at New York's Clinton Recording, "but I was very familiar with their music—I guess you could say I was a fan—so I didn't have to do much research. Also, Paddy and I discussed it thoroughly," he says. The Clinton sessions with Ry Cooder and Sinead O'Connor (two songs each) were cut during The Chieftains' most recent tour of the United States.

"I chose Clinton because I wanted to work in a substantial-sized room," Lesser says. "I wanted them to be able to set up the way they set up live onstage, and I wanted a little bit of air moving—I didn't want them to be in a dead space. I wanted it to sound like you were standing in the midst of them around you in a semicircle. I had a wonderful experience when I first met The Chieftains. They were rehearsing in a hotel room, so I got to hear them totally acoustically, just the six of them in a circle and me. It was phenomenal. There's a lot of unspoken communication that goes on. They're like a family in that way. Then Sinead came in during the middle of the rehearsal, and she was singing along with them."

When it came time to go into the studio, Lesser says, "I did a very elaborate seating and miking diagram, which I tried to keep consistent straight through the mixing. So

thing sound like it was recorded the same place or anything," Moloney says. "The Ry Cooder songs have their own sound because of all the treatments on his guitar. On Kevin Conneff's song ["Changing Your Demeanour"], I wanted it to sound old-fashioned, so I kept it very dry compared to everything else. I wanted the sound of this New York Irish group from the '40s—The Flannigan Brothers—who are on old 78s, and I wanted to get that particular sound. They used to use a piano and a banjo, so I got that and an accordion and went into a little place called Westland Studio in Dublin.

"Each room we recorded in had its own character," Moloney says, "just as every musician we recorded with had his or her own character. You know, at three o'clock in the morning when we'd finished the session with the Stones, Keith [Richards] said to me, 'Paddy, at the end of the day, music is music and musicians are musicians,' and he's right. That's what this was all about. It was great fun doing it."

We'll give Masterson the last word: "It's wonderful having all the famous names and all, but it's still a Chieftains record. I've worked with this band for years, in the studio and even doing their live sound, and I still can't believe sometimes how much energy and enthusiasm and communication there is in this band. I mean, audiences sometimes leave their concerts completely on a different planet. It's incredible for this band to have been doing this for so long and still be doing it so well. Not only that, but still getting *better*." ■

—FROM PAGE 157, USA GERMANO

making the disc set her back a "major bill"). The LP garnered a lot of positive attention, leading to major-label interest. She signed with Capitol and headed down to Daniel Lanois' Kingsway Studio in New Orleans to record her next LP, *Happiness*, with producer Malcolm Burn. The sessions were a success, but not so Germano's experience with the label: Having succeeded on her own terms with *Moon Palace*, she had a tough time acquiescing to Capitol's attempts to make *Happiness* more commercial. Capitol issued the album in July 1993, but soon thereafter a series of circumstances (including a general shake-up at the label) culminated in Germano amica-

—FROM PAGE 156, THE CHIEFTAINS

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What all the singers and guest players have in common is that they are distinctive and soulful song interpreters, more interested in getting *inside* of a lyric or melody than putting down a technically perfect performance. That is also true of The Chieftains themselves, though they are so skilled and precise that it's easy to forget this is essentially improvised folk music. It is their strength as a unit, providing unwavering support for all the singers and players, that ties the disparate elements together and takes the music to such a high level. It's no wonder that musicians line up to play with these guys—indeed, among those who have already said they want to record with The Chieftains on their *next* disc are Bob Dylan, Peter Gabriel, Joni Mitchell and Jerry Garcia.

"The key to all these collaborations is that we never lose The Chieftains' sound," says Paddy Moloney, the group's warm and gregarious leader, producer, piper and tin-whistler. "That sound is what we are, and it's still there on every track even though we have guests. You go to different studios and different places to record or mix, but The Chieftains are The Chieftains. I'll spend a lot of time working with engineers making sure that we get the backbone of The Chieftains down on tape, and then the rest is fairly straightforward."

It helps, too, that The Chieftains have maintained a long relationship with one engineer—Brian Masterson, owner of Dublin's Windmill Lane studios. Masterson has worked in some capacity on most of The Cheiftains' records since the late '70s, whether it was engineering and/or co-producing with Moloney, or just mixing. On *The Long Black Veil*, he contributed to six of the album's 13 tracks. New York-based engineer Jeffrey Lesser worked on five songs, Chris Kimsey tracked the numbers with Jagger and the Stones, while Simon Osborne (Sting), Andrew Boland (Faithfull), and Spencer Chrislu (Jones) handled other tunes.

"It's nice having someone like Brian who we know we can rely on," Moloney says. "Brian has grown up with us, and we've grown up with him around us, and it's like family. He's someone who totally understands what we're looking for and who'll tell me when things aren't right. It's great to have an engineer who is also a musician, which he is, and sympathetic to the sounds of the instruments, which are fairly specific. We've been working together since 1977, and he knows how the pipes are supposed to come across.

"The way we recorded [*The Long Black Veil*] was pretty much the way we've always done it with Brian. It's very much live in the studio with little separation. It's usually just one big semicircle, with each of us miked individually. On this album, almost all the lead vocals were live, and there was none of this in-the-booth business. One, two or three takes and that was it."

Comments Masterson, "I think the most important point is that I consider recording traditional music in general, and particularly The Chieftains, because of the harp and things, more akin to classical recording than rock 'n' roll recording. The idea, obviously, is to capture the natural acoustic sound of the band, while obviously still being able to call upon the tricks and techniques that are useful in multitrack recording. For example, Paddy plays the pipes and the whistle, but he obviously can't play the two at the same time. But depending on the piece, it might be better to put the pipes down first and overdub the whistle, or vice versa. That's a very simple example.

"They sit in a semicircle, and the only thing I find I have to isolate is the bodhran, the hand drum, which is very resonant, particularly the way Kevin [Conneff] plays it, which is so full of life and energy. But I don't lock him away or anything; just screen it off a bit and make sure he has a full view of the band, because playing together is all-important for The Chieftains. There are subtle little gestures going on the whole time between the players, particularly from Paddy to the rest of the band, and if they don't stay closely in touch with each other, then the whole thing won't work at all.

Masterson says he typically uses one mic per player. "But the pipes are a special case in that there are two parts of the pipes—the chanter, which produces the melodies, and the drones. They need to be miked separately. Different pipers have different sounds, and Paddy's sound is quite strident, but I find the Neumann KM84 gives me the detail I want while playing down that stridency a bit. The harp I also look upon as a stereo instrument, very akin to a piano in terms of the spread of sound, and I use AKG 414s on that. The fiddles and flutes and such would be one mic each—AKG 460s. Then I also use an overall ambience pickup, which contributes at least 50 percent of the final sound. In that way, it's very much like a classical orchestral pickup. I tend to use three B&K 4006 spaced omnis in that context, and that picks up the sound of Windmill Lane very well.

"We go for performances and then edit together the final stereo mix, again very much like the classical way of doing it, rather than trying to get into serious overdubbing or punching in or anything like that."

Jeffrey Lesser didn't have any experience working with The Chieftains going into the sessions he engineered at New York's Clinton Recording, "but I was very familiar with their music—I guess you could say I was a fan—so I didn't have to do much research. Also, Paddy and I discussed it thoroughly," he says. The Clinton sessions with Ry Cooder and Sinead O'Connor (two songs each) were cut during The Chieftains' most recent tour of the United States.

"I chose Clinton because I wanted to work in a substantial-sized room," Lesser says. "I wanted them to be able to set up the way they set up live onstage, and I wanted a little bit of air moving—I didn't want them to be in a dead space. I wanted it to sound like you were standing in the midst of them around you in a semicircle. I had a wonderful experience when I first met The Chieftains. They were rehearsing in a hotel room, so I got to hear them totally acoustically, just the six of them in a circle and me. It was phenomenal. There's a lot of unspoken communication that goes on. They're like a family in that way. Then Sinead came in during the middle of the rehearsal, and she was singing along with them."

When it came time to go into the studio, Lesser says, "I did a very elaborate seating and miking diagram, which I tried to keep consistent straight through the mixing. So

in the mixes, when you hear an instrument in the stereo perspective, it's placed the way they were sitting, so all the natural leakage that occurs when recording acoustic instruments was carried through to the final mixing stage."

Lesser also recorded The Chieftains in a semicircle, but in the case of the difficult-to-capture bodhran, "I didn't isolate it, but he was a little bit in back of the semicircle. Also, I miked it on both sides. I had the side where he's hitting the bodhran with the mallet and his fingers slightly edgier, and the other side, which is in the shell of the instrument, sort of boomy, so you get a combination. They were dynamic mics, but I don't remember which ones exactly.

"Paddy's parts were recorded on three tracks—drone mic, note mic and one for the penny-whistle. I used older tube mics for those—[Neumann] 47s and 67s—because I wanted it to sound warm. Also, one of the things Clinton is known for is its vintage Neve 8078 desk, so that added to the warmth. On top of that, even though the mics were only six inches to a foot apart, I left them open so the leakage created a nice space around Paddy's parts.

"For Sinead we used a wonderful [Neumann] M49," Lesser continues. "She was a real pro. In rehearsal, she had one take where she was feeling out the part and hearing where she fit into the mix. By the second run-through, she was totally a part of it—the band integrated her into the sound very quickly and easily. I set up a beautiful booth right there in the room with them, with thin isolation gobos. I built a little environment in there with a comfortable place to sit and a nice desk lamp, and I actually went out before the session and got a vase of flowers and put it in there for her. She was very touched by it, and it seemed to put her at ease."

For "Coast of Malabar," featuring Ry Cooder, "Ry played live acoustic slide but then overdubbed the electric guitar and vocal," Lesser says. "He has an interesting guitar, which is brilliant-sounding but a little temperamental. It's got a direct box setup where all six strings are isolated in six outputs if you want them, and you can pan them and re-level them any way you want. He had a few ideas for outboard effects, too."

"I think Ry was a bit nervous about

working with us at first," Moloney notes, "but we were able to change the track around enough that we could find some common ground, and that song is now one of my favorites on the record. I love the way Ry Cooder sings."

The most complicated track on the album is probably the opener, "Mo Ghile Mear (Our Hero)," cut by Sting. "I spoke to him one Thursday," Moloney says, "I sent him across the words in English, and then he said he wanted to see the Gaelic words! We ended up compromising and doing half in Gaelic and half in English. That's Sting! We sat down at the piano at his house, which is this big old castle down in Wilshire. The recording room is just one of the big stone front rooms of the house; it had incredible acoustics. He sat in the big open fireplace and sang. The mixing board was in the same room, and I was able to take the tapes back to Dublin and put them onto analog, and then I started to overdub on it—I added a big choir and the drums and bass and bagpipes on there. It was a joy to do." Adds Lesser, who mixed the track at Clinton, "They ran out of tracks on the [Tascam] DA-88. I did some playing around, moving the choir a bit. It has a nice feeling to it."

