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Perspective Monitoring

Two Pros And Their Tannoys..

Five centuries ago, Leonardo da Vinci brought art and science together to create beautiful images using his knowledge of engineering, physics, geometry and perspective. • His images were so clearly rendered, so precisely represented, that the mechanisms he drew then could be recreated today. • Da Vinci maintained that the artist had to use the methods of science, and the scientist the tools of art. • Now, five hundred years later, Tannoy once again blends science and art to deliver the world's most advanced monitoring systems.

Mick Guzauski, Producer • credits include:
• Mariah Carey • Eric Clapton • Barbara Streisand • Bryan Adams • Michael Bolton • Boyz to Men
"I have relied on Tannoy point source Dual Concentric loudspeakers for several years. Their resolution of time and space put them in a league of their own. Now with the advantage of state of the art filtering and amplification, the overall precision of the image and critical damping factor makes them an unbeatable combination at any price."

• Through the exacting application of science, the AMS monitors provide the accurate perspective to clearly render the musical image created by the top recording engineers and producers. ■ The AMS monitors are technically uncompromised designs, combining hand-selected models of Tannoy's exceptional Dual Concentric™ drivers, with the finest quality electronics design and construction.

• Beginning with the precise phase coherent drive units, the AMS series builds on Tannoy's unrivaled reputation for accurate imaging perspective. • Active monitors provide unparalleled low frequency accuracy, due to the extremely low impedance coupling of the amplifier and drive units, and the elimination of parasitic passive crossover elements. • Precise tailoring of the active filter elements allow matching of production tolerances to within 0.25dB, guaranteeing superb stereo imaging. • The amplifiers use aero-space tolerance components and design, with the components selected for their sonic qualities as much as their reliability.

• The amplifiers are truly unlimited in performance to ensure that there is no coloration of dynamics due to over-protective protection circuitry.

■ These are studio monitors designed to step aside and let you inside the musical perspective.

Joe Chiccarelli, Produc credits include:
• Tori Amos • Frank Zappa • American Music Club • Cracker • Dog's Eye View
"It's the first time I've used a near field monitor where I felt like there wasn't any glass between the control room and the artist. The transparency and phase coherency of th midrange allows you to move a microphon a quarter of an inch and truly hear the di ference, a remarkable achievement."

photo courtesy of Royaltone studios

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When we designed the PCM 80's basic complement of effects Presets, we also provided the ability to plug in hot, new Audio Software/FX cards. Simply plug in any of our cards and you've now supercharged the effects processor everybody is talking about. New effects and algorithms. Hundreds of stunning new Presets. Sophisticated PC-Card architecture that supports our commitment to functionality and continuing upgradability.

PCM 80 FX cards offer a library of over 700 new Presets — each one tailored for a particular application - with a unique Adjust Knob that lets you quickly audition variations of the effect. We put the most useful parameters of each preset into the PCM 80's "Soft Row" so you can fine tune the Preset without having to hunt for the appropriate parameters. Engineer or musician, there's a Lexicon FX card for practically any imaginable sound. Right now, you can instantly load-up on your creative options with any of these new FX Cards:

• Dual FX — 25 Algorithms / 250 Presets deliver highest quality stereo multi-effects, unprecedented routing capabilities & a powerful new digital sub-mixer.

• Pitch FX — 6 Algorithms / 100 Presets combine Multi-Voice Pitch Shifting with PCM 80 Stereo Algorithms.

• Harmony FX (Coming 1997) — Intelligent Pitch Shift Algorithms / 100 Presets offer Diatonic Harmonization, Automatic Pitch Correction and more.

• Scott Martin Gershin Post FX — 100 superb post-production Presets featuring Surround Delays for Film & Reverbs for Orchestras.

• David Rosenthal Music FX — 100 powerful performance Presets featuring brilliant reverbs & effects for keyboards, guitars, vocals.

And don't forget, you can use any Preset as a template to create your own stunning versions of Lexicon effects - and store up to 2,000 of those Presets using standard PCMCIA SRAM cards.

So check out the PCM 80 FX cards and experience the future today, at your Lexicon dealer!

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APRIL 1997, VOLUME 21, NUMBER 4

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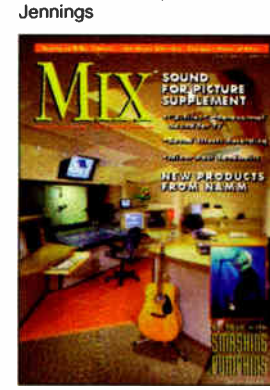
LIVE SOUND

DEPARTMENTS

Check out Mix Online
http://www.mixmag.com

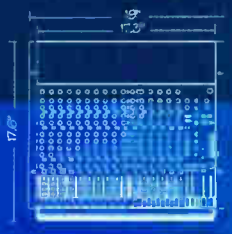
Cover: Crescendo, a new audio post facility in the heart of the San Francisco ad district, opened in September with two identical rooms, each based around an Otari Status console and Fairlight MFX3 workstation. The facility, designed by John Storyk and constructed by Dennis Stearns, is a satellite to the venerable Russian Hill Recording and was built exclusively for spot work. Pictured here is Studio Roma. The story is in the Sound for Picture supplement. **Photo:** Bob Wolsch. **Inset photo:** Steve Jennings



MORE BUSES, MORE PREAMPS, INTRODUCING THE NEW 16-CH.,

Four submix buses, swept mid EQ, AFL/PFL, new materials, new technologies and the soul

The original CR-1604 defined the modern compact mixer. Now we've "raised the standard" by adding over 20 new features like true 4-bus design with assign switches on every channel, 16 high-headroom/low noise mic preamps, separate stereo Control Room/Phones bus, effects return to monitors — for just $100 more* than the original CR-1604! No matter where you mix or what you mix, you'll find a lot to like on the new CR1604-VLZ. Call for a free 40-page brochure and applications guide today.



NEW TRIM control (on the channel strip) with 60dB total mic gain & –10dB "virtual pad" for line inputs.

6 AUX SENDS per ch. Aux 1 & 2 switchable pre/post. Aux 3 &4 (post-fader) become 5 & 6 via Shift switch.

HI EQ. ±15dB shelving at 12kHz.

NEW SWEEPABLE MIDRANGE. Wide, musical peaking EQ with 100Hz to 8kHz range. ±15dB range.

LO EQ. ±15dB shelving at 80Hz.

NEW LOW CUT FILTER is a must for live sound and acoustic (microphone) recording. Sharp, 18dB/octave @ 75Hz high-pass filter lets you add Low shelving EQ to vocals without boosting undesirable mic thumps, stage rumble, wind noise, P-pops, etc.

PAN control with constant loudness to maintain stereo perspective.

MUTE switch.

NEW MUTE & OVERLOAD LED.

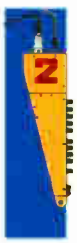
NEW –20dB SIGNAL PRESENT & SOLO LED.

SOLO. In-place AFL or PFL (pre fade listen).

NEW BUS ASSIGN for Subs 1-2, 3-4 & Main L/R.

NEW 60mm FADER with true log taper, special lip seal & long-life wiper material.

NEW Aux Return 3 **ASSIGN SWITCHES** to Main Mix, Subs 1 & 2 or Subs 3 & 4.



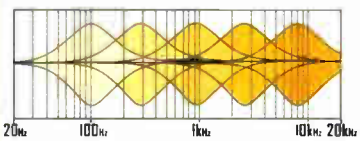
NEW Aux Return 4 **ASSIGN** to Control Rm/Phones.

NEW PHANTOM POWER LED.

NEW CONTROL ROOM/PHONES level control.

NEW TAPE INPUT LEVEL control and **TAPE TO MAIN MIX** switch.

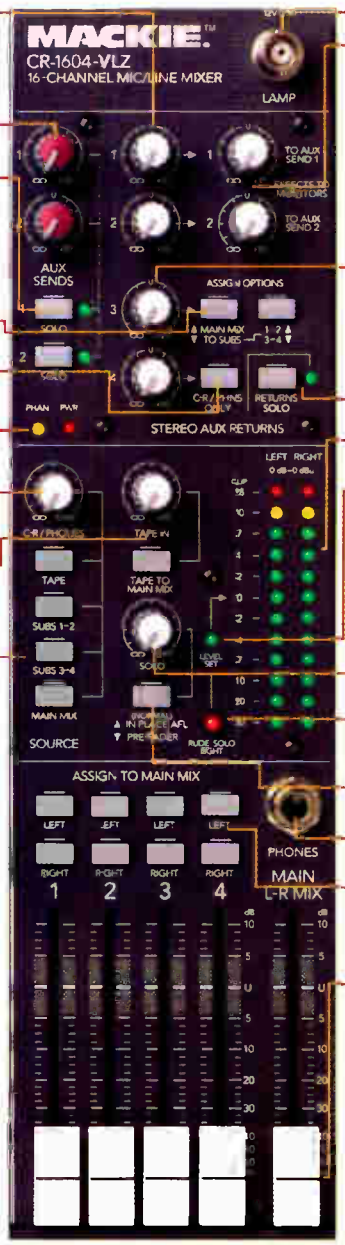
NEW CONTROL ROOM/PHONES SOURCE MATRIX. Just like our 8•Bus monitoring system, this creative feature lets you route any combination of Tape, Subs 1 & 2, Subs 3 & 4 or Main Mix to Control Room/Phones bus. Lets you create custom headphone mixes (press MAIN MIX and let performers in the studio hear what you're hearing in the control room), run simultaneous broadcast or live 2-track recording mixes, monitor 2-track tape deck output (if you're doing commercial production, press TAPE and share it with VO talent in the studio), route a cue/click track to phones or create a second stereo main output with its own level control.



MORE THAN JUST SWEPT MIDRANGE. Most mixers (except very expensive ones) have narrow EQ bandwidths — OK for drastic corrections but not very useful for gentle tonal changes. The CR1604-VLZ has wide, midrange EQ bandwidth that is far more musical-sounding and can be used more generously than narrow mid EQ.

5-WAY PHYSICAL CONFIGURATION via our famous rotating input/output "pod." Out of the box the CR1604-VLZ comes in with jacks to back. Use on a tabletop ❶ or rack-mount it with the free rack rails included ❷. In minutes, with just a screwdriver, you can rotate the pod for an ultra-compact 8-rack space configuration ❸. Optional RotoPod-VLZ bracket places the input/output jacks on same plane as the controls (rackmount ❹ or tabletop ❺).

***THE BIG ASTERISK:** Suggested U.S. retail for the CR1604-VLZ is $1199. This is actually LESS than the combined price of the old CR-1604 and XLR10 mic preamp expander (needed to get a full 16 mic preamps). Priced higher in Canada.



BNC lamp socket.

NEW EFFECTS TO MONITORS controls fold Aux Return 1 & 2 back into Aux Sends 1 & 2 so that on-stage performers can hear outboard effects.

Stereo **AUX RETURNS 3 & 4** with 20dB gain above Unity for boosting weak effects.

Global **AUX RETURN SOLO** with LED.

LED **METERS** with –30 to +28 range.

NEW LEVEL SET LED. In conjunction with individual channel Solo lets you quickly and accurately set input levels to Unity Gain, minimizing noise and maximizing headroom.

Global **SOLO** level control.

RUDE SOLO light.

NEW Global **AFL/PFL SOLO** switch.

HEADPHONE output.

NEW BUS ASSIGN to Left and/or Right Main Mix.

NEW 60mm **SUB-MASTER & MAIN L/R** faders with accurate, 8•Bus log taper.

BUILT-IN power supply.

PHANTOM POWER switch.

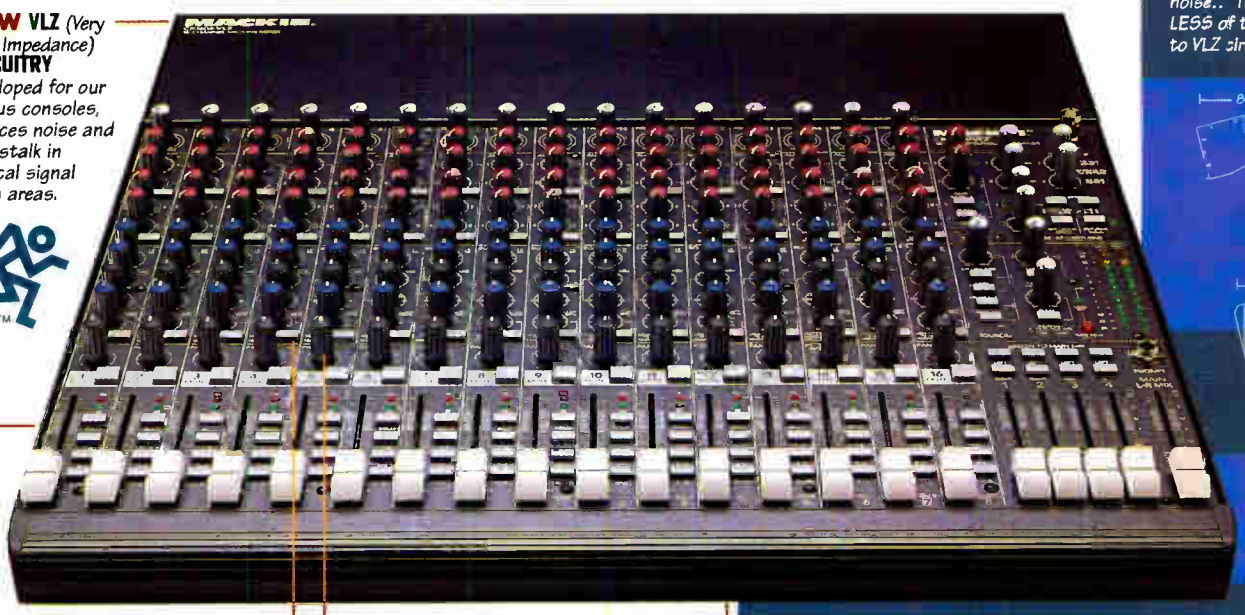
NAB BOOTH #M8038

mps • -20dB signal present LEDs • Control Room/Phones section w/switching matrix

MORE EQ, MORE FEATURES, MORE EVERYTHING.** 4-BUS CR1604-VLZ MIC/LINE MIXER. JUST $1199.*

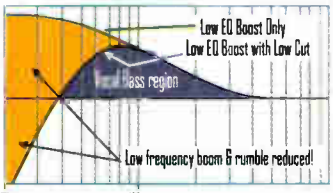
of our 8•Bus...we packed the new CR1604-VLZ with a 5-year "wish list" of the most-requested mixer features.

NEW VLZ *(Very Low Impedance)* **CIRCUITRY** *developed for our 8•Bus consoles, reduces noise and crosstalk in critical signal path areas.*



****** *Everything except noise... There's even LESS of that thanks to VLZ circuitry.*

SOLID STEEL *main chassis.*



NEW MONO OUTPUT *(bal./unbal.) has separate volume control.*

NEW RCA TAPE *inputs & outputs (unbalanced).*

NEW *Separate* **CONTROL ROOM OUTPUT** *(bal./unbal.) so you don't tie up your headphone output with an amp.*

NEW INSERTS *on every channel.*

SUBMASTER OUTPUTS *(bal./unbal.).*

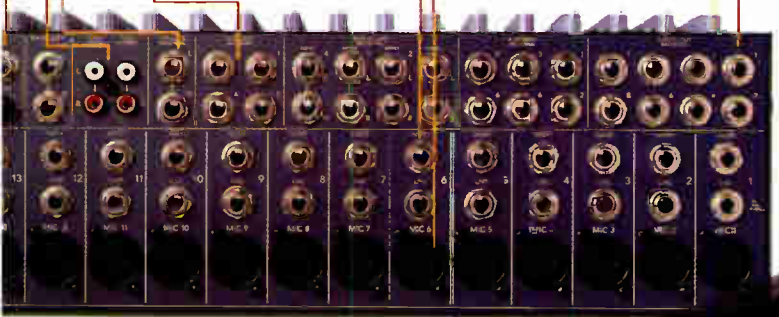
SEALED *rotary controls resist dirt, smoke and diet cola.*

Maximum **RFI INTERFERENCE PROTECTION** *via metal jacks, blocking capacitors, etc.*

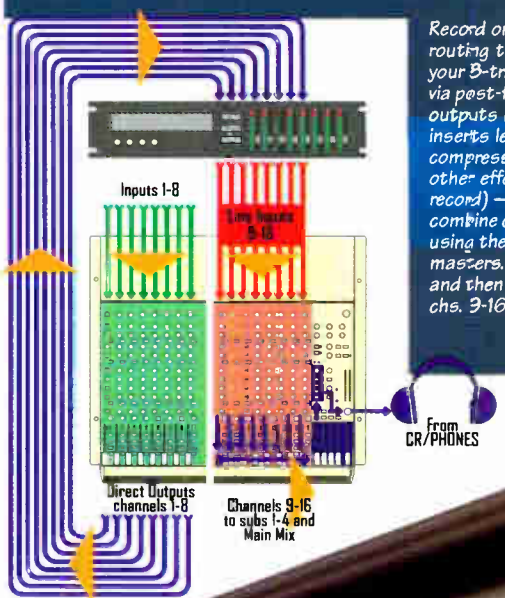
NEW LOW CUT FILTERS *on all channels. Low Shelving EQ can be very useful on vocals. But adding Low EQ also boosts stage rumble, microphone thumps and wind noise that aren't good for your PA system. Our sharp 18dB/octave filter cuts out the bad stuff below 75Hz and leaves the good stuff (unlike the shallow 6dB/octave or 12dB/octave "low cut" filters on some mixers that also slice off audible low bass & don't fully cut out subsonic stuff).*

NEW 16 STUDIO-GRADE MIC PREAMPS *with –129.5dBm E.I.N. — the same ones as on our acclaimed 8•Bus consoles that are regularly used to record platinum albums.*

DIRECT OUTS *(bal./unbal.) channels 1-8.*



The perfect mixer for use with 8-track digital recorders.



Record on chs. 1-8, routing tracks to your 8-track recorder via post-fader direct outputs (separate inserts let you add compression or other effects as you record) — and/or combine chs. to tape using the 4 sub-masters. Monitor and then mixdown via chs. 9-16.

Made with pride in the depths of the North-west rain forest, **USA.**

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FROM THE EDITOR

GEAR WARS

Recently, while browsing the rec.audio.pro newsgroup on the Internet, I noticed a posting from a reader who misses the "old" *Mix*. Essentially this person was lamenting our occasional coverage of products and procedures that—in his opinion—are not professional quality. Sure, it might be fun to revisit the 1970s pre-digital period when recording budgets were at their peak, more studios had a maintenance staff, second engineers dutifully aligned the decks before the session, and string players could still make a living doing studio work.

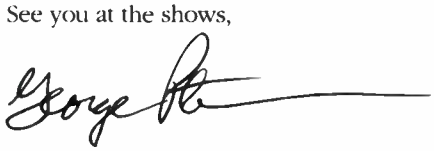
The key here is defining "professional." According to the old audio joke, "professional" is a phrase describing any piece of gear that weighs too much to be shipped via UPS. But seriously, the distinction between pro and semipro has become muddled. Today you might find racks of MDMs in the dubbing theater for a feature film; or a low-cost, 12-channel mixer handling dialog tracks on a location shoot; or $299 reverbs racked in with $5,000 and $10,000 units in the effects racks on a major album mix or live touring rig. The gear may be considered semipro, but I doubt that any of the engineers using the gear in these situations consider themselves anything less than professional.

Further clouding the issue is the realization that in some cases—such as digital multitracks and recording consoles—there are low- and high-priced items, but few options in the middle ground. For example, with digital 24-tracks, once you go beyond the $10,000-$15,000 range of MDM systems, the next step is Sony's PCM-3324S 24-track, carrying a $62,000 base price—*sans* optional SMPTE sync, remote, or digital I/O. Where are the professional $40,000 digital 24-track tape recorders?

And nestled among the $500,000 consoles at AES are synths, sample libraries and music software; go to NAMM and you'll see Amek, EAW, Focusrite, Manley, Meyer, Otari and TC Electronic—hardly low-end suppliers. Surely, this month's NSCA and NAB conventions will offer a similar blend of high-end and entry level products.

In keeping with this month's NSCA theme, Mark Frink drops in on the Smashing Pumpkins tour, and also examines the creative use of compressors in live sound. Our NAMM coverage reports on the show's hot new sound reinforcement, recording/music and software products. Mel Lambert chats with audio innovator John Meyer and road tests D&R's Cinemix console, which will be at NAB. Speaking of post-production, our semi-annual Sound For Picture™ supplement has articles on sound for *X-Files*, the post communities in Seattle and San Francisco, film scoring and sound effects recording. There's much more, of course—and like a mix of pro and semipro gear, there's something here for just about everyone.

See you at the shows,



George Petersen

BPA INTERNATIONAL SPARS ABP American Business Press

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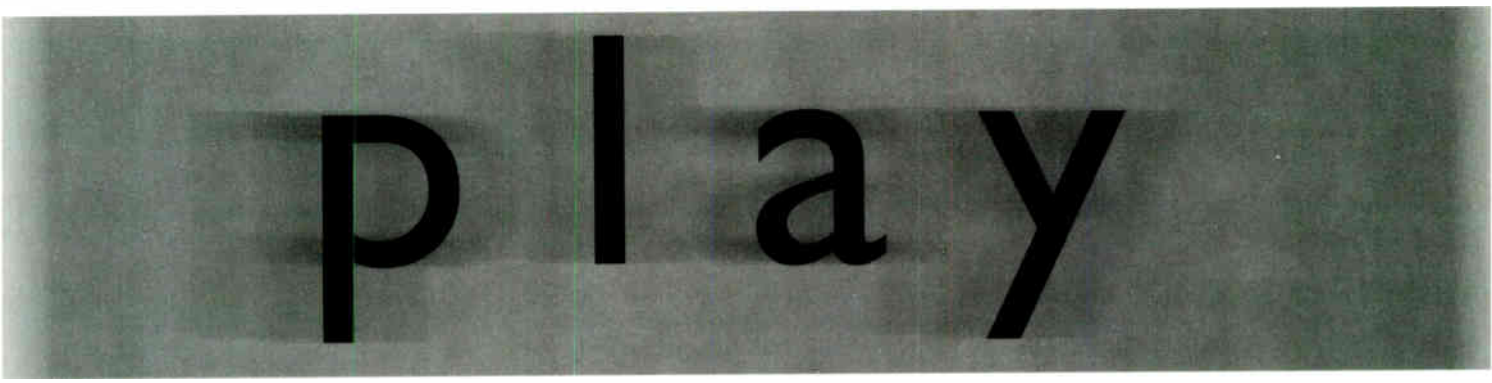
by David Schwartz and Penny Riker Jacob



QUANTEGY

CURRENT

WELCOME TO NAB'97!

This month, thousands will descend upon the Las Vegas Convention Center for NAB'97 and NAB Multimedia Radio World, April 5-10. This year's show is bigger than ever: It's expected to break attendance records by drawing nearly 100,000 attendees. Also, several new conferences, exhibit areas and an additional demonstration theater have been added at the Sands Expo Center. In addition to a sold-out Radio/Audio Hall at the LVCC, NAB is offering a second Radio/Audio exhibit area at the Sands this year. Internet@NAB.97, now in its second year, includes an exhibit area for service providers, designers and other Web-related companies. Several new conferences this year will present the latest information on cutting-edge technologies.

For the most up-to-date show information, visit the NAB Web site, at www.nab.org, or use NAB's fax-on-demand service: 301/216-1847.

GUY COSTA, 1942-1997

Gaetano "Guy" Costa, engineer, innovator and audio industry pioneer, passed away Tuesday, February 11, at his home in Westlake Village, Calif.

In his early career days, Costa and his uncle built Don Costa Productions, which later became MGM Recording Studios (now Cherokee Recording Studios). Costa was also responsible for the design, construction and operation of the famed Hitsville Studios in Hollywood, and for two decades worked with Motown Records and the Gordy Company. Costa also served as SPARS president (1987-88) and in 1988 founded Quadim, a highly successful tape-duplication and CD mastering facility. Costa is survived by his wife, Nancy; two sons, Paul and Brian; and two daughters, Stephanie and Suzanne. The family requests that memorial contributions be made in Guy's name to the Make-A-Wish Foundation: 800/332-9474.

COMPANIES PROVIDE COPYRIGHT PROTECTION FOR DIGITAL MUSIC

Redwood City, Calif.-based Liquid Audio announced an agreement with Solana Technology Development Corporation (STD) under which Liquid Audio will license STD's digital streaming technology, Electronic DNA™ (E-DNA), for use in its Internet music-on-demand products. E-DNA is a system for applying digital data to compressed audio streams while maintaining the integrity of the audio. Liquid Audio will use E-DNA to embed copyright and distribution information into music streams that customers can sample and purchase over the Internet. Used in combination with Liquid Audio's mastering tools for Internet audio content creation, playback tools for purchasing and publishing, and audio delivery tools, the technology will provide means of copyright protection and secure tracking and management of music sold and delivered via the Internet. Availability is expected some time this quarter.

VOYETRA, TURTLE BEACH MERGE

Voyetra Technologies and Turtle Beach Systems signed an agreement merging the companies into a new entity, Voyetra Technologies Inc. (VTI), led by Voyetra founder Carmine Bonanno. VTI continues to specialize in the development and distribution of music and audio software for Windows, and is enhancing this core business with digital audio and music synthesis peripherals, through Turtle Beach's strength in hardware development. Visit the Voyetra Web site at www.voyetra.com for more information.