According to Moloney, the most challenging track, even more challenging even than adding to the Sting track, was taming the Rolling Stones in the studio for the album-closing "The Rocky Road to Dublin."

"The Chieftains introduced the Stones to Windmill Lane, and it was after working with us there that they decided to do their album [*Voodoo Lounge*] there," Moloney says. "Mick came in one day, and that was easy doing his track. Then the next day we had the Rolling Stones in, and it was hilarious! They showed up at 7 in the evening with this big entourage and their own bar, the whole works. I don't think they'd even listened to the song properly. I had the shape of it, and I had that bit of 'Satisfaction' thrown in for a bit of fun. The whole thing was wild because I thought I was in total control, and I was saying, 'Lads, watch me toward the end, because we do need to finish this track,' but there was no stoppin' them, and they just kept going and going, and I ended up having to do a mechanical fade. On some of the takes, people were jumping around dancing, and there is even a real dancer [miked] on there. It was quite chaotic, and I took the best of what I got."

Moloney says he always likes to be involved in the mixes, even though he leaves most of the technical decisions to engineers like Masterson and Lesser. "Sometimes I'll have a way that I want to hear some specific instrument," he explains. "Like I might want to move a whistle up to the clouds, or maybe use a pipe as a lament—I want the sound of the pipes over the graveyard wall at a funeral, so you take that into consideration. We'll experiment with sounds and pan the pipes in such a way that it sounds a bit distant, using a certain amount of reverb, for instance."

For both Masterson and Lesser, capturing the ambience of Windmill Lane and Clinton was paramount at the mix stage. "Of course, there is some extra reverb, particularly on the pipes," Masterson notes. "The fiddle and the flutes just got a touch. The idea I go for is to make it sound as airy and spacey as I can naturally and then just touch up as I need to. My all-time stand-by is the Lexicon 480, but I've also quite recently discovered the TC Electronic M5000, which I think is a wonderful device."

"I wasn't trying to make every-

thing sound like it was recorded the same place or anything," Moloney says. "The Ry Cooder songs have their own sound because of all the treatments on his guitar. On Kevin Conneff's song ["Changing Your Demeanour"], I wanted it to sound old-fashioned, so I kept it very dry compared to everything else. I wanted the sound of this New York Irish group from the '40s—The Flannigan Brothers—who are on old 78s, and I wanted to get that particular sound. They used to use a piano and a banjo, so I got that and an accordion and went into a little place called Westland Studio in Dublin.

"Each room we recorded in had its own character," Moloney says, "just as every musician we recorded with had his or her own character. You know, at three o'clock in the morning when we'd finished the session with the Stones, Keith [Richards] said to me, 'Paddy, at the end of the day, music is music and musicians are musicians,' and he's right. That's what this was all about. It was great fun doing it."

We'll give Masterson the last word: "It's wonderful having all the famous names and all, but it's still a Chieftains record. I've worked with this band for years, in the studio and even doing their live sound, and I still can't believe sometimes how much energy and enthusiasm and communication there is in this band. I mean, audiences sometimes leave their concerts completely on a different planet. It's incredible for this band to have been doing this for so long and still be doing it so well. Not only that, but still getting *better*." ■

—FROM PAGE 157, LISA GERMANO

making the disc set her back a "major bill"). The LP garnered a lot of positive attention, leading to major-label interest. She signed with Capitol and headed down to Daniel Lanois' Kingsway Studio in New Orleans to record her next LP, *Happiness*, with producer Malcolm Burn. The sessions were a success, but not so Germano's experience with the label: Having succeeded on her own terms with *Moon Palace*, she had a tough time acquiescing to Capitol's attempts to make *Happiness* more commercial. Capitol issued the album in July 1993, but soon thereafter a series of circumstances (including a general shake-up at the label) culminated in Germano amica-

bly parting from Capitol and signing with 4AD. In an unusual particular, the deal allowed her to take *Happiness* with her.

4AD released a resequenced and partially remixed *Happiness* in spring '94, giving Germano a new start and a better shot: 4AD has plenty of experience marketing challenging artists, and Germano certainly falls into that camp—idiosyncrasy and intimacy are the strengths of her music. In fact, the way Germano recorded *Geek The Girl*, her first exclusive 4AD release, reflects both these traits. She did most of it herself, very simply, at home.

Actually, Germano didn't set out to record an album at all. Recovering from label-lag, she just wanted to spend some time messing around and putting down sounds. But while working on *Happiness*, both Germano and producer Burn realized that she does some of her best work in informal situations—she likes to work more randomly and spontaneously than being in the studio often allowed for. "When you're paying $1,200 a day for a studio," Burn says, "psychologically it's a bit difficult to let somebody noodle around. Fortunately for me and her, the ADAT technology has come along, and it's feasible to just noodle away at home and know that anything that you record is totally usable." So Burn (whose credits include Iggy Pop, the Neville Brothers, Chris Whitley and Giant Sand) set her up at home with an Alesis ADAT, a 16-channel Mackie board, an SM57, and some Alesis reverbs and drum machines, and she began playing around.

Germano was already accustomed to using recorders as instruments for composing, and, in fact, a lot of her cassette recordings found their way onto *Happiness*. She and Burn value passionate recordings over sonically pure ones, but having the ADAT setup made this even less of an issue and allowed Germano greater spontaneity, an element crucial to her work. "I think in order to capture a feeling," she says, "you have to go ahead and go into that intuitive stuff where there's no answers. What I mean is, you have to play—you can't go, 'Oh, I know what this is gonna be.' Sometimes you can do that, but you have to be open. If it's not working out on that instrument, pick up another one and play with it. And then when your intuition says this is it, make sure that you have all your recording stuff ready."

With the home setup in place, she was almost always ready. Some songs she co-wrote with Burn, including "Sexy Little Girl Princess." "Malcolm was inside setting up the ADAT," she says, "and I was outside raking leaves, listening to what he was doing, and all of a sudden this melody was going through my head. I came in and said 'I got this weird idea...'" On the spot, they laid down a song that made it onto the album untouched. Though she composed snatches of music in advance, she put together many songs as she recorded them. Inevitably, some things sound pretty rough. On the moody track "...Of Love and Colors," punch-ins and -outs are audible. Germano composed it on-the-fly, and when she tried to redo it, she says, it just didn't come out right, so she opted to stick with the first, most arresting version.

What's most fun about recording on her own, Germano says, is play-

ing "with all the little instruments and things I have here at home, trying to color it the way that I feel makes you feel the music." The metaphor of coloring is apt. For example, on the song "Cry Wolf," about a girl getting in over her head, Germano played a wistful guitar part through an old Ampeg amp that Burn owned. She "painted" using the amp's tremolo feature, fleshing out a sound of sadness and loss.

Grappling with the expressive qualities of sound is tough, and it's easy to imagine how the recording process could bog Germano down. But because she used the ADAT to compose, recording became a direct bridge between her and the listener. "There's nothing between your instant creation and the audience," she says. "It's not like, okay, that's the song, now let's track it properly."

Given her aesthetic and methods, it's not surprising that after a lot of noodling around at home a theme began to take shape, and before long Germano had a potential album on her hands. Burn convinced her to ask 4AD whether they'd be interested in releasing the material, and when they said yes, the two went into Echo Park Studio in Bloomington (owned by Mellencamp guitarist Michael Wanchic). In the studio, Kenny Aronoff laid down live drums on a few tracks using an additional ADAT. (Burn says they tried transferring to 24-track but decided that the ADAT sounded better.) They then remixed a couple of things, but they mostly stuck with the mixes Germano had laid down to the Sony DAT at home, and sent it all off for mastering.

The credits on *Geek The Girl* say "made by Lisa Germano and Malcolm Burn," reflecting the fact that this is a very unproduced LP, which, as Burn points out, is its strength. "There's nothing in between her and the listener," he says, "except for an ADAT." ■

—FROM PAGE 157, "STRAWBERRY FIELDS"

deeper reaches of his inner being, for better or worse. "Strawberry Fields Forever" is a hybrid grown from those influences—a deeply hallucinatory audio dreamscape plucked from Lennon's subconscious. Strawberry Field is a real place—a Salvation Army home for disadvantaged children set on sprawling grounds near Lennon's childhood

abode in Liverpool. But it is the *unreality* of just about everything in the song—the instrumentation, the lyric phrasing and the bizarre technical details of the tracks—that places the song in its own netherworld.

After a three-month hiatus during which the individual bandmembers worked on their own pursuits for the first time, the Beatles convened back at Studio Two at Abbey Road in London on November 24, 1966, to begin work on their next album. The first song they tackled was Lennon's new song, "Strawberry Fields Forever," which he ran down for the group and producer George Martin on acoustic guitar. Geoff Emerick was the engineer. According to the indispensible sourcebook, *The Beatles: Recording Sessions*, the band worked from 7:00 p.m. until 2:30 a.m. putting together take one of the song, which was positively skeletal compared to what it would finally become a few weeks later. Still, it was a multitrack affair, consisting of the famous mellotron "flute" line (played by Paul), various guitars, including some distinctive slide by George, the rudiments of Ringo's drum part, maracas and various vocal harmonies. This was still the era of 4-track bouncing to record multiple parts; it predates the ability to mechanically sync up tape machines. The studio's console at that point was an old EMI valve model, and the 4-tracks were Studer J37s. (Abbey Road didn't get an 8-track machine until late in 1967, after *Sgt. Pepper.*)

A few days later, the group returned to the studio on two consecutive evenings to put down several more takes, concentrating on the rhythm track but also adding piano, bass and more double-tracked Lennon vocals. For the next nine days, take seven was labeled "best," and had this been 1965, that's probably close to what we would've heard on the finished master. But the rules of the game had changed for the Beatles, and they now felt they could take their time with recording. So that sessions' "best" became just another take, and more sessions followed a week and a half later, with the group making it up to take 24 and adding overdubs of bongos, tambourine, more guitars, tympani and some of the famous backward hi-hat line.

"Up to that time, we never remade anything," George Martin wrote in his 1979 autobiography, *All You Need Is Ears*. "But this time we did. 'Maybe we should do it differently,' said John. 'I'd like you to score something for it. Maybe we should have a bit of strings or brass or something.' Between us, we worked out that I should write for cellos and trumpets, together with the group. When I had finished, we recorded it again, and I felt that this time it was much better."