TEC SCHOLARSHIP APPLICATIONS AVAILABLE

Applications for the TEC Awards Scholarship Grant are now available. Administered by the Mix Foundation for Excellence in Audio, the Scholarship Grant was created in 1995 to award funds to deserving individuals pursuing careers in audio and currently enrolled in an audio program. Last year, grants were given to Erik Todd Lutkins, a senior at Middle Tennessee State University, and to Daniel Overholt, a senior at California State University, Chico.

If you are interested in receiving an application, send or fax your name, address and telephone number to Mix Foundation for Excellence in Audio (MFEA), 1547 Palos Verde Mall #294, Walnut Creek, CA 94596; fax 510/939-4022. Applications will be accepted until Friday, August 1, 1997. ■

NSCA IN CHARLOTTE

The NSCA Expo'97 is in Charlotte, NC April 16-20. In addition to more than 480 exhibits, NSCA has put together an all-new education program, including two new series of seminars: The "Lunch and Learn" program, featuring nationally recognized speakers/business experts; and the "Exploring" series on new technology. Special events this year include the first annual Jason Perlman Memorial charity golf tournament on Thursday, April 17, and the annual "Contractor Caper" cocktail reception, held that night in the New Charlotte Convention Center Ballroom. For show registration information, call 800/446-6722.

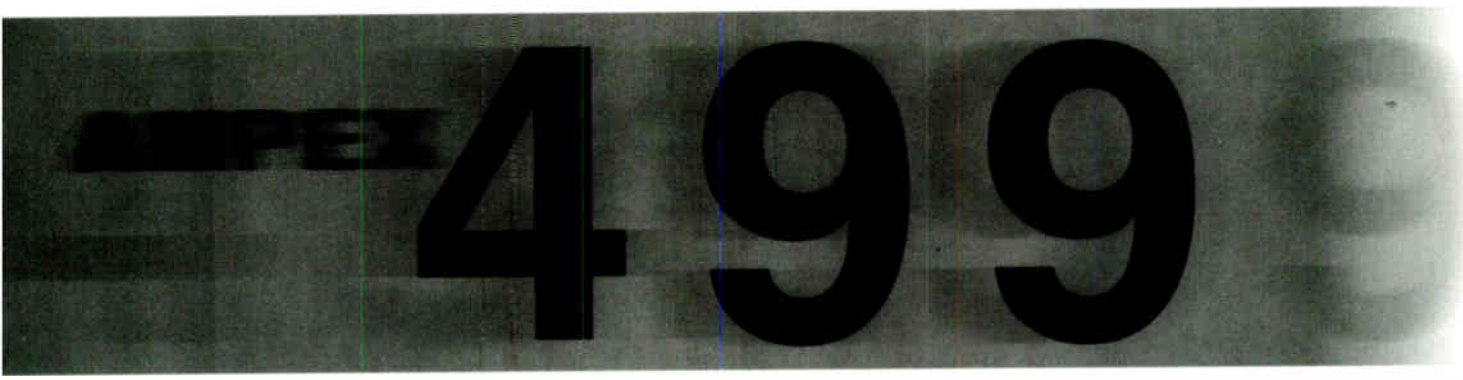
1997 SPARS TEST AVAILABLE

The newly revised 1997 SPARS test is now available for use by employers, students and educators in the audio industry, according to Shirley Kaye, SPARS executive director.

The test, a set of four modules addressing technical, administrative, music recording and audio post-production skills, is designed to provide a basic tool for assessing aptitude and preparedness for employment via a standard method for evaluation.

The SPARS test can be taken by individuals, administered by educational institutions or used by employers in evaluating job candidates or determining benchmark skill levels for various job classifications; this year's test is an outgrowth of the earlier, late-'80s SPARS testing program. The test is available for use by all SPARS members, for fees ranging from $25 for a single module to

—CONTINUED ON PAGE 12



Play back Ampex 499 and all you hear is serious sound.

More audio professionals choose Quantegy than any other tape in the world. With the lowest distortion, widest dynamic range and highest output, Ampex 499 is the most audibly superior tape in the industry.

Play back the quality.

QUANTEGY

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INDUSTRY NOTES

Amek's (North Hollywood) **Rupert Neve** was awarded a Grammy for his contributions to the technical evolution of music...**Telos Systems** in Cleveland brought onboard **John Casey** as vice president of marketing and sales...**John Haeny** was appointed international product manager at **Fairlight ESP** (Culver City, CA)...The Sandy, UT-based **Harman Music Group** named **James Holmes** to the new position of marketing coordinator/designer for **dbx** and **Allen & Heath**, and **Brad Jensen** to the post of technical marketing communications for **dbx Professional**...**Jean Tardibuono** was named national sales manager and **Philip Paske** named western states technical support engineer at **JR Pro Sales**, in Valencia, CA...**Graham-Patten**, headquartered in Grass Valley, CA, announced an OEM agreement with **Fidelipac Corp.** In other Graham-Patten news, **Technical Industries Inc.** (Birmingham, AL) and **Digital Images** (Alexandria, VA) are the company's newest sales representative firms...**Kris Jackson** was named training manager, **Vicky Neal** named marketing communications coordinator and **Jane Hutter** named sales administrative assistant at **Otari Corp.** in Foster City, CA...**Focusrite Audio Engineering Ltd.** moved to new UK headquarters. The address is 19 Lincoln Road, Cressex Business Park, High Wycombe, Bucks HP12 3RD; phone 44/1494/462-246; fax 44/1494/459-920...**Sweetwater Sound Inc.** (Ft. Wayne, IN) appointed **Jeff Radke** as president of its sales division...**Sonic Foundry**, based in Madison, WI, promoted **Rimas Buinevicius** to the post of chief executive officer and brought onboard **Roy Elkins** as vice president of sales and marketing...**Jeff Alexander** was hired by **Crest Audio** (Paramus, NJ) to fill the post of marketing manager...Westlake Village, CA-based **360 Systems** named **Lonnie Pastor** to the newly created position of director of marketing for export sales. In other 360 news, the company opened a European sales office near Amsterdam, headed by newly appointed European sales manager **Peter Lee**. Call 31/299/433-627 for more information...**Quantegy Inc.**, based in Peachtree, GA, hired **Tausche Martin Lonsdorf** to handle a full-service marketing program...In a restructuring move, **Klipsch Professional** (Hope, AK) announced that **Tom Gallagher** will be responsible for domestic sales and marketing, assisted by **Chuck Mulhearn**, who will guide international sales, and **Ginny Sanders**, who will provide international documentation and market support assistance...**The Plant Recording Studios** in Sausalito, CA, received a **BASF** Master Award, the first given to a recording studio, for its recording of Metallica's *Load*... Uster, Switzerland-based **Weiss Engineering** hired **Andor Bariska** for software development and international sales, and **Marcel Vogt** for quality control and customer service...**Freed International** has moved. The new address is 13501 SW 128th Street suite 204, Miami, FL 33186; phone 305/378-1818; fax 305/378-6669...**PreSonus Audio Electronics'** (Baton Rouge, LA) advertising and dynamics director **Laura Odom** received a Gold American Advertising Award from the Advertising Federation of Baton Rouge...**Neumann** (Old Lyme, CT) presented **Sam Ash Music Stores** (Hicksville, NY) and **Westlake Audio** (Los Angeles) with Dealer Excellence Awards, in recognition of outstanding sales achievement... **Studio Tech** is the newest dealer for **Grace Design** (Boulder, CO) mic preamps...Orlando, FL-based **Planet Hollywood** named **Larry Howard** as director of the audio visual department...And finally, ***Mix*** would like to congratulate our editorial assistant, **Anne Eickelberg**, and ***Electronic Musician*** editorial assistant **Rick Weldon** on their recent marriage! ■

—FROM PAGE 10, CURRENT

$60 for single use of all four modules. Discounts are available on purchases of ten or more tests; all grading is done at the SPARS national office. Call 800/771-7727 for more information.

WEB DEBUTS

Avalon Industries introduces a home page at www.avalondesigns.com. It includes information about Avalon gear and accessories, a price list, reviews, user list and a world dealer network.

BandPages is a new Internet service for musicians that provides online media kits, tour dates, recording and distribution information, band graphics and more. Visit www.bandpages.com.

Charles Salter Associates has a new interactive Web site at www.cmsalter.com. Features include service information, projects, animations and audio simulations.

Electronic Specialists introduces www.elect-spec.com, a page that includes a comprehensive product listing with descriptive material, application notes, specifications and prices. Product photos are also featured.

Visit **Groove Tubes'** Web site, at www.groovetubes.com, and find the latest product information and news.

HHB introduces a Web page at www.hhb.co.uk. The site features detailed product information, technical specifications and application notes on a range of HHB-manufactured and distributed products.

Voce announces a home page at www.voceinc.com. There, find product information, news, links and photos.

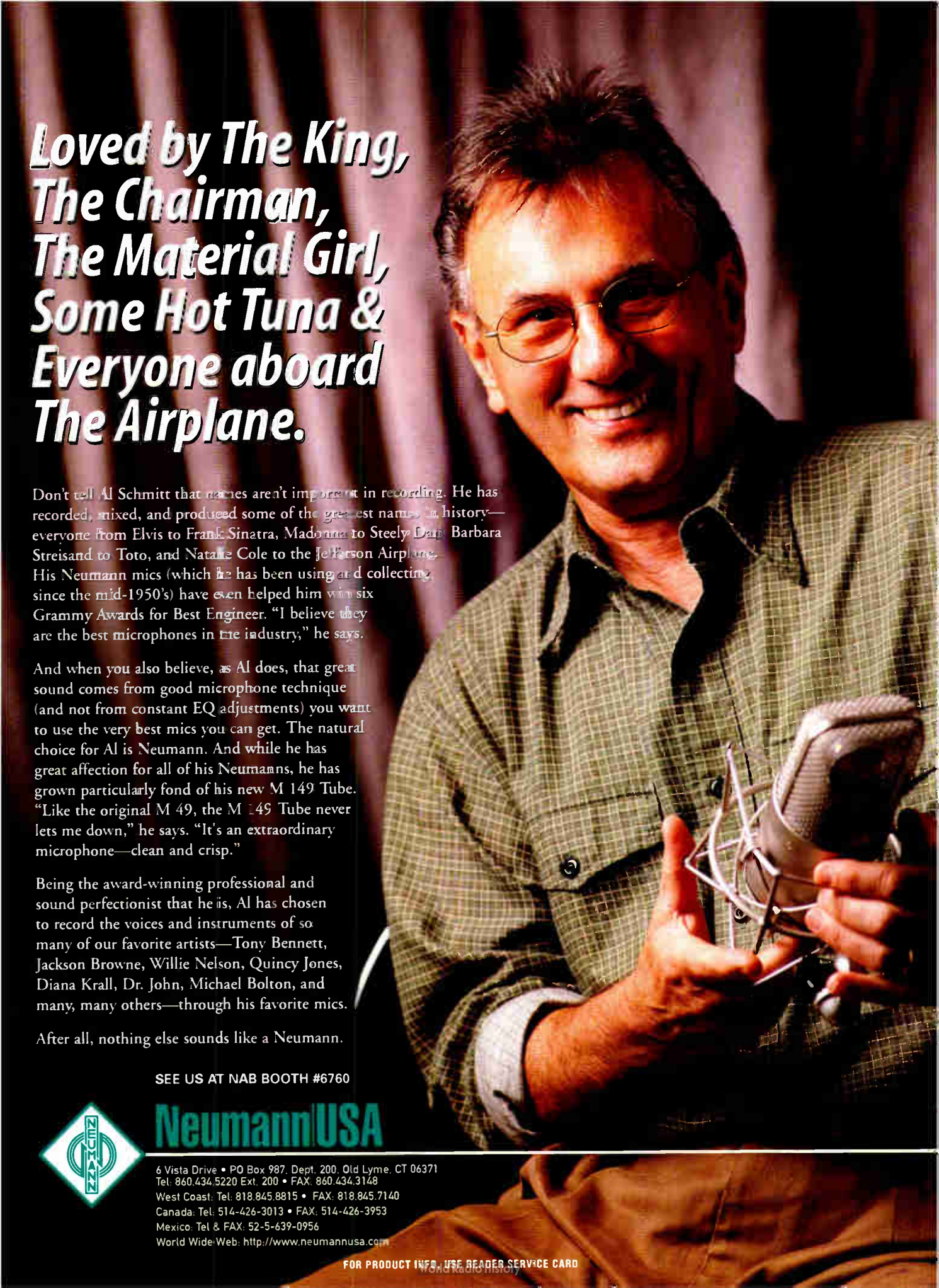
Weiss Engineering's new Web site, at www.weiss.ch, features information on its digital audio products.

CORRECTIONS

In the January "New and Improved Remote Recording Trucks" story, a photo on page 95 pictures the National Mobile Television unit, with engineer Mark Brooks at the board.

February's Intelligent Devices Field Test listed an incorrect e-mail address. Intelligent Devices' address is intdev@clarknet.

February's "Current" listed an incorrect telephone number for Glenn Meadows of Masterfonics. The correct number is 615/259-4452. ■



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SONGS IN THE KEY OF LIFE

A LIFELONG SEARCH FOR THE PROPER SEQUENCE

ILLUSTRATION: STU SUCHIT

I went to NAMM, too. I went a few days early so that I could lay out on the beach before the show and get a bit of a tan. I figured this would get rid of that special "I have just served three years of hard time" pallor that is just one of the plethora of prized by-products of sitting inside, banging away at a computer nonstop for three weeks (as is the time-honored tradition of poor, unfortunate souls who are crunching to get a new product ready to show). But alas, I met with rain. So I ate. Then I ate some more. The more it rained, the more I ate. Then I bought some larger pants. And, of course, the cool shirts I brought with me were chosen to go with a beautiful California Tan—so they went back in the suitcase, and I got some special ones to complement my ceramic-white self.

Then the show opened, and blinding sun streamed down from cloudless blue Paradise skies—for each and every day of NAMM. Then the show closed and it rained endlessly for a week, so I gave up and came home. There was some stuff at NAMM, but I didn't look. Thank you for reading my NAMM report.

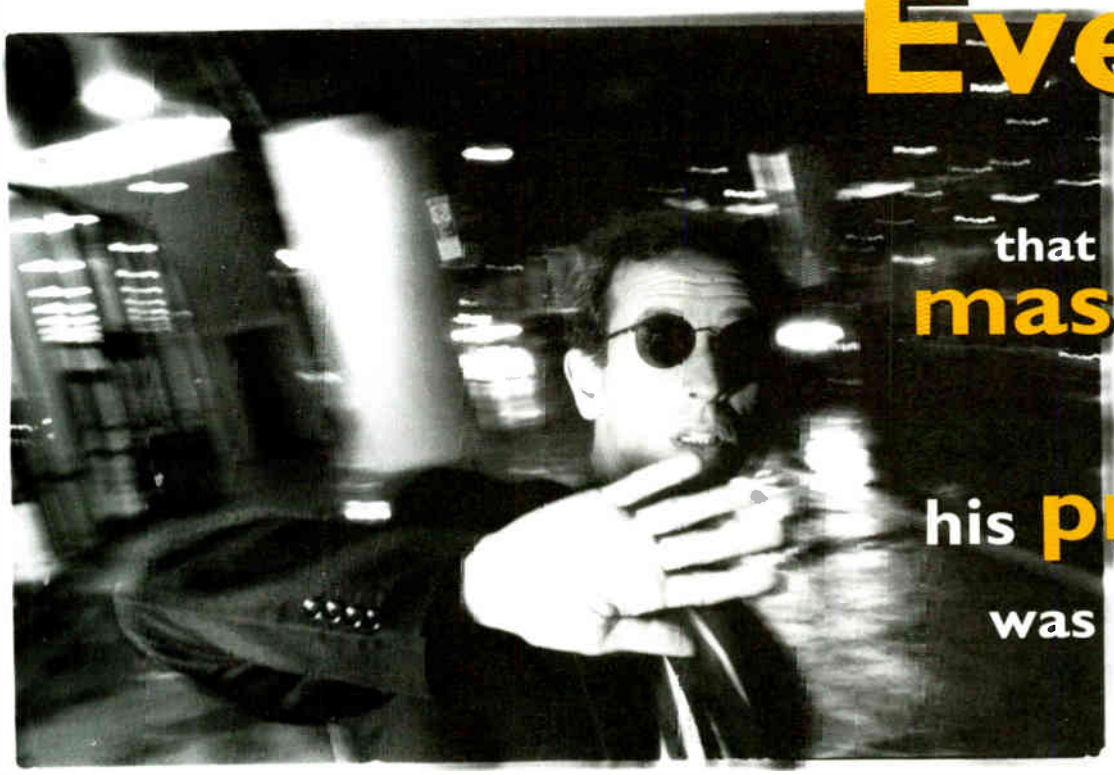
Oh, wait—there was one more point of interest. At least once during every one of our breakfast business strategy meetings, Minnie or Daisy would come pet my hair until I turned bright pink and lost the last bit of macho business clout that I had. But then they would do it to the other guy, and he, too, would be rendered powerless in child-like pinkness. I will miss this existential ritual.

While sitting in Laguna Beach watching a tabby play on the sand in the rain, I began to think about adaptation and evolution. If a California sun-cat (for those of you who don't know, cats don't usually tolerate water very well) can adapt to rain so that it may actually enjoy playing in it, what can humans adapt to? Or more to my point, what have we already evolved into?

I am speaking of music. Not disco or other evolutionary dead-ends, but the actual concept of music itself. What *is* music to a human? I will take a moment right here to tell you that I am not about to address the obvious points, that there are natural rhythms within and about living creatures, so to mimic these produces some pleasant responses. No, I am going to take you deeper into the human collectiveness (or accidentally reveal the true depth of my own warped vision of life...you decide).

You hear a tone. Fine. Then

BY STEPHEN ST.CROIX



Ever since that masterful edit, his privacy was all but forgotten.

Sound designer Leslie Shatz narrowly escapes camera barrage.

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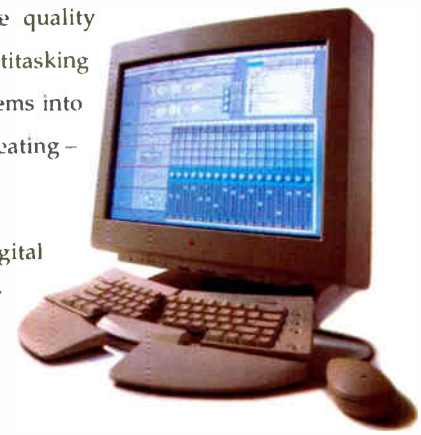

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Apollo 13 sound edited at Hastings Sound and Wonder Dog Music. *Dead Man Walking* sound edited at Hastings Sound.

you hear another one. Okay, your brain instantly says, "Mmm. Two tones. What is their relationship?" Now certain frequency differences produce no interesting answer to this neural question—but certain others *do*. If the two tones are a certain interval apart, the brain gets real interested, notifies the conscious mind to wake up and stand by, and wait for the next pitch. Somewhere in here, when there are enough pitches with the proper intervals in a sequence, it becomes "music."

We, as social beings, must for some reason actually be sensitive to these changes emotionally—and not to "non-musical" sequences. Look at the model: All of our sensory input systems have flaws and nonlinearities. The eyes are heavily weighted toward lime green, while our ears are subject to dramatic tilting of their frequency response as a function of age, or serious denting of that frequency response as a result of traumatic damage. And then there is the Fletcher-Munsen curve—the entire curve shape changes constantly as a function of amplitude.

But there seems to be something more to all this. Apparently, the ear (actually the ear-brain system) is nonlinear in other ways than just amplitude response curves as a function of frequency. In fact, it looks like there might be a specifically nonlinear *emotional* response map as well! There seem to be certain frequencies within the system's 20 to 20k Hz (yeah, right—if you are three) range that, if experienced in a certain relationship to other frequencies, in a particular sequence or pattern of frequencies, are found to be *extremely* pleasant. Further, it is common to experience memories—and both happy and sad emotions—when exposed to these certain frequencies in a certain order. There is some sort of trigger built in that links these tone sequences to events...if the sequences are "correct."

I am going to take you deeper into the human collectiveness (or accidentally reveal the true depth of my own warped vision of life...you decide).

If a sequence is not correct, it is extremely distasteful, to the point of the listener actually distorting his or her facial features to express their distaste for these mispositioned frequency events. So there must be points or grids or notches that these tones have to fall into to trigger positive responses. If you hit one, then you hit another one with the proper relationship, this happens. What is even more amazing is that it is *not* absolute. In fact, these hot points can be moved so the relationship of these frequencies stays the same, though the actual frequencies all change. So it is the first note that you hear that determines what you will expect next, or what will then be pleasing or not in that sequence.

We in the Great Western World Of Mickey-D and Mickey M have determined that there shall be 12 of these magic soul-seeking frequencies, and as many doubled and halved versions of these as we can hear. Other worlds

have decided that there are less or more, in some cases many, many more microtonal frequencies that are legitimate. But "they" also eat animals that we consider pets. I personally am more comfortable living within the minimalist Western provincial tonal world, and petting my pets.

And then it goes on. A pleasant event in one's life is very often linked not to a smell or a sight, but to a song heard at the time. People will relate that event to its song forever: "Oh! This is our song," or, "I heard this song when I spent the night out in the desert that one time." It is truly incredible that we have this built into us.

But the question is: why? Why would a creature incorporate a mechanism to respond emotionally to a sequence of tones? What the hell for? Unless, of course, it's the obvious; some year in the future a huge space ship will appear in our skies, gracefully land in the desert or on a popular beach somewhere, the door will open, some creature will come out, hold up a little tape recorder and play those tones, and we will all file in and become...dinner. I can't think of any other reason. It certainly is how I would do it if I were farming. I would start a colony on a planet and genetically code them with a response like this so I could easily round some up when my freezer got low.

Oh. Wait. There is just one more possibility (okay, I admit it's a *probability*). We attract mates with our song. Not as blatantly or beautifully as birds, but basically we all do (except, of course, some of the newer alternative bands). I think that's why Harleys work so well for this—it's the *sound.*

Why would a creature incorporate a mechanism to respond emotionally to a sequence of tones?

Now on to perfect pitch. I have always thought of perfect pitch as a blessing, a sort of mysterious gift. Sort of like being Kim Basinger—she is some other life form. I'm not Kim Basinger, but Kim Basinger apparently is. She's a superstar: She's up there, and I'm down here, and that's the way it is. And that's how I feel about absolute perfect pitch; it would be incredible, but I don't have it. There are some other life forms that do. These people look basically like me, but apparently they have a power I don't have. I have only relative perfect pitch, and that's it.

But in reality, absolute perfect pitch might be a curse. Maybe it's a defect, a shortcoming. Could it actually be the inability to slide or move those notches, those response positions? That might be the true curse of absolute perfect pitch. If the tones don't exactly hit these hardwired points, if they don't hit the right sequence in absolute terms, it is horribly uncomfortable for those afflicted with this disorder. These people often complain of it as a curse. They can't listen to a song on the radio if it has been wound up a shade to squeeze one more play into an hour. They can't tolerate working with VSO'd tracks. What does Doppler sound like to these poor unfortunates? Or low batteries in that cassette player strapped to them in the gym? Ick. ■

SSC has had a perfect pitch in his left ear ever since that marathon concert in 1967.

NEXT YEAR'S GEAR

THE NAME OF THE GAME

Maybe it's a sign of the inevitable depersonalization of a technological society, but have you noticed that these days some of our most advanced tools are being given "human" names? No longer satisfied to use numbers and those obscure, funny letters at the end of the alphabet, manufacturers are now taking real people's names and sticking them on products. I'm not talking about devices named after their inventors, like Neve, or Dolby, or Theremin, or even Joe Meek, who at least inspired the equipment that bears his name, even if he happened to expire a few decades before it was developed. What's bugging me is the names of historical figures being put onto equipment that has absolutely no connection to them.

For instance, what kind of audio gear should be called a "Mozart"? You might suppose that it would have to be something that can't be used by anyone over 35, that's producing fully-realized mixes almost before it leaves the factory, and that rolls a pair of dice to determine how the outputs will be configured. How about a "Hendrix"? Shouldn't whatever *that* is have THD figures up in four digits and be operated left-handed and upside-down while it's on fire? Or an "Einstein"? You'd think this would have some kind of mechanism that makes it heavier, and shorter, as the music gets faster.

BY PAUL D. LEHRMAN

And for that matter shouldn't the tempo of the music be totally different depending on where in the control room you're sitting? And there's something in the film world called a "Hitchcock"—my guess would be that it takes pictures of the operator and inserts them at random into the reels he or she is working on.

My confidential sources at LLP&P (LirpaLoof Projection and Prognostication) tell me that this trend will continue for some time, but it won't stop at historical figures. Contemporary personalities, and even some fictional ones, will also find their names on the audio and video equipment of the near future. In the interests of responsible journalism, I am now going to

ILLUSTRATION: CHARLIE POWELL

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break several punishable-by-death non-disclosure agreements to bring you news of these products. Here's what you can expect to see in the months to come—but please don't tell anyone where you got this information:

Clinton—A stereo image collapser, ensuring mono compatibility across an extremely wide spectrum. No matter which side an input comes in from—the far left, far right or anywhere in between—it emerges precisely centered. Has a unique self-erasing scribble strip: Any label you try to put on the unit has disappeared the next time you look at it. Reportedly supported by a number of foreign patents, but nobody knows for sure.