Then, typical of the way Martin and Emerick worked back then, those horn and cello tracks (take 25) were grafted onto two tracks of a 4-track that contained the current "best"—a 2-track reduction of takes 15 and 24. "Once again, all four tracks were full," writes *Recording Sessions* author Mark Lewisohn, "and there was another reduction mix. Onto this was added two separate recordings of John Lennon's lead vocal, tracks three and four. At the end of the second overdub, Lennon muttered the words 'cranberry sauce' twice over...By the end of the evening, the remake of 'Strawberry Fields Forever' had taken on an intensity of almost frightening

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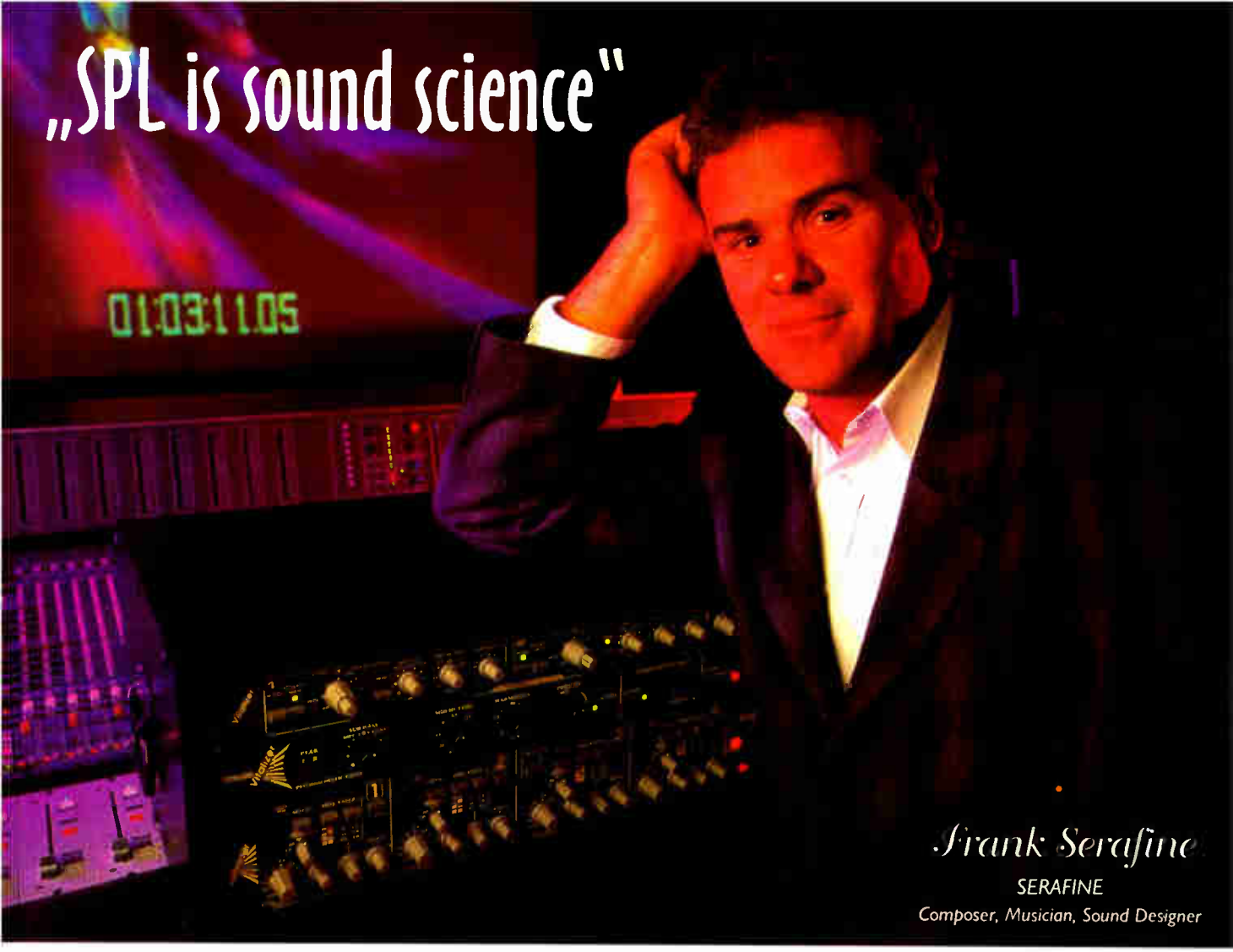

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proportion. With its frantic strings and blaring trumpets, very heavy drum sound and two manic, exceptionally fast Lennon vocals, it was far removed from the acoustic take one of the song recorded on 24 November. Would John be satisfied with it now?"

Well, not *quite*. Lennon decided he liked the beginning of the earlier, less scored, "best" version, and also the "finished" take 26. "He said, 'Why don't you join the beginning of the first one to the end of the second one,'" Martin remembered. "'There are two things against it,' I replied. 'They are in different keys and different tempos.' 'Well,' he said, 'you can fix it!'" So a week after take 26, Martin and Emerick went back into the studio to see if they could pull off this difficult feat.

"I thought: If I can speed up the one and slow down the other, I can get the pitches the same," Martin wrote. "With any luck, the tempos will be sufficiently close not to be noticeable. I did just that, on a variable-control tape machine, selecting precisely the right spot to make the cut [exactly 60 seconds into the song], to join them as nearly perfectly as possible. That is how 'Strawberry Fields' was issued, and how it remains today—two recordings."

Whew! A number of the different takes of "Strawberry Fields" have come out on bootleg albums and CDs through the years, and what struck me most in listening to them was that almost all of what I once believed was studio trickery is, on closer inspection, actually just very weird musical parts by oddly combined instruments. It's a masterpiece of arrangement more than anything, and the studio sleight of hand (backward tracks, the distinctive fades) is actually fairly simple, even by the standards they'd established on certain tracks of *Revolver*.

As fate would have it, "Strawberry Fields" and "Penny Lane" were not destined to be part of the Beatles' next album. Their record company, evidently believing that the public might forget about the Beatles if they didn't release a single in the winter of '67, convinced the group to release the two songs in February of that year. By the time the single came out, the band was already deep in the throes of their next masterwork: *Sergeant Pepper's Lonely Hearts Club Band*. But that, to say the least, is another story. ■

by Philip De Lancie

TAPE & DISC NEWS

ELECTRO SOUND BOWS BUDGET DUPE SYSTEM

Electro Sound is introducing a new line of gear oriented toward the lower end of the high-speed tape duplication market. The Series 7500, available starting February, is designed to meet what the company calls "a growing demand by music and spoken-word duplicators for cost-effective, compact equipment." The system operates at ratios up to 64:1.

The model 7540 master reproducer is a powered bin-loop design with vacuum holdback tape tension. It features a microprocessor-controlled transport, automatic slave control, and pass count and fault detection. According to Electro Sound president Jim Williams, the unit will be priced at under $25,000.

The companion slave, model 7550, will start at under $8,000 in either a freestanding or tabletop configuration. Accommodating up to 14-inch pancakes, the unit features a double-roller, tape-packer arm, a constant-tension, tape-holdback system, and 8MHz bias frequency. Dolby HX Pro is available as an option.

ITA REPORTS STRONG 1994 MEDIA SALES

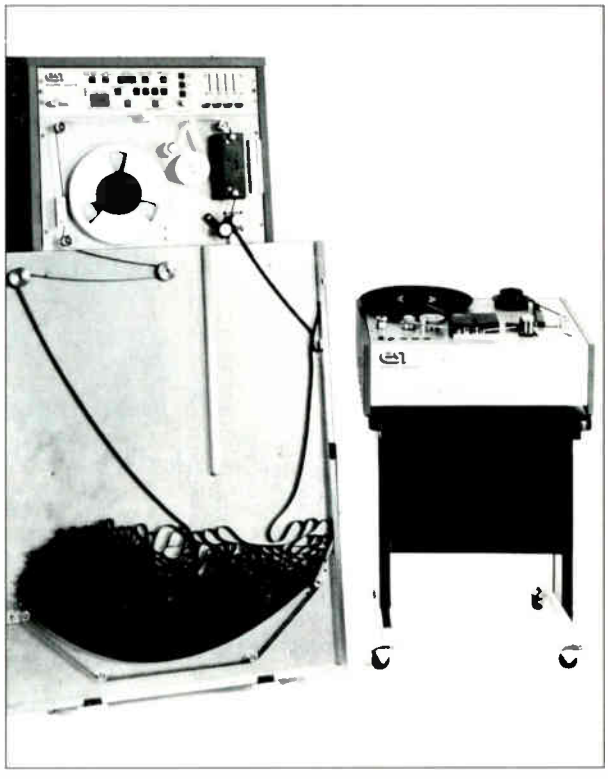
Based on reports from its 450 member companies, the ITA announced late in 1994 that it was projecting surprisingly strong sales of magnetic and optical media products for the year. The group estimated that over 580 million audio CDs were purchased at retail last year, and that sales of 6.5 million players brought CD penetration in U.S. households over 50% (more than 55 million households) for the first time.

In magnetic tape markets, meanwhile, the ITA said, "continuing consumer acceptance of prerecorded video as a sell-through product" drove a 35% increase in video duplication volume. Audio cassette duplication held steady at a worldwide volume of about 2 billion, while blank cassette demand in the U.S. was stable at about 500 million.

In other ITA news, the organization has a new executive VP, Charles Van Horn, who succeeds the retiring Henry Brief, as well as a new board chairman, Donald Rushin of 3M, and president, James Ringwood of Maxell. Six new members of the board of directors were also elected.

ATLANTIC TO RIDE CD-PLUS WAVE

Atlantic Records announced its intention to enter the interactive multimedia market. The company signed an agreement with REV Entertainment to produce enhanced CDs featuring a combination of CD-Audio and



Electro Sound Series 7500

San Francisco's KKSF Radio raised over $898,000 for local AIDS charities through its Samplers for AIDS Relief albums. Pictured above at the debut of the latest album are (L-R) David A. Kendrick, KKSF general manager; Keith Hatschek, vice president of sales, Music Annex Duplication; Craig Chaquico, featured artist on Sampler 5; and KKSF program director, Steve Feinstien.

CD-ROM content on one disc, as well as CD-ROM games based on the label's artists and music.

According to Atlantic president Val Azzoli, the "alliance with REV brings us fully into the mixed-format CD arena, and gives our artists an array of potential new venues for their creative input, including games and other interactive media." The company's titles will be distributed by WEA.

NEW SONY CD-R DRIVES

Accelerating a trend toward broad acceptance of recordable CDs, Sony announced two new computer-hosted (SCSI) CD-R mechanisms. According to Sony, the CDU-920S (internal, 5.25-inch bay) and CDU921S (external) drives are targeted toward "CD software development and distribution, data archiving and hard drive backup." The double-speed drives, which also function as CD readers, can record at 300 KB per second in disk-at-once, incremental or multisession modes and feature a 1MB buffer.

The drives will be available to OEMs the first quarter of 1995 at prices that should translate into less than $2,000 at retail. Sony is also expected to announce that it will sell the drives under its own brand.