Hillary—An intelligent multifunction auxilliary unit, packaged with the above. Contains the "brains" of the duo, and some users live in fear that its networking and control functions could end up running their whole studio if the unit is not carefully monitored and kept in its place. Other users think that wouldn't be such a bad idea.

Rush—A unique signal processor, very popular with users having only one ear (and a corresponding volume of brain matter), that ignores anything even remotely near the left input. Outputs are parallel, and labelled "Right!" and "Ditto!" Extremely effective distortion algorithm, such that any data that goes in emerges completely unrecognizable and way, way out of phase. Unit is much bulkier than it needs to be, and output is unnecessarily loud. Inputs and outputs are XLR, but all internal circuitry is utterly unbalanced.

Shouldn't a "Hendrix" have THD figures up in four digits and be operated left-handed and upside-down while it's on fire?

Helms—A timing generator and corrector, based on a design that was popular in live minstrel shows before the age of television. The ultimate in "instant vintage" gear, it has a non-resettable internal clock that runs approximately 90 years slow, and it positively will not synchronize to, or even recognize, color video or blackburst. Circuitry is not flammable, yet it steadfastly supports its right to smoke. Available in white only, of course.

Perot—A dither generator that produces a strange kind of rabble-rousing noise-shaped signal. Has an advanced data-compression and simplification algorithm that can knock the most complex equations and formulas down to earthy and nonsensical homilies. Features a very attractive but totally misleading full-color display, and really wide stereo spread.

Vangogh—A stereo to mono convertor, very crude but highly effective. Direct interface with a Perot (above) not recommended.

Billgates—An all-purpose device that performs every function and operation you can think of in a studio, although it does none of them particularly well. Has a tendency to crowd out gear from competing manufacturers, and in some cases actually absorbs it.

Takes up more rackspace than you would believe possible. In spite of the fact that it runs far more sluggishly than other similar products, and its confusing front panel contains dozens of badly labelled controls that you will never use, will somehow become an industry standard. The initial price seems quite reasonable until you realize it exacts a small fee from every user each time you plug it in.

Kevorkian—An interruptible power supply for studios that are no longer functioning as well as you would like them to. Lets you "pull the plug" once and for all on unwanted vintage gear. Buyers should be warned that using it in some states may led to prosecution.

Madonna—Peculiar yet clever piece of gear that constantly re-invents itself in terms of appearance and functionality, so that every time you use it, you have no idea what it's going to do or what it looks like. (Manufacturer's previous model was "Bowie.") Requires extra front panel clearance for distinctive cone-shaped controls. Very cheap and flashy, but should manage to last long enough on the market to develop a patina of respectability.

Elvis—Reissue of long-discontinued vintage microphone preamplifier and sandwich maker, the original of which still shows up from time to time in out of the way studios, post-production facilities, supermarkets, fast-food restaurants and stamp collections. Available in three models, "Young," "Old" and "Really Decrepit."

Clemens—Highly accurate ultra-high-speed multimedia delivery system. Should give good service for a number of years, but then requires a very expensive upgrade. Next upgrade, for example, is priced at $24 million, and owners will discover afterwards that their systems will now only work in other people's studios.

Dr. Tim—Another reissue, this one a recently discontinued chemically-based reality transposer. Has three switches: power, frequency adjust, and momentary data loss. Original was unfathomably popular in the '60s, but when it was taken off the market all remaining units were shot off into space, or perhaps cyberspace.

Letterman—Latest model in a long line of popular workstations. Previous model, "Carson," was hailed for originality and inventiveness, but newest incarnation is surprisingly devoid of any interesting capabilities or content. Continued use of old, original algorithms may lead to tedium and force users to seek other tools. Advanced and highly lucrative—although unstable—networking capabilities. Actually very unfriendly to almost all input; what gets past the formidable set of filters is usually destroyed, while the user watches. Case made of pure, unalloyed irony. (More lightweight, slightly less expensive model, with fewer sharp edges, available as "Leno.")

Shaffer—Musical generation and accompaniment software for above workstation, which in spite of great technology, solid pedigree, intelligent programming, and brilliant add-ons, not to mention some of the hottest "guest" algorithms in the business, manages to make everything sound the same.

Ahnold—A digital delay line with exceptionally high feedback gain. It will be back. And it will not stop. Ever.

Cage—Random signal generator using extremely elaborate processes based on Eastern philosophies, which often result in no sound at all.

Picasso—Stereo image processor

—CONTINUED ON PAGE 251

Digital

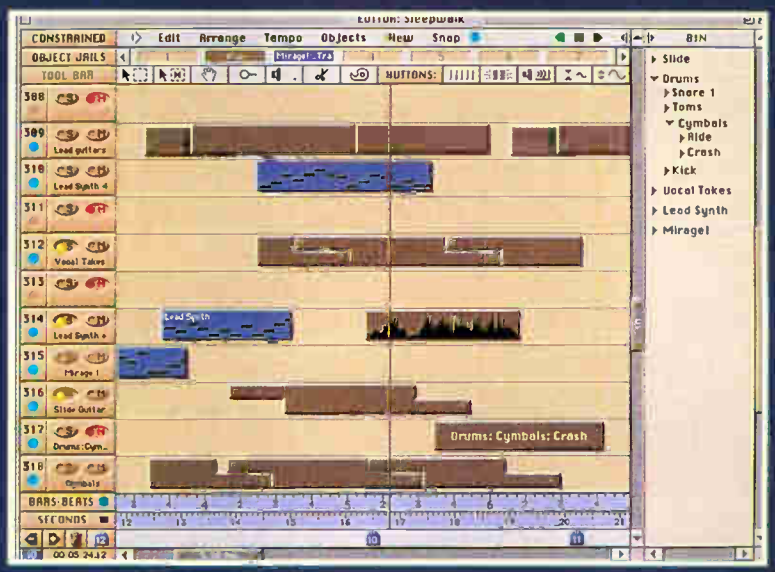
STEALS CENTER STAGE AT NAMM

Mackie Digital Console

The song remains the same, but technology marches forward. From January 16-19, 1997, a record 42,000-plus industry professionals made the annual trek to Anaheim, Calif., for the 1997 NAMM Show, put on by the National Association of Music Merchants. Originally a trade show where new musical instruments were unveiled to music store owners, dealers and distributors, NAMM has developed into a premier venue for unveiling new pro audio products. And this year's event did not disappoint.

BY GEORGE PETERSEN

Electro-Voice N/D 868



Ensoniq Paris

RØDE NT-1

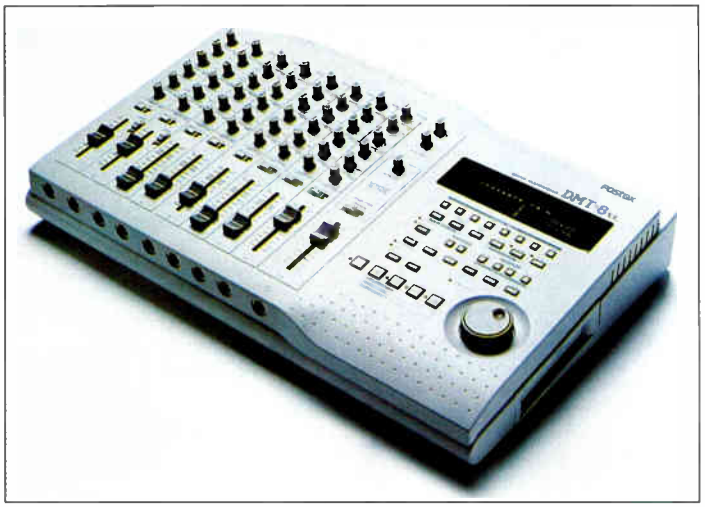
Yamaha A 3000

By far, the most talked about product at the show was the **Mackie** Digital 8-Bus Mixer. Slated to ship after mid-year, this 48x8x2 comes with 24 analog line tape inputs, 12 mic preamps, 4-band parametric EQ, meter bridge, 12 balanced aux sends/channel, ESAM II- and MMC-compatible transport control with push-button and jog wheel controls, remote track-arming from fader strips (or punch-in/out footswitch), joystick port for multichannel 7.1, 5.1 and LCRS panning, SMPTE location display, S/PDIF I/O and optional plug-in cards for up to 24 channels of ADAT, TDIF, AES/EBU or S/PDIF digital I/O. Based on Mackie's proven UltraMix software, the automation is extensive, with recall of every control (including headphone mixes) and 100mm long-throw moving faders and disk storage of mix data. And there are ports for connecting a QWERTY keyboard and VGA monitor for high-res display of all automation data, status, EQ curves, etc. The console's most unusual feature is an internal 33.6kB modem, for downloading software upgrades, third-party updates or auto-diagnostics via any phone line. Pricing is expected to be less than $8,000.

Those in the nondigital mixer camp may be interested in the VTC tube 8-bus console from

TL Audio (distributed by Sascom Marketing of Oakville, Ontario). Available in frame sizes from 16 to 56 channels, VTC is a fully modular, in-line design featuring 4-band EQ, one stereo and six mono aux sends, and faders on both channel and monitor pathways. Retail is approximately $1,000/channel; options include various patchbays, fader/mute automation and 8/16/24-channel expanders.

Those on smaller budgets may want to check out the **Alesis** (Los Angeles) Studio 32, a 16-channel, 4-bus, in-line board with 40 inputs on remix, all priced at an affordable $1,299. The console features 16 hybrid/discrete mic preamps, 3-band EQ with parametric mids, onboard power supply and direct outs on each channel.



Fostex DMT-8VL

WORKSTATIONS: FORGET EVERYTHING YOU THOUGHT YOU KNEW

Six months ago, the workstation market had seemingly leveled out, with a dozen or so manufacturers seeking niche markets. Now, two major new players have entered the market, and with numerous I/O cards now becoming available, the workstation world is going to get a lot more interesting in the months to come.

The workstation bargain of the show was Layla from **Event Electronics** (Santa Barbara, Calif.). Layla by Echo™ is essentially a 20-bit multitrack recording, editing and mixing system for the PC and Macintosh. The core Layla system ($999) comprises a PCI bus card (equipped with Motorola's powerful new 56301 chip for onboard DSP) and a rack-mount breakout box handling analog and S/PDIF digital audio I/O, word clock and MIDI sync connections. The system includes multitrack recording/editing software, although the hardware is compatible with various PC and Mac audio recording and editing software packages (except Digidesign).

Layla's rack box has 20-bit A/D and D/A converters on the eight balanced analog inputs and 10 balanced outputs. Simultaneous recording on all eight inputs is supported, while its OmniBus™ audio assignment architecture allows users to freely configure the outputs as monitor mixes, aux sends and discrete channel outs. S/PDIF I/O, with 24-bit resolution, is standard. If more tracks are required, the user merely plugs in a second PCI card and stacks another rack box, which slaves to the first at sample accuracy. The PC version of Layla ships next month; a Mac version is due this summer.

Paris from **Ensoniq** (Malvern, Pa.) is a modular 24-bit system that combines recording, editing, mixing and processing in a single disk-based environment. A basic system (priced from about $3,000) includes a PCI card, cross-platform software that can be run under MacOS or Windows 95/NT, hardware with 16 I/Os, and a control surface that includes 16 channel faders; master stereo fader; rotary controls for EQ, aux sends, pan and control room monitor level; jog/shuttle wheel; transport controls with autolocate; numeric keypad; and mute plus solo buttons. The system can be expanded with additional DSP cards and interface boxes for up to 128 I/O. Add-on modules will include analog I/O (XLR/TRS jacks), digital I/O (S/PDIF, AES/EBU, ADAT and TDIF) and SMPTE timecode units.

Paris' integral automated 128-track digital mixer offers dynamics processing, 4-band parametric EQ, aux sends and real-time effects, including highly realistic reverb based on Ensoniq's acclaimed DP-4 Series. Support for third-party plug-ins is also planned. Paris also supports the use of multiple cards to further extend real-time processing power and I/O capability.

A year ago, **Roland** (Los Angeles) took NAMM by storm with its VS-880 self-contained 8-track digital recorder/editor/mixer. But the new VS-880 V-Xpanded model ($2,695) takes this already-powerful box to the next step with a 1GB hard disk and Version 2 software. The latter adds an entire new bag of tricks, with mix automation, improved tempo mapping, better EQ, effects insert capabilities and faster audio editing. Ten new effects algorithms (when used with the VS8F Effects Expansion Board) include mic simulation (emulates the sound of expensive European microphones), voice transformer (gender and pitch shift effects), 19-band vocoder, hum canceler, Space Chorus, gated reverb and vocal canceler, for eliminating center-panned elements from existing material. VS-880 owners can upgrade to Version 2 for $125.

New from **Fostex** (Norwalk, Calif.) is the DMT-8VL hard disk digital multitrack recording/editing system ($1,295) with eight tracks of uncompressed, CD-quality audio, 18-bit ADCs and 20-bit DACs. Each input strip has 2-band EQ, aux send, stereo in-line monitor section and an 80mm fader. The DMT-8VL handles eight additional line inputs plus two stereo aux returns at mixdown, for a total of 20 mix inputs. Recording and edit operations are managed from a dedicated control surface and shuttle wheel.

There are plenty of MIDI users who don't have/need/want a computer-based system, so the MPC-2000 from **Akai** (Fort Worth, Texas) is an integrated sequencer/sampling drum machine that's the perfect solution for

Akai MPC-2000

The Logic System:

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Logic – The MIDI Masterpiece. The most integrated 960ppq real-time sequencer to date. Professional scoring and printing and a totally user definable interface. Unlimited virtual mixers and editors. Full automation, full SYSEX support and more.

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rap, hip hop or live performance applications. Priced at $1,495, the MPC-2000 combines a 64-track/100,000-note sequencer, 16-bit sampling engine (32-voice), and Akai's renowned pressure/velocity-sensitive finger pads for fast, creative production.

MONITORS: COMING ATTRACTIONS

Tannoy (distributed by TGI of Kitchener, Ontario) unveiled System 1000 ($1,795/pair) and 1200 ($2,495/pair) near/mid-field reference monitors. The combination of Tannoy's 10- or 12-inch dual-concentric DMT drivers and compact cabinets delivers high power-handling, low distortion and rock-solid, point-source imaging.

Hafler (Tempe, Ariz.) provided a sneak preview of its TRM-8 studio near-field speakers, which combine an 8-inch woofer, 1-inch waveguide tweeter and onboard bi-amplification in a vented cabinet. The internal 75- and 100-watt amps use Hafler's patented Trans-Nova design.

Expected this summer is the SMS™ Surround Monitoring System from **Alesis**. The SMS system includes two different models, a low-profile shielded speaker for the left/center/right channels and a wall-mountable surround speaker (a standard setup would include three LCR and two surround speakers). The LCR speaker has three response settings for approximating theater listening conditions. The surround speaker has settings to emulate Dolby Pro Logic and Dolby Digital/DTS playback curves.

MICS, MICS, MICS...

It never fails to amaze me how certain products run in cycles. For some reason, this time around it was kick drum mics! New dynamic entries in this genre include the **Audix** (Lake Forest, Calif.) D-4 priced at $299 and the **Electro-Voice** (Buchanan, Mich.) N/D 868, retailing at $370. Meanwhile, **K&K Sound** (Coos Bay, Ore.) has completed its line of drum mics with the Dyna B 07 ($269), designed specifically for kick miking. The ATM87R from **Audio-Technica** (Stow, Ohio) takes a slightly different approach: it's a condenser boundary mic designed specifically for high-SPL, low-frequency applications. List is $299.

Groove Tubes (Sylmar, Calif.) unveiled two new mics. The 5sc ($699) is a single-pattern (cardioid) condenser with a 1-inch diameter diaphragm, switchable highpass filter, -10dB pad, shock-mount and case. The 6™ sets a new price point for large-diameter capsule, 3-pattern (cardioid, omni, figure-8) condenser mics with tube electronics. Including hard case, shock-mount, cable and tube power supply, the 6 is a paltry $1,395. This one's a winner all around.

The **RØDE** NT-1 (distributed by Event Electronics, Santa Barbara, Calif.) is a large-diaphragm cardioid studio condenser mic. By cutting out some of the frills (no shock-mount, no changeable polar patterns), the mic is an affordable $499, with case.

KEYBOARDS AND ALL THAT

It's been awhile since anyone put out a serious combo organ product (the last ones that really got me going were Korg's BX3/CX3 in 1980). **Roland's** VK-7 ($2,495) is a 61-key model using "Virtual ToneWheel" technology to recreate the classic organ sounds of the '60s and '70s. VTW assigns 91 voices, which are in constant independent oscillation for a true sound. Nine harmonic bars and controls for key click noise, overdrive, digital reverb, vibrato to effects and tube amp simulation complete the effect. An orchestral voice section with strings, choir, electric piano, brass, bass and more are available for layering or keyboard splits. And, yeah, it's MIDI, and has really good onboard rotary speaker emulation based on composite object sound modeling. But coolest of all was an 11-pin output jack for connecting it to a real Leslie® cabinet.

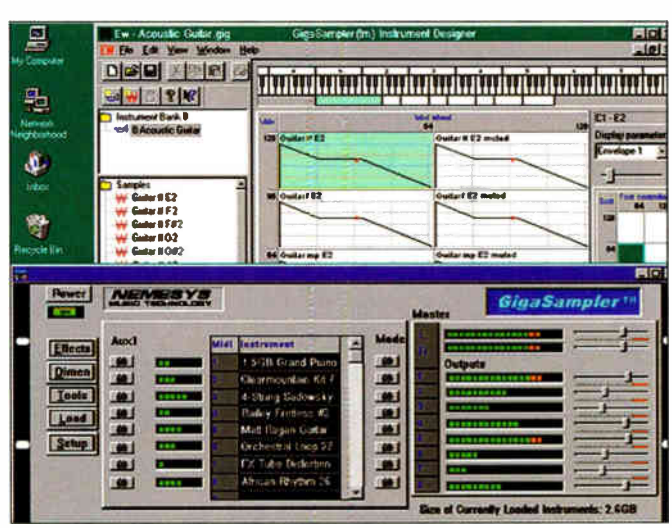
Alesis NanoSynth

Need a B3 sound, but on a budget? The $899 V5 organ module from **Voce** (Ridgefield Park, N.J.) puts tone wheel control and great organ presets into a compact MIDI-controlled module. And the company's Spin II rotary speaker simulator ($399) is housed in a fuzzbox-sized case, yet offers complete parameter control, speed and on/off footswitches, and natural-sounding speed ramp ups/downs. On the pro audio side, Voce is about to begin delivering a line of affordable, high-quality tube outboard gear, including compressors and mic preamps. We'll keep you posted.

Expanding the compressor and reverb offerings in its Nano Series, **Alesis** showed three mini-MIDI sound modules, each offering 64-voice stereo sounds from a one-third-rackspace chassis. NanoSynth ($499) has 8 MB of sounds—512 preset programs and space for 128 user settings. The $399 NanoPiano has 512 presets with acoustic and electric pianos (with or without layered strings), vocals and pads. NanoBass ($299) has 256 preset acoustic, electric and synth basses.

GigaSample from **Nemesys**, (Cedar Park, TX) and **East-West**, (Beverly Hills, CA), is a system that uses a clever cache scheme that somehow sidesteps the prob-

Nemesys GigaSample



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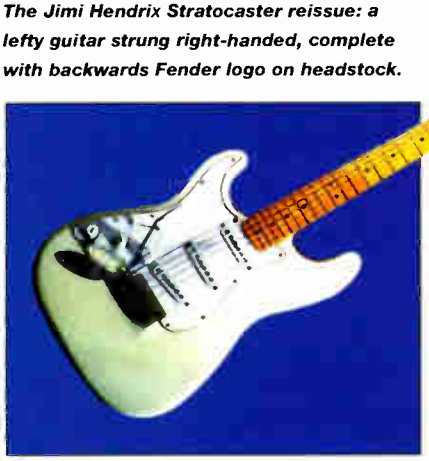
lem of RAM limitations to play samples directly from hard disk. At NAMM, the companies demo'd a 1.5GB (!) sampled Steinway directly from disk, with no latency or delay time. GigaSample will initially be available as a $10,000 turnkey system, with a software-only PC system to come in the future.

Yamaha (Buena Park, Calif.) is back in the sampler business. Housed in a two-rackspace chassis, the new A3000 features 64-note polyphony, three effects blocks for each program, 4-band EQ, onboard sequencing and expandability to 128 MB using 72-pin SIMMs. Retail is $1,700. Options include an internal hard disk, SCSI interface, up to 12 analog outputs and S/PDIF I/O. But best of all, it offers a clever, user-friendly interface based on five rotary knob/push-switches, making parameter tweaking and voice editing an almost fun process.

A must see: **Fender's** Jimi Hendrix memorabilia exhibit, with original guitars, amps, posters, lyrics and clothes from the great one. Today, 30 years after the debut of *Are You Experienced?*, this man's studio brilliance and guitar wizardry remain as fresh as ever. And the grace, power and absolute soul of Jimi's playing will never be equaled. But the reason behind Fender's exhibit was to launch "The Jimi Hendrix Stratocaster," now available as a special reissue model, complete with left-hand body and neck flipped over and restrung for right-handed players. And the controls, whammy bar, and wrong-side body cutout are exactly in those awkward positions that Jimi had to endure as a southpaw player in a world where decent left-handed guitars are a rare exception. The Fender Stratocaster is one of the greatest achievements in guitar history, but this reissue is merely silly.

The Jimi Hendrix Stratocaster reissue: a lefty guitar strung right-handed, complete with backwards Fender logo on headstock.



CELEBRATE!

Traditionally, NAMM has always been the site of good parties, with ample concerts and events providing the backdrop for socializing and schmoozing in the wee hours of the morning. *Mix* magazine is 20 this year, and Crown International can now claim a half-century of excellence, as can AKG. Companies beginning their 25th year in 1997 include Audio-Technica U.S., CAE/LittLite, E-mu Systems and Roland. And still a year from the Sweet 16 mark, Fostex turns 15 this year.

Mark Frink continues our NAMM coverage elsewhere in this issue, with the show's sound reinforcement product hits. In other news, the expansion of the Anaheim Convention Center is slated to begin later this year, so NAMM will move to the Los Angeles Convention Center for the Winter 1998 and 1999 seasons, returning to the land of Disney in 2000. It's a long way off, but in the meantime, pencil in July 11-13, 1997, as Summer NAMM returns to Nashville. See you there! ■

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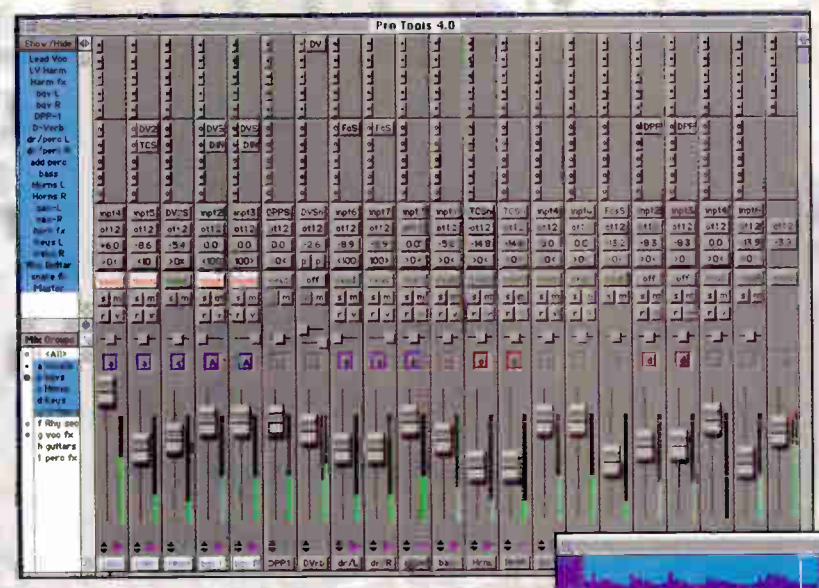
Music & Software Hardware Hits

AT WINTER NAMM

BY SARAH JONES

Good news for budget-minded musicians: Digital technology is getting cheaper, as Winter NAMM offered new product versions with improved performance and expanded features at the same or lower prices as their predecessors. The technology buzz at the show focused on software emulation, acoustic modeling and third-party development—plug-ins, plug-ins, plug-ins. Here are some of the products that made the biggest impact at NAMM.

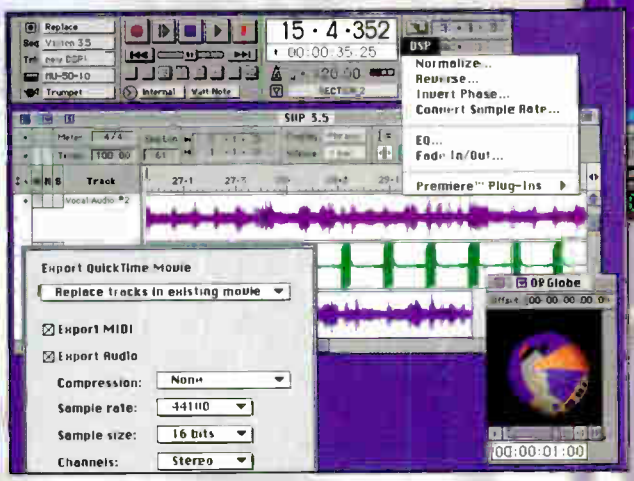
Emagic's (Grass Valley, Calif.) impressive entry into the hardware market is Audiowerk8, a PCI card with two analog ins (converters are 18-bit), eight discrete outs, S/PDIF I/O and full compatibility with MacOS and Windows95. Audiowerk8 ships with easy-to-use VMR (Virtual Multitrack Recorder) control software, and, of course, it's compatible with Logic Audio. Perhaps most impressive is the price: $799.