AIDS RELIEF SAMPLERS NET CLOSE TO $1 MILLION

The first four KKSF *Sampler for AIDS Relief* albums have netted $898,000 for the San Francisco AIDS Foundation. Available on CD and cassette, the albums are a benefit for the Foundation's counseling, hotline, education and shelter services in the San Francisco Bay Area. The project was organized by radio station KKSF, with cassette duplication services and materials donated by Music Annex, TDK and Michelex. A fifth album, featuring 15 songs by artists such as Carlos Santana, Craig Chaquico and Karla Bonoff, was released in time for the 1994 holiday season, and is expected to bring the total donated proceeds to over $1 million sometime this year.

SPLICES

Jackson Sound Productions of Englewood, CO, purchased a DAAD R² from Concept Designs (Graham, NC). The digital bin will be used with Jackson's Gauss 2400 duplication system. Concept Design also announced recent sales of its CD 9000 (nine domestic, two overseas) and CD-9002 (seven domestic, two overseas) cassette loaders...Gauss (Sun Valley, CA) announced sales of high-speed duplication gear to five Asian companies, including two in China, two in Thailand and one in Singapore... **Quintessential Sound** (New York, NY) installed a complete CEDAR Series II digital audio restoration system including the DC-1 de-clicker, the CR-1 de-crackler, the AZ-1 azimuth corrector and the DH-1 de-hisser.

The components link together to form a series of audio restoration processes in real time...New York City's **Digital Domain** mastered the Vincent Herring Quintet for MusicMasters, former Blood, Sweat & Tears sax-man Fred Lipsius for MJA Records, and trumpeter Clark Terry for Chesky Records...At San Francisco's **Rocket Lab**, Marc Senesac mastered the new album from Digital Underground, while Paul Stubblebine mastered two Reference Recording works by Tam Henderson...**52nd Street Inc.** moved its mastering, duplicating, office and storage facilities to 1800 North Argyle Ave. in Hollywood, CA...**Philips Semiconductors** (Sunnyvale, CA) announced the availability of MUSICORE V.1.1, an MPEG-2-compliant audio encoder/decoder DSP chip allowing hardware manufacturers to make MPEG-2 audio products...**OMI** (Los Gatos, CA) is now offering its Disc-to-Disk sound capture utility for the Windows operating system. The program converts Red Book audio from CD-Audio discs directly to audio files for computer playback...**Macromedia** (San Francisco, CA) announced the availability of its Director 4.0 authoring program in a "fat-binary" version for faster operation on Apple's Power Macintosh line...Bob Ludwig's **Gateway Mastering** (Portland, ME) installed a dB3000 digital optimizer recently. The dB3000 is a multifunction sample rate/data format converter designed by Bruce Hemingway and Dan Lavry of dB Technologies...**Saki Magnetics** (Calabasas, CA) reports three major cassette duplicators puchased its replacement heads for KABA real-time duplicating equipment: **Tapesouth** (Birmingham, AL), **Good Vibrations** (Bonita, CA) and **Audiocraft** (Cincinnati) switched to Saki's ferrite heads. ■

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COAST To

L.A. GRAPEVINE

by Maureen Droney

Hollywood's Music Grinder has been busy since its post-quake installation of an SSL 6072. The console, which features 48 G Series and 24 E Series modules, has played host to recordings for Green Day's smash *Dookie* and several projects for producer Babyface, including Madonna's hit "Take a Bow." The Madonna sessions, engineered by Brad Gilderman, included a 21-piece string session in Studio A's large live room. Studio A is home to plenty of outboard preamps for those who may like to bypass the console while recording; they have eight Neve 1084s (like 1073s but with selectable high freq), six Langevin M16s, and com-

—CONTINUED ON PAGE 175

Chief engineer Gary Skardina and owner/manager Ron Filecia in front of the SSL 6072 console in Studio A at Music Grinder, Hollywood

PHOTO: MAUREEN DRONEY

SESSIONS & STUDIO NEWS

by Jeff Forlenza

SOUTHERN CALIFORNIA

Geffen recording artists **White Zombie** tracked their latest hard rock album at North Hollywood's **NRG Recording** with producer/engineer **Terry Date** (Soundgarden, Pantera) and assistants **Ulrich Wild** and **Wade Norton**...Chart-topping rappers **Cypress Hill** returned to L.A.'s **Image Recording** to work on their third album for RuffHouse Columbia. Cypress producer **DJ Muggs** worked at the vintage Trident A Range console in Studio B with engineer **Ben Wallach** and assistant **Terri Wong**...At North Hollywood's **Lighthouse Recorders**, former Creedence-frontman **John Fogerty** was doing overdubs on his latest album with engineer **John Lowson**...At L.A.'s **Cherokee Recording Studios**: **Dave King** (ex-Fastway vocalist) tracked with the **Robb Brothers**...Producer **Scott V. Smith** was at **Mindseye Productions** (L.A.) working on gospel singer **Andre Crouch**'s Qwest Records release, *Mercy*. Tracking and overdubs were handled by engineer/studio owner **Bill Pearson**...Country band **Boy Howdy** was at **Track Record** (North Hollywood) recording for Curb Records with producer **Chris Farren** and engineer **Joel Stoner**...

NORTHEAST

Jazz saxophonist **Stanley Turrentine** recorded and mixed his latest Music Masters release at **Omega Studios** (Rockville, MD) with producer **Alan Abrahams** and engineer **Dave Goodermuth**...Rapper **Keith Murray** recorded his Jive Records debut at **The Music Palace** in Long Island, NY, with producer **Eric Sermon** (formerly of EPMD) and engineer **Bob Fudjinski**...**Chieli Minucci** (guitarist for Special EFX) was at **Mystic Studios** (Staten Island, NY) producing/mixing his solo debut for JVC Music with engineer **Paul Wickliffe** and assistant **Hiro Ishihara**...Rapper/actor/producer **Kid** (of Kid 'N Play) was at **Bayside Studios** (Bayside, NY) producing tracks for upcoming acts **Build & Destroy** and **Bass Blasta** with engineers **Mike Tuosto** and **Parris Robinson**...**Ruben Blades** and trumpeter **Willie Colon** were at **Acme Recording Studios** (Mamaroneck, NY) mixing their *Reunion* album for Sony Discos with engineer **Rory Young**...PolyGram artists **Avatar Blue** were at Boston's **Sound Techniques** tracking and mixing new material with producer **Chris Phoenix** and engineer **David Dachinger**...

SOUTHEAST

New Orleans' roots-rockers **Cowboy Mouth** tracked their latest Monkey Hill release, *It Means Escape*, at **Kingsway Recording Studios** (New Orleans) with engineer **Gene Holder** and assistant **Trina Shoemaker**. CM's drummer singer/songwriter **Fred LeBlanc** mixed the album with engineer **Mike Mayeux** at **The Egyptian Room**, also in New Orleans...**The Scorpions** visited Miami's **Criteria Recording Studios** to mix their live album with engineer and co-producer **Erwin Musper**...**John Hiatt** was at **The Castle** (Nashville) tracking and overdubbing a project for A&M Records with producer **Don Smith** and engineer **Greg Goldman**...Folk-rocker **Michael Johnathon** recorded his latest release for Poet-Man Records, *Assasins in the Kingdom*, at **Toys in the Attic** (Lexington, KY) with engineers **Rick Marks** and **Dwight Dunlap**...

COAST

PHOTO: DAVID GOGGIN

At L.A.'s Brooklyn Recording, (L to R) producer Don Was, engineer Ed Cherney and Karambolage recording artist Jonell Mosser were working on her debut for Was' label.

NORTHWEST

Cracker (led by former Camper Van Beethoven-er David Lowery) was at San Francisco's Brilliant Studios recording a cover of "Good Times, Bad Times" for the Atlantic Records tribute to Led Zeppelin. Norm Kerner and Rich Hasal engineered the sessions...At Live Oak Recording (Berkeley, CA), Jive recording artist Spice 1 tracked his third album, *Amerikkka's Nightmare*, with producers Blackjack, DJ Slip and Extra Large, and engineer Dale Everingham...The Robert Cray Band returned to Studio D Recording (Sausalito, CA) to begin work on their next self-produced blues album. Steve Savage was at the console, with Larry Brewer assisting...Taime Downe (of Faster Pussycat fame) was at Seattle's Soundhouse Recording working with producer/engineer Scott Crane on a new solo project...

NORTH CENTRAL

At Chicago's Warzone Recorders, owners Van Christie and Jim Marcus remixed their band Die Warzau's new single "All Good Girls" for Wax Trax/TVT Records. Christie engineered with Jason McNinch assisting...R&B singer Marcus Lewis mixed his latest CD, *I Like It That Way*, at Overture Music (Novi, MI) with engineers Scott Stern and Jade Scott...

SOUTHWEST

At Houston's Sound Arts, hard rockers Sufferance tracked a release for local label Cage Records with engineer Brian Baker. Also at Sound Arts, producer David Eaton flew in from L.A. to work with alternative popsters Big Holiday (featuring vocalist Lisa Novak) and engineers Brian Baker and Bryan Jones...

STUDIO NEWS

The Plant (Sausalito, CA) tore the roof off its Studio A as part

—CONTINUED ON PAGE 177

NY METRO REPORT

by Dan Daley

The Jingle Book—Jingles are to New York like...bagels are to New York? Right. But even though the city's status as jingle capital hasn't changed, the jingle industry has. Engineers used to go to commercial studios to produce jingles that were written at New York's many music houses. Now, a lot of those houses have built their own studios, so the engineers often can stay in the music houses to record. And that trend has led to a leaner, more highly competitive jingle

—CONTINUED ON PAGE 177

Director Woody Allen was at Clinton Recording in New York scoring his latest film (slated for a fall release) with a big band arranged by pianist Dick Hyman. From left: engineer Roy Yokelson, Allen and music recording supervisor Walt Levinsky.

PHOTO: KIERAN CONNELLY

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partner, the A827 (left), offers new levels of quality for analog recording. The Studer D827 digital multitrack offers full field upgradability from 24 to 48-track. With 18-bit converter technology and advanced noise-shaping techniques for the very highest audio quality – in the Studer tradition. There's a unique 24-bit Studer-format recording option – while retaining full compatibility with existing DASH machines. Both analog and digital 827-series machines are always on cue when you need them, thanks to a fast, responsive transport and built-in locator. Enhanced servo control and dynamic tape-handling ensure your masters get the respect they deserve.

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—FROM PAGE 172, L.A. GRAPEVINE

ing soon, a Neve 8108 sidecar with 12 inputs.

As a matter of fact, Music Grinder seems to be the world's expert on 8108s. The one in Studio B, recently used by Big Mountain and Dada, is the only one in existence that has 64 inputs. According to owner/studio manager Ron Filecia, the desk was purchased from the Dutch Broadcasting Corp.in Holland, which had originally ordered it built with hand-selected components to create an especially quiet noise floor for its weekly classical broadcasts.