Pro Tools 4.0 from Digidesign offers new fader structure options and an improved interface.

BIAS' SFX Machine lets you save modular synth/multi-effect parameter settings as presets.

Opcode's Vision 3.5 is PowerPC native and supports QuickTime files.



By the time you read this, Digidesign's (Palo Alto, Calif.) Pro Tools 4.0 should be shipping. New features in the PowerPC-native 4.0 include expanded automation capabilities, more EDL editing features, new fader structure options and a fresh-looking interface with plasma-style metering. Call Digidesign at 800/333-2137 to order a free demo video. Digidesign also introduced its newest, albeit sort of retro, TDM plug-in package, the LoFi/SciFi family ($395). LoFi offers controlled, creative degradation (yes, degradation) of audio quality through bit-rate reduction and distortion—great for those trip-hop tracks. SciFi emulates analog synth-type effects using ring modulation, frequency modulation and variable frequency resonators. And it's a lot lighter than an ARP.

Steinberg North America (Chatsworth, Calif.) announced that Cubase VST technology has gone multiplatform—the virtual studio is now implemented on PowerMac, Windows95 and Silicon Graphics systems. VST 3.02 (starts at $399) includes up to 32 tracks of digital audio, up to 128 real-time EQs, open plug-in interface and complete Cubase MIDI and scoring. Also debuting was Cubasis AV, an entry-level recording/editing tool co-developed with Apple.

Soundscape (Cardiff, UK) introduced Version 2.0

SSHDR-1 software, offering numerous new features including expandability to 128 physical tracks (256 virtual tracks) up to 192 physical outputs, customizable digital mixer featuring 16 internal buses, fully parametric EQ and an "audio toolbox" with chorus, flanger, multi-tap delay and more. New hardware includes the SSAC-1, with enhanced processing, an expansion port to a 512-channel audio bus and TDIF interface; and the SS810-1, with 10 inputs/12 outputs, ADAT/TDIF digital I/O, 20-bit Crystal ADCs/DACs and word clock in/out.

Plymouth, Minn.-based **Digital Audio Labs** announced its long-awaited V8 is shipping! V8 is a PC-based system of audio cards, ADAT and DA-88 interfaces, digital and analog I/O modules, and peripherals that, combined with third-party software, form a highly customizable 16-track workstation. For prices, visit www.digitalaudio.com.

The newly merged **Voyetra Technologies** (Yonkers, N.Y.) and **Turtle Beach Systems** showcased Turtle Beach's MultiSound Pro Series: products combining Turtle Beach's PC audio hardware and Voyetra's audio software applications and utilities. The MultiSound Fiji™ card ($299) features 20-bit ADC/DACs and Turtle Beach's Hurricane™ architecture. The MultiSound Pinnacle™ ($429) adds the Kurzweil MASS[ies]™ wavetable synth engine for MIDI synthesis. Bundled with both boards is Voyetra's Digital Orchestrator Plus™ SE digital audio/MIDI sequencer software.

Cool Edit Pro, the new multitrack (up to 64 tracks!) version of **Syntrillium Software**'s (Phoenix, Ariz.) popular Cool Edit 96 shareware application, is a digital audio recorder/editor/mixer for Windows; it lets you record, play and edit files up to 2 GB, in any of more than 25 formats. Built in are noise reduction features and effects such as 3D echo, pitch and tempo change. Shipping this month at $399.

Metalithic Systems (Sausalito, Calif.) unveiled Digital Wings for Audio Version 1.3, now with multiple levels of undo, 2-channel mixdown for mastering, waveform view, MIDI master/slave option and 33 MB of bonus samples. And if that's not enough, the price has dropped to $1,195 (8-in/8-out breakout box with S/PDIF I/O is $795 extra).

The PCI24 from **Lucid Technology** (Edmonds, Wash.) is a 2-channel PCI audio I/O card for Mac and Windows. The PCI24 transfers digital audio in either AES/EBU or S/PDIF format, and features real-time sample rate conversion; the card couples to external DACs and ADCs or DAT recorders. Retail is $499.

Sonorus (New York City) announced the release of STUDI/O™, a PCI card providing a 16-channel digital audio interface for PC-based workstations. STUDI/O includes two 8-channel ADAT optical interfaces (software-configurable for S/PDIF I/O) and an analog monitor output. Available this summer, for $989.

Zefiro Acoustics' (Irvine, Calif.) ZA2 is a 2-channel ISA interface card for PCs. The ZA2 can simultaneously record and playback to any device using S/PDIF (TosLink or co-ax) or AES/EBU interfaces. Using Windows95 or NT drivers, dual ZA2 cards can be used in a single system for 4-track recording or playback. Retail: $495.

Arcadia, Calif.-based **MIDIMAN** showed its Dman 2-channel card for hard disk recording that can be used together with a program like SAW+, Samplitude, Cakewalk Pro Audio or Logic Audio to multitrack on your PC. Add the EQ-man stereo graphic equalizer for control over both tracking and mixing, or even automating EQ in mixes.

DSP WORLD

Berkley Integrated Audio Software (Sausalito, Calif.) introduced the SFX Machine—a combination modular synthesis/multi-effects plug-in for the BIAS Peak. For each of its eight stereo modules, SFX Machine lets you select from nine sources, apply any of 11 DSP algorithms and then perform any of 13 modulations to create multilayered effects. Use one of the many presets, create your own settings, or "randomize" and see what you come up with. And it's only $299.

CreamWare (U.S. offices in Sumas, Wash.) debuted the FireWalkers plug-in, a set of eight real-time DSP modules featuring 8-band parametric EQ, graphic FFT analyzer, effects including multi-modulation chorus, stereo flanger and pan modulator, and a signal generator, transposer and high-resolution VU meter. Designed for tripleDAT and the new MasterPort ($998) PC audio card, the FireWalkers plug-in set lists for $498.

PurePitch from Wave Mechanics (distributed by Wave Distribution,West Milford, N.J.) is the first real-time, formant-preserving pitch shifter for Pro Tools. Created by Eventide H3000 co-developer and Wave Mechanics founder Ken Bogdanowicz, PurePitch creates natural-sounding harmonization and pitch correction by compensating for the changes in formants that occur naturally in the human voice.

Barcelona-based **DUY, S.A.** showed five DSP plug-ins for Digidesign's TDM Bus and Sound Designer II. DaD Valve simulates a classic valve sound, with 1,600 configurations including optimized responses for 38 different instruments. DUY Shape uses a 3-band filter with continuous crossover points and three independent user-defined Shaper curves for dynamic/frequency enhancement. Digital DeClicker removes pops and clicks, operating independently of content. DUY Wide is a multichannel spatial enhancer; and Max DUY performs sound level maximizing based on DUY's exclusive Intelligent Level Optimization algorithm. Visit www.duy.es for more information.

Steinberg (Los Angeles) showed Red Valve It, a "virtual tube amp" TDM plug-in. Red Valve It combines a speaker emulation with a preamp comprising a drive section, 3-band EQ and gate. Tube models are implemented in the input stage and in the drive section, and processing is 24-bit. MSRP: $399.

Waves Ltd. (Knoxville, Tenn.) announced the PAZ PsychoAcoustic Analyzer, a new plug-in designed to create an accurate visualization of the psychoacoustic experience by providing an accurate frequency analysis (includes weighted curves), stereo display with polar coordinates, and loudness/peak metering. It's available in the TDM and MultiRack RealTime DSP/SDII bundles. Additionally, Waves' TDM plug-in bundle includes more plug-ins for the same price of $2,300; the MultiRack bundle, at $1,200, offers more plug-ins at $450 less than the previous bundle.

INTERNETTING

Headspace (San Mateo, Calif.), a music software company co-founded by Thomas Dolby, introduced Beatnik, a Web-based software system for creation and playback of interactive music. The system includes the Beatnik Editor, for importing music and sound and customizing it for efficient delivery over the Net; the Beatnik Browser plug-in to manage playback; and the Beatnik Web site, where musicians and content designers can exchange code and showcase work. JavaScript functions allow for a personalized musical experience, and Beatnik outputs music in Headspace's

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Berkeley, Calif.-based **Wildcat Canyon Software** debuted the Internet Music Kit, a program that provides a three-step process for creating, translating and embedding MIDI files onto a Web page, using Wildcat's WebTracks technology for playback. The basic kit is $49; a Deluxe version including a professional composition program, is $119. Also, Wildcat's Autoscore sequencing/notation software ($150) will recognize whatever you sing or play into the system and notate it in real time.

SEQUENCERS, NOTATION AND MORE

Sequencers are getting more sophisticated: **Passport Designs** (Foster City, Calif.) showed Master Tracks Pro Audio, a product that combines IQS™ SAW SE™ digital audio system with Passport's own Master Tracks Pro MIDI sequencer. This modular system for Windows allows the editing of sound files, synching with MIDI sequencing and linking to the Net—a great value at $249.

Opcode (Palo Alto, Calif.) debuted Vision Version 3.5 at the show. Vision is now PowerPC native and offers several new DSP features including Sample Rate Convert, Invert Phase, EQ, Normalize and Fade In/Out; also new in 3.5 is support of QuickTime files, Adobe plug-ins and all major audio files. A bonus: the price dropped $100 to $395. In other Opcode news, Overture Version 2.0 notation software boasts more than 100 new features, including PostScript drawing tools, automated MIDI and music management, Smart Guitar Tablature™ and a jazz articulation palette. Retail is $494.

Cakewalk's (Watertown, Mass.) Pro Audio 6.0, introduced at NAMM, furthers the company's commitment to integrate third-party software by supporting Microsoft ActiveX open standard for streaming audio and video media. Pro Audio 6.0 offers some of its own new ActiveX real-time DSP commands including pitch-to-MIDI translation, pitch shifting, time translation, and reverb, chorus and delay effects.

Also supporting ActiveX is **Sonic Foundry's** (Madison, Wis.) Sound Forge 4.0. In addition, Sound Forge 4.0 supports RealAudio 3.0 and includes a preset manager, nondestructive cut list, a noise reduction plug-in that will keep residual sound only (useful in forensics) and real-time monitoring of

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www.digidesign.com

Playback and Record for the Spectrum Analysis plug-in display. Download a free update from www. sfoundry.com. New plug-ins from Sonic Foundry include CD Architect, offering extensive PQ editing; and the Acoustics Modeler plug-in, which models the acoustics of real environments and recording devices. Look for the new Waves Native Power Pack for Sound Forge.

Mark of the Unicorn's (Cambridge, Mass.) FreeStyle Version 2.0, new at NAMM, automatically senses the tempo of music played into the system and lines up bar lines to produce editable notation. Users can drag barlines and beats, and even tap along with a rubato performance to identify beats. FreeStyle 2.0 also lets you insert meter and key changes, and draw tempo changes with a mouse. Lists for $199. Also, Digital Performer Version 2.0, featuring Power-PC-native code, sample rate conversion and PureDSP, is available at $895.

For those looking for the fanciest, schmanciest notation package, **Sibelius Software**, based in Cambridge, UK, made its U.S. debut with the introduction of Sibelius 7, an amazingly fast, publishing-quality music notation system already in place at institutions such as the Royal Academy of Music and Julliard. Sibelius 7 takes advantage of a RISC microprocessor (the package will only run on an Acorn system) to perform tasks such as part extraction and reformatting—resizing staves or even pages—almost instantly. Sibelius 7 software retails at $1,499; the Acorn system runs around $1,999.

Coda Music Technology (Eden Prairie, Minn.) introduced Vivace, a practice tool for musicians that combines a synthesizer/sound card and a pitch-to-MIDI converter with a modular hardware control system to provide Intelligent Accompaniment™—following tempo—for soloists. Vivace's repertoire catalog includes more than 1,100 titles. Systems start at $499.

Vancouver-based **Justonic Tuning's** Pitch Palette is the Rolls Royce of tuners. This software will analyze the harmonic content of each note played by an electronic/fixed-pitch instrument and—via a huge menu of historical and international scale temperment options (including floating or stable tonal center, microtuning and user-defined settings)—let you customize the intonation. $199 for the PC version; a Mac version is planned.

A cool new feature of **PG Music's** (Buffalo, N.Y.) "Band-in-a-Box" Version 7.0 is Automatic Soloing, which generates solos over MIDI jazz arrangements and displays the notes onscreen. Pick from a menu of more than 100 "soloists" such as Django Reinhardt and John Coltrane, and define parameters such as Range, Phrasing and the very 'Trane "Outside." Prices start at $189 (upgrades start at $49).