"Honestly," Filecia says, "they only used it once a week! Like the little old lady with the cat!" At any rate, Filecia's partner, chief engineer Gary Skardina, says that the lower noise floor allowed them to expand the console from the normal 48-input to 64. Skardina, besides being a technical type with a real affinity for a soldering iron, is also a producer and hit songwriter who has charted with songs like the Pointer Sisters' "Jump" and Anita Baker's "No One in the World."

Filecia and Skardina, who went to college together in Illinois, started Music Grinder on Melrose Avenue 20 years ago. They moved to their Hollywood Blvd. location in 1990, and they gutted and earthquake-retrofitted a building to create the high-ceilinged, spacious facility. Both control rooms were designed by Vincent Van Haaff and reflect the partners' 15 years of experience at their previous location: They now have plenty of secure parking, large control rooms and separate comfy lounges for each studio. Plans for a third room are on hold. According to Skardina, "We're tired of construction, and we're going to take a breather. Besides, we're using the warehouse space for old Neve parts!"

Vintage meets new: The result is Frankenstein! That's what Jaime Sutton, owner of Burbank's Valley Sound, calls his newest creation. "It's been my pet project for two years," says Sutton, who is known for custom designs built around modules retrieved from vintage consoles. "I saw this empty chunk of frame one day, and I just knew it could really be something. Body parts in a nice bucket—I named it 'Frankenstein!'"

What Sutton has created is a small, 16-input console composed of rare mic pre's, EQs and comp/limiters from Telefunken, API, Focusrite, Neve, Shep and Neumann. Sort of like a box of Godiva chocolates for engineers, it includes the kind of quality components that are becoming more valuable each day. You can rent it, or you can get Sutton to build one for you. "It was a logistical nightmare to put it together," Sutton explains. "The units are different sizes, with different power requirements and output impedances. It took time to make it work." However, Sutton was up to the challenge. These days, he's establishing quite a reputation for his mods of vintage gear. His specialties include 8x2 and 10x2 Neve mixers, composed of preamp/EQ modules rackmounted with a stereo fader and bussing assigns. A&M Studios and Dreamhire Rentals have become customers, as have Toy Specialists and Audio Affects. Sutton is also a broker for a variety of new and used equipment and is the U.S. importer for Shep Associates of London.

Capricorn Rising: Siemens Audio took the adventurous step of

installing a Neve Capricorn digital console into Sound City's Studio B for the months of December and January, making it available for demos (Free time! Did you miss out?) to producers and engineers. Margaritas flowed as the installation was kicked off by a party held on December 3 to commemorate dual 25-year anniversaries: Sound City's and Neve console technology's.

According to Siemens' Stan Cotey, who familiarized users with the board, basic learning time on the Capricorn is about one hour. He laughs, "I'd give people the rundown, and in about 55 minutes they'd look over at at me and say, 'Uh, Stan, could you go get me a cup of coffee?' And off they'd go on their own." Producer/engineer Sylvia Massey used the time to cut some tracks. Jean-Marie Horvat, engineer with Teddy Riley and known for work with Michael Jackson and Bobby Brown as well as for his mix of WRECKZ-N-Effect's hit "Rumpshaker," was one of the participants. The Capricorn may show up at another studio for the same kind of tryout. As for Sound City, manager Shivaun O'Brien tells us that next up in Studio B is a Neve 8038: a 36-in. all-1073-module desk with six Neve compressors onboard.

Tiny Lights is housed in the old TTG building on North McCadden Place in Hollywood where Frank Zappa, The Doors and Jimi Hendrix recorded years ago. Up and running for three years, the studio is known among its clients for "good vibes," some of which may be left over from the ghosts of those past sessions. The facility was refurbished by owner Michael Momm and has two rooms operating: one with a 40-input Amek Mozart console and a nice selection of tube gear, and one that is outfitted with Pro Tools, a digital 8-track and a host of MIDI gear.

Recent Tiny Lights clients include Tracy Chisholm—producer of Belly's *Star* and engineer for American Music Club's latest release *San Francisco*—working on a new album for the Miss Alans. Also in have been Pangaea/IRS artists Vinx, and music supervisor Dawn Soler, who completed five songs for the Jodie Foster-produced film, *Home for the Holidays*, for Foster's own much-talked-about Egg Productions. ■

Fax your L.A. news to (818) 346-3062.

—FROM PAGE 173, SESSIONS & STUDIO NEWS

of a half-million-dollar upgrade recently. Studio owner Arne Frager and chief engineer Manny LaCarrubba worked with acoustic designer Frank Hubach to make their A room the "livest room on the West Coast." The remodel involved raising the roof to 28 feet and adding three iso booths to the SSL 4064 G-equipped studio. Metallica were scheduled to be the first clients in the remodeled "rock" room...Sonalysts Film Studios (Waterford, CT) recently began construction of a recording studio complex that will be a duplicate of Tony Bongiovi's Power Station A room in Manhattan. The Sonalyst facility, licensed to use the name **Power Station New England**, will have a 35-foot, domed ceiling and five isolation areas...**Bay Records Studios** (Berkeley, CA) installed an Otari Series 54 console with DiskMix 3 Moving Fader automation. To accommodate the new board, Bay rebuilt the control room with acoustic design by Randy Sparks. ■

Send Sessions & Studio News to Jeff Forlenza c/o Mix.

—FROM PAGE 173, NY METRO

business in New York. But not necessarily a better-sounding one.

Danny Lawrence, 36, is a staff engineer at Manhattan Beach, which is both a music house and studio facility. He characterizes the New York jingle scene as "unhealthy" at the moment for engineers. Lawrence, who has done jingles since 1979 when he worked at Clinton Recording, and before that at Messina Music, has seen commercials go from making up nearly 100% of his revenues to considerably less, thanks to the virtual elimination of jingle demos done in facilities other than project studios and a decrease in live recordings for jingles—all attributable to jingle writers using personal recording gear.

"Used to be with jingles, engineers learned to be fast and good," Lawrence says. "Sessions were all live players and arrangers." Now, he says, the sessions often occur in non-real time, with engineers fixing bits and recording vocals or the odd live instrument on composers' demos, which often ultimately mutate into the finals. "There's also a trend away from live vocals," he adds. "They don't have to pay through SAG [Screen Actors Guild], and that's because the budgets have gotten lower."

Maurice Puerto, 33, has spent a decade in the jingle jungle, first as a staffer at Celestial Sound and then at music house/studio Marathon. And though he's been able to keep jingles as the bulk of his revenue, as a freelancer he's rapidly fallen into the minority as more music houses rely upon staff engineers to cut commercial demos and finals in-house. "The same amount of recording goes on," Puerto says. "What's changed is that the sources are different—more machines than live instruments. The personal and music house studios do more of the work, and I'm finding that the future for independent engineers is becoming more limited in jingles because of that."

Sometimes, freelancers with prestigious credentials are called into music house sessions for finals when commercial clients are going to be present—part of the flourish that music houses want to stage for agencies. However, even that's becoming tenuous as agencies abdicate production roles to writers and listen

in on ISDN phone patches instead of in person. "You're not working as closely with the producers anymore; it's the writers you're spending more time with because, in effect, they've become the jingle producers from their own home studios," Puerto observes. "It increases the volume of work but limits you in that they don't need an engineer as often or from start to finish. I've definitely lost some work because of that and [because of the use of] staffers at music houses. And some of the stuff coming out of home studios sounds really good, for demos *and* finals." However, Puerto notes that the trend has included some demand for live players, and that budgets can be found for both an occasional live element on sequenced tracks and the engineers to record them. "It's not happening as much as in records, but it's definitely there," he says.

Kevin Halpin is one of the busier jingle engineers. Halpin works freelance but is mainly based out of music house/studio JSM. He is optimistic, having recently seen increases both in the number of live jingle dates being done and in his own rates; last year, Halpin began charging $125 per hour. But, he acknowledges, others may not be so fortunate. "A lot of the younger guys try for $60 or so but get knocked down to $25," Halpin comments. "It's a very changed business—much more competitive because of all the project recording. And a lot of the studios that catered to jingles, like Automated [where he used to work], are gone. And so are a lot of the engineers who specialized in them. I've been lucky."

Angela Dryden acknowledges she doesn't know a lot of history about jingle production; she's been engineering them for just a couple of years, notably at Sutcliffe Music. But what she does know is that the technical requirements have undergone a bit of a shift. "You're basically doing MIDI tracks, overdubbing to lay-ups [premixed stereo tracks] the writers bring in," she says. "You don't need a whole lot of microphone placement experience for that. It can get frustrating because you can't use everything you know. You can't tweak things. The role of the engineer in jingles has become that of an expeditor, working on small portions of many projects instead of seeing a session from start to finish." ■

—FROM PAGE 127, MICROPHONES

mixer and front-of-house mixer. We've had a lot of success with the Shure Beta 87. It may not be the first choice in a studio, but it works nicely in live situations. We've also used the Beyer TGX-480 and TGX-580. They have a lot of nice detail, and we've had pretty good luck with them capturing the delicate details of the female voice. The mics have a condenser-like sound, without being peaky or shrill.

"We did a show with Roger Daltrey at Carnegie Hall, with the Julliard Orchestra. It was an exceptional date. These young players were really into it, which makes all the difference in the world. Carnegie Hall is very live, with a small stage, and we thought we'd have trouble—miking an orchestra and a rock 'n' roll rhythm section is the hardest thing to record on the planet. We used a stack of Fishman pickups for the entire string section, and it was worth it. We got a wonderfully isolated sound—very direct, but also very rich-sounding. We also miked the section with Schoeps mics overhead and combined the two to get an air sound on the ballads. On the louder rock tunes, the drums would wipe out the string overheads, and the Fishman pickups were a lifesaver."

KOOSTER MCALLISTER

The owner of Record Plant Remote (West Milford, N.J.), Kooster McAllister was busy the past year doing a George Thorogood live album, the Broadway show Passion *for public television and 54 artists in a three-month period for the TV series* The Road. *The latter included performances by artists such as James Taylor, the Neville Brothers, Trisha Yearwood, Vince Gill, Emmylou Harris, Pam Tillis and Nanci Griffith.*

"On *The Road*, we were doing approximately five artists per night, with complete changeovers. I tried to use similar microphones on all instruments, so my settings were in the ballpark from one band to the next. On vocals, I was using Beta 87s, which I like a lot: P.A. companies can deal with them. It's a high-output microphone and a condenser, but it has very good rejection, and it handles high sound pressure levels very well. Most of the artists were up for trying it, and most of them liked it.

"Elton John was the first person

who turned me on to the Beta 87, and having been on the stage and hearing how loud it was, I was impressed with how good its rejection was. Shortly after that, I was doing a Bob Dylan shoot, and Bob wanted to use a U87, but it's obviously not an on-camera mic. I ended up using the Beta 87, and Dylan liked it so much, I gave it to him.

"I've been using a Shure VP88, the stereo M-S mic on pianos, and it works great. When the playback is in mono—like most televisions are—all the audience is getting is the main capsule, and you don't end up with all the weird phase things that can go on if you have a spaced pair of microphones. On that show, I wasn't using the mic's built-in M-S decoder, because Showco was doing the front-of-house sound, and they know how to deal with M-S miking. Overall, the VP88 is very respectable—a good-sounding studio microphone. And for film and TV work, you get the best of both worlds—mono-compatible, yet with a wide, open stereo sound."

ROGER NICHOLS

Perhaps best known for his long association with Walter Becker and Donald Fagen of Steely Dan, Roger Nichols has also been busy with projects for Roseanne Cash and will soon be working with John Denver. Nichols is currently in production on a live Steely Dan album, recorded during the band's 1994 tour.

"I've been pleasantly surprised about Audio-Technica's 4000 Series mics. It's almost as though they're priced too low; They'd sound better if they charged more. I've used the 4033 on vocals for Roseanne Cash and some other artists and really liked it on her voice. I haven't tried the new 4050 multipattern one yet, but I've used the 4051s with the hypercardioid capsule on hi-hat, and it's been a long time since I've found anything that won't overload on hi-hat.

"For drums, I'm sticking with my Yamaha MZ-204s and MZ-205s on toms, snare and kick drum, although on the road, I tried the Audio-Technica ATM-25 on kick, and we ended up using that on all the [Steely Dan] shows. I haven't used that in the studio yet. Instead of using an undersnare mic to pick up more of the snare sound, I've been using a shotgun mic above the drummer's head, aiming directly down at the snare drum. The shotgun is tight enough so it just picks up the snare, while capturing all those things that you'd use an underneath mic for. It picks up a little bit more of the whole drum—the shell, the snares, everything.

"I've used the Sony C-800G—the mic with the Peltier junction—on piano, and it was the best piano sound known to man. I even tried buying one of those Coleman Peltier junction refrigerator/coolers for keeping my mics before I used them, but it wasn't quite the same."

DAVE RIDEAU

As an engineer, Dave Rideau may keep a comparatively low profile, but the acts he works with are known worldwide. Recent sessions include projects for Janet Jackson, Patti LaBelle, Tevin Campbell, Bobby Brown, Sounds of Blackness, and new MCA artists the Boys of Paradise and For Example.

"I use a lot of B&K microphones. I like using a pair of the line-level 4007s for drum overheads. I recently tried a prototype of the new 4040 tube mic on vocals. I A/B'd it with the 4006 and with some U47s, and the B&K tube mic was very impressive. My impression was that it was a warm version of the 4011 cardioid—just as open, if not a hair more open, especially on the extremely super high end. And it has some warmth on the low end—not as much as a U47, but closer to the 47 in the good ways, without that huge bump. I also tried the 4040 with the FET output; it was nice and clean, but not as warm. At $9,000, it's pricey, but B&K is definitely the cutting edge.

"I lived in Europe for three years, and I did a lot of live-to-2-track classical and jazz recordings. I used a lot of leakage, such as miking trios with omnidirectionals with no baffles. I can't recommend stuff like that to the masses because it can get you into some serious trouble. You have to be *very* careful. But some of the best drum sounds I've ever done were with just two overheads and a kick mic. You have to have the right drums, the right drummer and the right room. A lot of people don't realize that you can make a great recording with a pair of SM57s. All you need is ears." ■

—FROM PAGE 109, WIRELESS MICS

ball, news programs from *60 Minutes* to the local bureaus use wireless almost exclusively, Garth Brooks and Michael Jackson seem to wear them to bed and everywhere else, and more and more applications are being found.

In the world of press conferences, for example, most of the effects of wireless microphones taking over in the last several years have been good, especially at "Gang Bangs," which is what the *in-the-trenches* sound types call a press conference. This is because hundreds of reporters are hopping around trying to get the sound bite from one interviewee. Heads are getting banged, knees smacked, cameras shaken; the competition is fierce. In the days of wires, a crew would have to show up early, lay the wires in snakes on the floor, set up all their links and wait for the conference to begin. Now with wireless, a crew can show up late and leave early. A two-person crew can patch in their wireless, send the reporter into the fray, get the recording and be off to the next event. There are no wires to run, but the "banging" still exists.

The key with many news crews is to obtain maximum mobility without the overhead. A common system used by *60 Minutes*, and elsewhere, involves one boom microphone, two "lavs" (lavalier wireless microphones), two wireless transmitters (for a total of four wireless configurations) and only two crew members (an audio mixer and a camera operator). The audio mixer carries the boom while mixing the sound between the boom and the two lavs, which are attached to the talent. At the back of his mixer are the two wireless transmitters, which send the mixed sound to the Betacam. The audio mixer and the camera operator have complete freedom of movement with respect to the talent and to each other. There are simply no cables.

Wireless mics have so permeated the news broadcast system that they are also being used in less obvious situations. In many instances, the talent and the camera operator use a second wireless microphone "turned around." The camera operator has a mic that is transmitted to the talent's ear, to send messages like, "Lower your arm, I can't see the ear," "Move left a smidget," and the ever popular, "Speak into the microphone." Of course, the talent still has the main microphone, with its receiver attached to the Betacam inputs. But as crews get smaller (i.e., no engineer or sound mixer), the camera operator has become the entire operation. He or she has picked up all the sound duties in what is called a "one-man-band" configuration.

Before the wireless microphone, this situation was virtually impossible. It was too much for one person to handle the camera and lighting, as well as drag the audio cable around. Still, the job of the camera operator is labored, and most end up focusing mostly on the visual, so a confidence meter has been placed on the front of many cameras to reassure the talent that their voice is making it to tape. It is usually a bright set of LEDs that lets the talent know exactly how hot his or her voice is.

The audio mixer and the camera operator have complete freedom of movement with respect to the talent and to each other. There are simply no cables.

In situations where the 500-foot range of some of the wireless systems has proven too short, crews have developed the "hop" method of transmission. To have a signal travel 1,000 feet, it is not uncommon to use two wireless transmitters hooked up in series. The receiver of the first system is hooked directly up to the transmitter of the second. This is a two-hop transmission with a lot less chance of dropouts than just trying to stretch the original unit.

For Tom Ansell, an engineer at KCET-TV in Los Angeles, the question of wireless reliability is not an issue. He has been using Lectrosonics systems for years and has even become a beta tester. On a recent project for public television, he spent six months with puppeteers who were wearing wireless mics with the transmitters strapped to their heads, and during that time, there wasn't a single dropout; everything transmitted crystal-clear. The wireless allowed them to avoid using a boom (which was getting in the way of the puppets), and allowed for much more spontaneity with the talent.

James Stoffo, who used to work radar and other super-high-frequency devices on a submarine, is now a wireless mic specialist. He has set up productions that involved up to 50 wireless units, and others, such as the Daytona Speedway, where the signal had to travel up to 2,500 feet without noise or dropouts. Most of the problems he has seen in the industry have to do with the engineer and microphone operators. There is a tendency to put the transmitter too close to the receiver. This is a mistake. The units are designed to work best between 250 and 300 feet. In situations where there are dozens of transmitters, adjusting the distance is the best way to keep the signals from getting crossed. Distances greater than 300 feet can also get tough because there is a greater chance that the transmitted signal is now bouncing off of other objects and phase-canceling the original. The best wireless mic operators come equipped with their own RF spectrum analyzers and a tool box.

The tool box will often include high-tech filters for frequencies over the audible range (someone needs to coin a term for them). Often, the problem with the transmission has nothing to do with the transmitter and receiver. Microphones themselves can become mini-antennas to these higher frequencies. At the Daytona Speedway, the radar signals from the nearby airport were rattling the electronics of the actual microphone. Stoffo's solution was not to change the wireless setup, but instead to apply a bypass filter to the microphone.

Stories like the audible flush of the Florida press conference only go to show how good the state-of-the-art wireless systems are. Companies like Vega, Sennheiser, Lectrosonics and Sony are releasing greatly improved products all the time, and they all seem to be getting great responses from their customers. More and more, wireless microphone horror stories are fading to the times of Wyatt Earp. The engineers who use the microphones correctly are saving labor and adding clever new features to age-old jobs. Going wireless can be great. And maybe someday we'll be able to say that the only thing that's "wired" on the set is the director, 'cause she drank too many espressos. ■

▪ STUDIO SHOWCASE ▪

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—FROM PAGE 119, MERGER MANIA

positionings. I'd expect both of them to continue.

Rawley: We'll stay with our strengths. Peter will lead the charge on audio; that's what Digidesign does well. If someone wants 64 channels of I/O, there's no question they want Pro Tools. If they want less than that for audio-for-video, they'll want AudioVision. But there's some things we can take from the Pro Tools feature set and include them. As things become more software-driven, this won't be as hard as it appears.

Mix: Will this put any kind of cap on feature sets for each line?

Gotcher: We're in different markets. One of Digi's markets is radio broadcast. Avid doesn't know squat about radio broadcast. So you're not going to see the AudioVision product expanded to handle the radio broadcast market.

Mix: Five years from now, will we see a single product from this new company that purports to do it all?

Gotcher: No. I don't think so. What a lot of workstation companies have suffered from, if you try to build a jack-of-all-trades product, I'll guarantee over time you won't make any of those markets happy. There are a lot of things that post people need that music people don't. You can't rationalize building that into every system. You don't want to burden the user. There's an opportunity to get more focused.

Mix: That segments the market according to technology. What about the fact that the market has been segmented even more by price points, from project studios to large multiroom facilities in post and music?

Gotcher: We've sold 36,000 systems, ranging from $1,300 to $6,000. [Avid has sold 6,000 of its various systems, ranging up to $90,000.] We don't want to put artificial restrictions on any product, because that's a formula for letting someone come in and beat you. Take Session-8: There was a debate as to whether a product like that at that price point would compete with Pro Tools. The answer is, if it can be done, someone will eventually do it, and it might as well be us. We're in a situation at this stage where there really is different value at different price points.

Mix: That seems like the main synergy—a wider price spread from the two product lines.

Gotcher: Yes.

Rawley: I would say it differently. I would say we have a much broader market spread. We have an opportunity to leverage our technology over more markets. I think price is one of the elements, but I don't think it's the real driving element that differentiates. User need still is the main basis for that. Doing records and Budweiser commercials are two very different environments.

Gotcher: We've priced our product to include the kind of support that shrink-wrapped software companies offer. You want to be able to get us on the phone. The phrase Curt uses is "mission-critical." There's more equipment here and more service that goes into it. So in that sense, I don't think price is the most important element.

Mix: What about the R&D teams on both sides?

Gotcher: They'll both stay. The combined engineers of the combined companies are over 200. If anything, the engineering staff will grow. I also think we'll keep our staff out here—this is a real hub for multimedia offerings. Digi's location here will become a hub for an Avid West.

Mix: And the integration of the marketing departments?

Rawley: I don't think we're anticipating laying off a single person in any department.

Gotcher: And Digi grew from about 400 to 700 people last year.

Mix: What new aspects of the industry is the new Avid looking at?

Gotcher: We're coming from a world where video and audio production have been very separate worlds, and it's been a world of separate specialists. They're now converging in a number of markets. My personal feeling about the product direction is that the future will be integrated audio and video systems that will be very powerful on both counts.

Mix: That's a real safe guess.

Rawley: You'll have to take it market by market. You'll have networking, shared media, which is not the case today. We're talking about the ability to have audio and video off the same server in real time. I think you'll see that in a year or two. This whole business of multiple generations is going to change.

Mix: From Avid?

Gotcher: AvidNet is an announced product, a networking solution that allows multiple workstations to sit on a network. The technology is there today, and we'll be tuning it further. The next step is when the networking stuff with real high-bandwidth servers is really in place strongly, to the point where a number of source files and documents are residing on the server and not have all that data where you're making editing decisions—collaborative computing—that's probably a little further off.

Mix: OMF. That's turned out to be the most successful response to the interchange issue.

Gotcher: There's still a lot of elements that need to be integrated.

Mix: We've seen a year's worth of acquisitions and mergers and IPOs, and the emphasis seems to have shifted from trade to business. What are the implications of this merger?

Gotcher: The industry is entering a digital transition. When a market goes through a transition like this, there's a lot of opportunity, with a lot of money flowing into it. This merger just reflects what's going on in this industry. There are other paradigms: the project studio and desktop publishing. It will be the software-driven companies that will emerge the strongest from this transition. Manufacturers of hardware devices like tape recorders will find it harder to make the transition.

Rawley: I think there will be a new core to this industry, and that's what's attracting the investment. The new core is disk-based solutions: media. It's meant a proliferation of smaller companies with little opportunities for commonality. That's changing now. There's still going to be the opportunity for well-crafted solutions from smaller companies. But the interface to core-stream of disk-based open systems is going to be much more important. Small companies of the future will have to do two things: serve their niche very, very well and interface to that open system.

Mix: If this merger had not happened, do you think either company would have been as successful five years from now?

Gotcher: No way. This market is dynamic. Five years is an eternity. What will the platform standard on computers be in five years?

Rawley: When things are going well, sometimes change is a bad thing. But we realized that by putting the two companies together, the chances that Avid/Digi emerges as the standard platform is increased.

Gotcher: The Apples and IBMs of the world haven't been able to see their short-term success do the right thing strategically. We're going to compete with some big companies in this market. Some large computers want this market. Sony wants this market. We're simply strengthening our ability to leverage all this expertise.

Mix: Who would have expected AT&T to be a pro audio player?

Gotcher: That's a real paradigm shift. The market has become very, very big. Once you integrate media production...there were so many specialized devices needed to do media production in the past: VTRs, ATRs, dubbers, lots of mechanical stuff and tape formats. The opportunity to provide a standard platform is going to attract a lot of big players who may have not been there before.

Rawley: It already has. Look at the race for video-on-demand servers. CNN is thinking about turning over its whole operation.

Mix: A lot of those same companies have made acquiring and/or developing content a major pursuit, as well. Even something like sound libraries. What about Avid?

Rawley: Our primary purpose has been in creating enabling technology. We facilitate those people who own content with the best tools possible. We don't want to compete with our customers.

Gotcher: The tool-making market has to make a lot of solutions to a lot of distribution systems. It's hard to predict if the record companies are going to go away and switch to music on-demand. What we do know is that the distribution method will be digital. If we stay focused on a broad range of production tools throughout the production process, there's plenty of opportunities there.

Rawley: I don't want to lose sight of the highest level of motivation for doing this. Both companies were very economically successful. The motivation wasn't economic; it was a combination of products and skills. It positions us as one of the candidates to provide that common platform. In the final analysis, this will turn out to have been one of the most natural things that could have been done. ■

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—FROM PAGE 153, AES PART 2

and has a switch. The new Crest Vx console, the eagerly awaited extension of the Century Series, was shown for the first time, adding eight VCA groups along with the standard eight matrix outputs. A front-panel switch turns individual channel inserts on and off, and they are on separate balanced send and return jacks. The CA 12 amplifier, which debuted at NSCA last spring, was also shown. It is rated at 1,200 watts/channel at 4 ohms and has proven popular with users who don't need the octal sockets and heavy-duty chassis found on the 8001. New amps in this series are the CA 2 and CA 4, rated at 250 and 450 W/ch at 4 ohms.

The new "REAL-Q" REQ-3100 room equalizer from **Sabine** (Gainesville, Fla.) builds on the digital notch filter technology used in the company's Feedback Exterminator and ADF workstation. This mono digital processor is three products in one. Besides being a 31-band equalizer and a real-time analyzer, it is a processor that maintains the frequency response of the sound system to a predetermined curve with a 31-band corrective equalizer, working independently of the program material to correct for changes in room response after soundcheck. It is placed just before the system crossover and monitors the sound in the room with one or two microphones. It stores the signal level at each frequency and references them during the show, constantly comparing them one at a time by placing an extremely narrow notch filter into the program and replacing the program material at that frequency with a -60dB reference signal, but only when there is enough program to mask it.

QSC (Costa Mesa, Calif.) announced the 18-pound PowerLight 1.8 amplifier, which uses a switching power supply in a two-space, 18-inch-deep chassis. Rated at 900 watts per channel at 2 ohms, it lists for $1,998. Other models in the package will include the PowerLight 1.0 and 1.4, rated at 500 and 700 watts, respectively. They feature Neutrik Combo XLR-¼-inch input jacks, as well as a new "touch proof" binding-post, which QSC is incorporating into its entire line. This improved output connector replaces previous hex-nut binding posts, allowing the direct insertion of up to 7-gauge wire or the barrel of a banana plug directly through it; the edges of the cross hole are beveled to prevent shearing of multistrand wire when tightened. Its slotted head allows tightening with a coin instead of a hex nut socket. PowerLight amps bought in the first half of 1995 include free addition of a three-year extension to the standard three-year warranty. The new MX3000a amp, introduced last September, was also shown. It is essentially an MX version of the popular EX 4000, delivering 1,600 watts per channel into 2 ohms and listing for $1,999. ■

—FROM PAGE 28, PRO AUDIO'S FRATERNITY

shoe stories and described the life and times of a Foley artist to the captivated audience of more than 70 audio students and professionals.

The Northern California sections have formed an alliance and produce a regional conference each year. The last conference was hosted by the students at California State University, Chico, under the direction of Keith Seppanen, director of the Recording Arts Program. The three-day event, attended by more than 150 people, included presentations from industry professionals on such topics as Music Publishing, The Making of "Rock, Rap and Roll," Satellite Audio Uplink, Audio Contracting and Installation, and the Artist and Engineer Relationship. The next conference will be hosted by Sacramento City College in the spring.

Association with the student sections can also open doors to the real world through internships and training positions. Lamonte did her internship at WTIJ, part of Capital Cities/ABC in New York City. Her contact with AES provided the opportunity, and she is enthusiastic about the possibility of returning as an employee. While interviewing for positions, Lamonte said, "I was taken more seriously and had more in-depth conversations" once she established that she was an AES member.

Many AES activities give students a chance to learn what lies beyond the classroom, get some real-world exposure to the industry and develop preprofessional contacts.

The other perspective is that of the employer. Ron Streicher, Secretary of the AES, spends his summers as co-director of the Recording Institute of Aspen's Aspen Music Festival. Each year, he works with six interns hired by the festival to help in all aspects of production. Last year, almost every intern was affiliated with a student section. Streicher says that "students who are qualified and dedicated are the primary criteria. Students who are active in AES sections show, by virtue of being active, that they are dedicated to their careers in the audio industry."

The Society also assists students by publishing a Directory of Educational Programs that lists more than 250 programs worldwide that provide degrees in audio engineering and related disciplines. The directory includes information provided voluntarily by the schools on their educational programs, curriculum, facilities, degrees and faculty. The directory is mailed directly to the membership with the *AES Journal*; the last distribution was in April of 1994. The next edition of the directory is due for publication in 1996. In the mean time, the directory can be purchased through the AES New York publication department ([212] 661-8528). (Additional information can be found in *MIX*'s annual Master Directory, and in the career handbook published by the National Academy of Recording Arts & Sciences.)

For graduate students, there are grants available through the AES Educational Foundation. Each year, this foundation awards four to six grants to graduate students working in the field of audio engineering and related arts who show commitment to the industry. Grants are awarded internationally and provide support for tuition and books. Applications, due in May, are available through AES headquarters in New York.

New to the AES is an educational column in the *Journal*. Soon this column will be filled with topics of interest and concern on educational issues. It's designed to be an open forum for students, educators and industry professionals. Contributions can be submitted for review by the AES Education Committee, chaired by Roy Pritts of the University of Colorado at Denver.

Just as in my day, AES conventions are of paramount importance. Lamonte says, "Conventions are where it all happens." The cost of attending is heavily discounted for students, and conventions are the best place to meet people and get information on possible careers and internships in the industry. The Miami student section helps out by sponsoring a cocktail party at each convention for students, alumni and friends, providing an informal setting for networking. In addition to the exhibitors' floor, workshops and technical papers, there is usually an education fair at the AES show. Schools with programs in the recording arts and other educational service organizations are represented. For its 1995 convention, to be held October 5-8 in New York, the AES is considering sponsorship of a job fair in collaboration with SPARS (Society of Professional Audio Recording Services).

The AES offers some excellent programs and is working hard to attract, educate and encourage young people on their professional journey. Its aim is to facilitate your growth and development, but your future success depends upon you. As Lamonte says, "Talk to everyone you can and learn all you can, because you'll be out there soon enough." ■

Marjori Schmugler, soon to be found at Specialty Audio, stopped traveling long enough to write this article. She is the vice-chair of the AES Working Group on Diversity.

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(no phone calls, please. Moving to S.F in May 1995). EOE

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MIX MARKETPLACE

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March 15, '95 deadline for
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May 15, '95 deadline for
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FEEDBACK

MORE ON J-J-J-JITTER

I enjoyed Zelniker and Taylor's (Nov. '94) article on jitter. They have their facts straight, but one thing they glossed over, however, is digital transfers. Most equipment does not have the type of error-reporting we really need when making digital transfers. The only way to tell if you have an error is listening to the material for dropouts as it's transferred (an exhausting type of listening). The authors imply that AES transceivers are very reliable, but anyone who's transferred tapes can tell you, if one in a billion bits (or cables) goes bad, that one is in the last five seconds of a 47-minute program. Or, your assistant might be demagnetizing a tape deck and create a little voltage spike, which gets into your digital line. Wouldn't it be nice if we could set up a transfer and come back later and see whether any errors occurred? Most chips have the data available (electrical link problems, CRC errors, etc.), but most equipment doesn't make the info available to the users. A simple reset button/LED or display mode on a DAT machine would be enough.

Marc Lindahl
Flavor Crystal Productions
New York City

A TRACK 1 SOLUTION

I read with interest your December article on Enhanced CDs. I, too, am a believer in this exciting format and its huge commercial potential. However, I was concerned about the following quote: "Even if you automatically skip over track 1—and as far as I know, nobody has succeeded in doing that—the first audio track will still be track 2, which is still confusing to the consumer who is buying it as a record."

I wanted you to know that these problems have been solved. I represent V2 Productions, which created the multimedia content for Heyday Records' Chris von Sneidern CD and was featured in the *Mix* article. I am also working with Pacific Advanced Media Services (P.A.M.S.) of Sydney, Australia, which has patented a unique system of encoding the multimedia CD-ROM content of the disc to automatically shield it from audio CD players. (The trademark is "Active Audio.") When the disc is loaded into an audio CD player, it will indicate the number of Red Book Audio tracks and line up at the start of track 1 (i.e., the first song). In other words, there is no "track 1 problem."

Unlike the proposed multisession system, this system is operational *now*. It works on all audio CD players and the vast majority of installed CD-ROM drives without the need for additional software drivers. We are negotiating the use of this system on enhanced CDs being developed by several labels here and in Europe. In addition, P.A.M.S. is opening offices in San Jose, Singapore and Tokyo, with plans for London in the works.

Paul Atkinson
Santa Monica, CA

BURIED A-LIVE BY BASS

With great pleasure and relief, I read George Petersen's "From the Editor" column in the January issue.

In August 1992, I saw Bonnie Raitt's "Luck of the Draw" tour at the Hershey Park Arena. This concert was one of the best performances I have experienced, not only by the musicians, but by the FOH mixer, as well. The mix lived up to any expectations I had, with everything in its place and comfortable SPLs all night long. Unfortunately, I have no idea who the engineer was, but thanks to him, Bonnie, Lyle Lovett and company, I decided that evening that I would finally get started on a sound reinforcement venture of my own.

Here I am nearly three years later, with a compilation of new and used gear. It's not all pretty, but it works well. History aside, the reason Petersen's column struck a chord with me was that the last few concerts I've attended fall right in line with the "delicate mix" mentioned in the column. These concerts featured national acts at large venues, with internationally known sound reinforcement companies. I know there were guitar leads, but only because I could *see* the guitarist playing them. Bass guitars overpowered the other instruments, as well as the vocals. Now I understand why these companies use so many power amps—they're all for bass and drums!

As a novice engineer, I once regarded major tour companies in great esteem, but now I realize that the human element (which the column addressed) is indeed the key, much more than the tons of gear they own. I feared I was missing the boat, but you have set me straight, and I thank you. I will continue to mix the way my ears tell me to, comfortable in the knowledge that there are some "Big Guys" out there that are on my side.

Jeffrey Adams
The Sound Project
Jarrettsville, MD

SAMPLE ADDITION

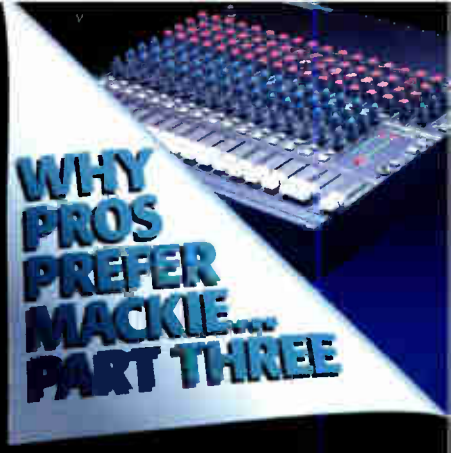
Dan Daley's January article on the Take 6 sampling sessions ("Birth of a Sample") failed to mention that engineer Tony Shepperd and Kurzweil's Joseph Ierardi spent three days mixing the recorded tracks in Studio A at Boston's Sound Techniques. Studio A is the home of our Neve V/Flying Faders console. Additionally, we rented a Sony 3348 deck for the session.

Gina Romani
Sound Techniques
Boston

CHARLES THE MIXOLOGIST ROANE

D.C.'s hot urban contemporary station WPGC got its current #1 market standing by doing risky, innovative things. Like hiring Charles "The Mixologist" Roane & his trusty CR-1604. Roane's remix of "Whomp (There it is)" helped spur total sales of the single to over 6 million — making it the all time best selling rap record. Now record labels seek out The Mixologist for his "flava" and clean mixes.

Though he recently bought a Mackie 32•8 8•Bus console, Charles won't part with the CR-1604 that got him started. He calls it his "lucky mixer."



WHY PROS PREFER MACKIE.... PART THREE

MACKIE REMIX MASTERS

BONZAI JIM CARUSO

Ever since he engineered five remixes on Madonna's smash "Erotica" album, Bonzai Jim Caruso's engineering career has been on fast forward. As he did on the Madonna sessions, he usually brings along his personal CR-1604 mixers.

The rest of Bonazi's resume speaks for itself: top-charted dance remixes for George Michael, Luther Vandross, Jon Secada, Gloria Estefan, The Basement Boyz, Natalie Cole, Class-X with Michelle Weeks and Jose Feliciano. All mixed on two Mackie CR-1604s.

Now let Bonazi speak: "I went through four other small mixers before finding the Mackie. The others didn't even come close. The CR-1604 is the only mixer that can handle really huge drum sounds, monstrously fat bass and a ton of synths simultaneously."*

Recently, while mixing Crystal (La-Da-Di La-Di-Da) Waters at the Basement Boyz' Baltimore studio, the SSL console didn't have enough inputs. So Bonzai rented a CR-1604 to help mix two cuts, "Ghetto Days" and "What I Need." The studio was so impressed with the Mackie CR-1604 that they immediately bought two!

Bonazi then used those two CR-1604s to mix Martha Wash's new remix album release "Leave A Lite On" — sans help from the SSL board.

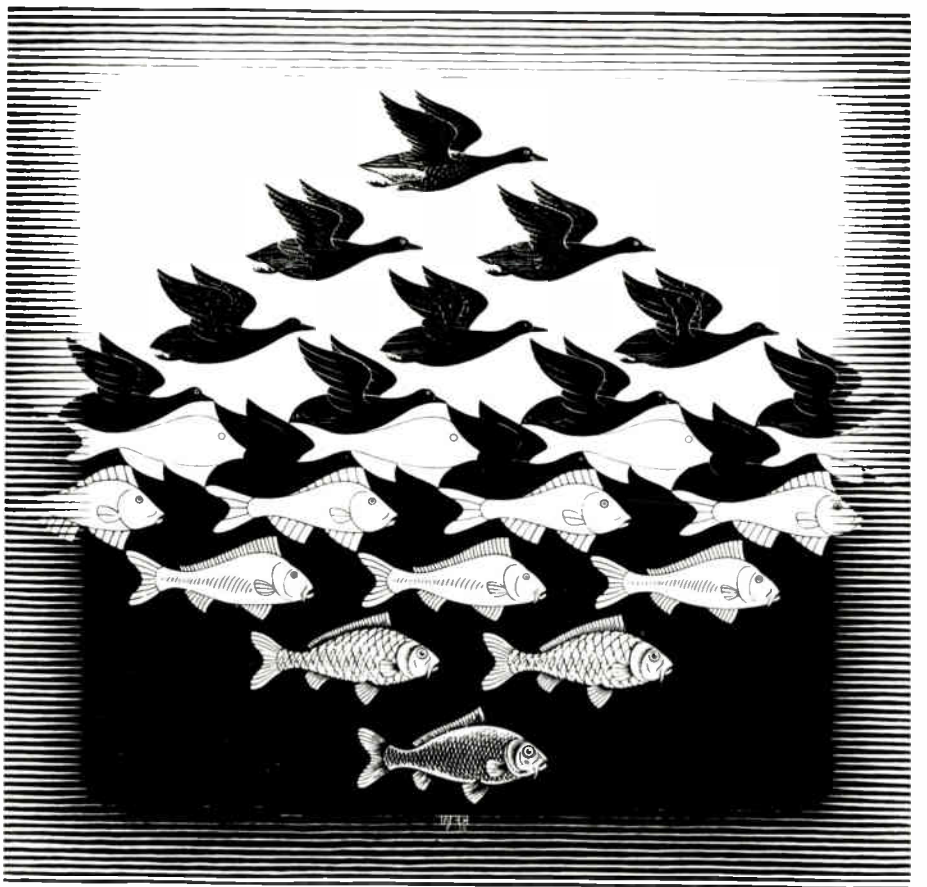
MACKIE.

All of our mixers are made at 20205 144th Ave NE, Woodinville, WA, 98072, USA • For more info, call 800/268-6883 M-F, 9 to 5 PM PT • FAX 206/487-4337 Outside the US, call 206/487-4333 • Internet address: technical.support@mackie.wa.com • On CompuServe: GO MACKIE • Represented in Canada by S.F. Marketing 800/363-8855

*Although Bonzai specifically listed the other brands he'd tried and rejected, we don't mention direct competitors in our ads. If you want a hint, though, see who else is advertising compact mixers in this issue.

USE READER SERVICE CARD FOR MORE INFO

If you think only your eyes can play tricks on you...



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.

Models pictured (L-R)
3-Way 10" 4410A, 2-Way 8" 4408A and 3-Way 12" 4412A

The original 4400 Series monitors have played a major role in recording and broadcast studios for years. Today, 4400 Series "A" models rely on low frequency transducers with Symmetrical Field Geometry (SFG™) magnet structures and large diameter edgewound ribbon voice coils. They incorporate new titanium dome tweeters, oriented to create "Left" and "Right" mirror-imaged pairs. Refined crossover networks use conjugate circuit topology and tight tolerance components to give 4400A Series monitors absolutely smooth transition between transducers for perfect imaging and unparalleled power response.

If you're looking for a new pair of studio monitors, look into the 4400A Series. We think you'll find them to be a sight for sore ears.

JBL

JBL PROFESSIONAL, 8500 BALBOA BOULEVARD, NORTHRIDGE, CA 91329, PHONE (818)893-8411, FOR FAX INFORMATION, CALL (818)895-8190