For the one-stop shopper, **Rack Mount Solutions** (distributed by Wave Distribution of West Milford, N.J.) offers the StudioPC, an IBM-compatible computer designed for music production/recording. The Windows95/Pentium-based system is preconfigured for Digidesign's Session 8 system. It's housed in a 19-inch rack-mount chassis, with shock-mount drive bays. Options include CD-R, Jaz and SCSI Barracuda drives; and several RAM, hard drive and video options. A variety of front panels, including Chrome, Classic Tweed and Snakeskin, accessorize any fashionable studio. Look for a Mac version later this year. ■

Sarah Jones is an assistant editor at Mix.

We made the console,

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● "I just sold my Mackie 8-bus and purchased the new Ghost console. The difference is amazing. The Ghost is the warmest sounding board I've ever used." - Mike Perkin (The Lab Recording Studio, Emmaus, Pa)

● "I replaced a console that was more than 3 times the price, and got a quieter, more transparent, and sweeter sounding console! Big console feel, with an amazing price!" - Kurt Bevers, Brownell Sound, Oregon.

● "An incredibly musical console, ultra flexible with a real usable EQ. It is absolutely the best sounding project studio board that I've heard". - Howard Givens, Spotted Peccary Studios."

● "I love the desk, the EQ is just marvellous. Ghost is the best 8 bus recording desk on the market." - Lee Hamblyn, Engineer.

● "Intuitive handling, flexible routing, great Soundcraft sound." - Melvin Fernandes, Recording Engineer, CMM Studios, India.

● "I use the Ghost for several radio shows doing live performances. The EQ is amazing, I'm on air in 5 minutes! Doing dance stuff is one, doing live stuff is another. But I use only one board for both of them, The Soundcraft Ghost." - Barney Broomer, Sonic One Rotterdam.

● "Base of operation and the numerous in-line inputs for my synthesizers and samplers is why I purchased the Soundcraft Ghost console." - says President of Saban Entertainment and producer of Mighty Morphin Power Rangers Shuki Levy.

● "I didn't know how useful mute groups could be and how good the EQ had to be until we used the Soundcraft Ghost." - Stefaan Windey, La Linea Musicproductions b.v.b.a., Belgium.

● "It sounds great and the EQ is very precise which makes it very easy to pin-point the frequencies I need to work on. Ghost enables me to finish mixes on the console at home, without having to use any other studio." - Phil Kelsey (Remix Engineer)

● "The console is very user-friendly and is constructed so well that it can easily withstand the rigors of even the most hectic of production schedules." - Corey Dissin, Producer at Paul Turner Productions.

● "Both myself and our Production Director Jeff Thomas used the console for PowerStation and were equally very, very impressed. For the money, the console is fantastically versatile, has good headroom and a very impressive EQ." - Alex Lakey (Engineer for PowerStation)

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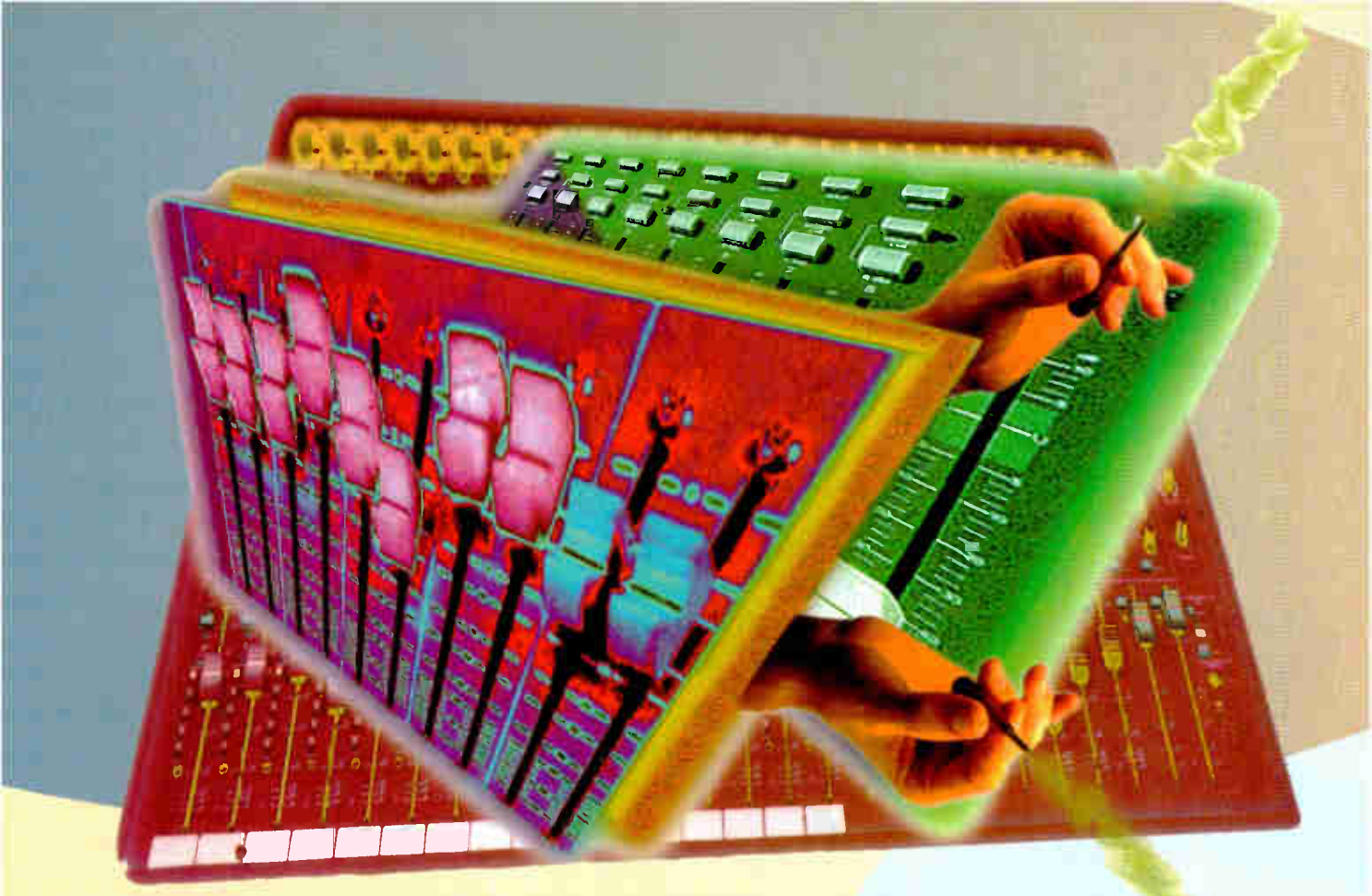

EIGHT-BUS

AT ONE TIME, BUYING AN 8-BUS CONSOLE WAS A RELATIVELY SIMPLE TASK. Manufacturers were few and options were minimal. Today, there are dozens of models available from a variety of manufacturers, and several 8-bus digital consoles are either shipping (RSP/Rocktron, Soundtracs and Yamaha) or slated for introduction later this year (Mackie, Tascam and a few yet-to-be made public). Whether you're looking for a board in the $3,500 or $35,000 price range, the selection process takes some time—even for experienced professionals.

The first step is determining your needs. Fortunately, 8-bus consoles are well-suited to typical 8-, 16- and 24-track production tasks, and there is no necessary correlation between the number of available output buses (groups) and the number of recording tracks. To be sure, extra buses can simplify certain tracking and mixing operations, yet there are few real-world situations that cannot be handled with a well-designed 8-bus board, especially when combined with direct channel outputs and a flexible patchbay.

I've often observed tracking sessions where a lazy (or unknowing) recording engineer ran every channel going to tape through the buses—including mono feeds such as bass guitar, kick drum and lead vocal—thus subjecting the signal to a longer signal path, more amps and more noise. A simple patch cord from the channel's direct output to the tape's track input would result in a cleaner, punchier signal, with minimal effort from the engineer. In such cases, an 8-bus board with patchbay (internal or external) could sonically outperform a non-patchbay 16- or 24-bus board and offer more versatility as a bonus.

(At the same time, let's not completely ignore 4-bus boards. I've cut some really fine albums on 2-bus and 4-bus boards. Most manufacturers build less-expensive 4-bus versions of their 8-bus boards: If you're on a tight budget, these are worth considering.)

A major decision is whether to buy a modular or one-piece mixer. The additional flexibility of a modular design—with its interchangeable input, output, channel and effects return modules—is accompanied by an equally significant increase in price, as compared to a similarly equipped, nonmodular board. However, modularity allows buyers to custom-configure mixers to fit particular

ILLUSTRATION: TIM GLEASON

needs. For example, if your application requires a lot of stereo sources, then stereo modules may fit the bill, in less space and at a lower cost than two mono modules. And many console manufacturers have recently begun offering "standard" and "deluxe" modules, the latter usually providing amenities such as improved EQ, phase-reverse switching or more sends than the standard version.

"Shortloading"—another advantage of modular consoles—involves buying a console frame that's larger than your present needs dictate. For example, a shortloaded 40-channel frame may only have 32 channel modules, with blank panels inserted into the remaining eight slots. Shortloading not only allows for future expansion but also reduces a console's original purchase price. And some nonmodular mixers have optional expander sections (usually in 8-channel increments) for increasing console capacity. However, keep an eye on the future availability of modules or expander sections, especially if you hear any rumors about the manufacturer discontinuing the model you bought.

Ironically, something as simple as the width of the channel sections can play a major role in determining console ergonomics. The knobs, switches and faders in a board with wide channel strips may be easier to find and access during a hurried session; at the same time, such wider channels can increase the overall size of the board by as much as 50% over more compact designs. Either way you look at it, this is a trade-off in size vs. ergonomics, and your own work habits may dictate which is the more appropriate. As a means of saving space, some consoles also employ concentric controls—usually in EQ sections and/or aux sends; again, these represent another trade-off to be considered in the size vs. function debate.

In terms of inputs, the old rule of thumb—needing 1.5 times as many inputs as tape tracks—has long since become obsolete. With racks full of stereo signal processors, and the availability of MIDI instruments and disk-based virtual tracks, even a basic 8- or 16-track studio may require 48 or 64 channels when mixing. If in doubt, and you have the cash, buying a slightly larger mixer than you think you'll need is often a good idea.

Effects return modules pack a lot of line-level inputs in a small amount of space, which is just the ticket for most project studios. These are typically available with two, four or eight inputs; however, when compared to channel inputs, effects returns are fairly limited in terms of equalization, sends and solo/mute capabilities.

Along with the need for Inputs! Inputs! Inputs!, consoles now also require Sends! Sends! Sends!, and the once-standard complement of two or three effects sends is considered *passé* by modern production standards. Today, six, eight or more aux sends are pretty much the norm. Here are a few things to watch—or watch out—for:

- The presence (or absence) of concentric controls, especially when you have to access the lower control in a concentric knob pair.
- Switches for changing the auxiliaries from pre- to

MAKING THE RIGHT CHOICE

Consoles

BY GEORGE PETERSEN

THERE ARE FEW REAL-WORLD SITUATIONS THAT CANNOT BE HANDLED WITH A WELL-DESIGNED 8-BUS BOARD.

GOING DIGITAL . . . TODAY OR TOMORROW?

At the supermarket, the "paper or plastic?" decision is fairly simple, but when it comes to consoles, the "analog or digital?" question requires some serious thought. The easy answer is obviously to go digital, as this is the direction the industry is heading in. Yet while digital consoles offer many advantages, they also have their drawbacks.

Technology is changing at a rapid pace. Will the digital console you buy today keep up with tomorrow's digital products? If 96kHz, 32-bit recorders with IEEE 1394 ("Firewire") ports somehow become available and affordable a year from now, connecting the deck to an analog console may be easier than interfacing to a 20-bit digital mixer. This may be a far-flung example, but it is something to keep in mind. Remember, it wasn't too long ago that 66 MHz CPUs were state of the art...

At the same time, today's low-cost, 8-bus digital consoles offer a lot of performance for a price that can't be matched in an analog board for under $100,000. Once considered frills for the rich and famous, even the most affordable digital consoles typically provide moving fader automation, instantaneous reset of all console parameters, programmable, fully parametric equalization and noise gates on all channels.

Signal processing is often standard on digital consoles, but how difficult is it to integrate favorite analog I/O devices to your new digital wonder? But—if desired—can all the aux sends be used to control external outboard gear, or are certain aux sends "locked" into use only with the onboard DSP?

A major consideration with digital consoles is ergonomics. Most digital boards have some sort of central channel control section, with a single set of EQ controls that can be assigned to any channel. In operation, such approaches are easy to get used to, while keeping the engineer in the sweet spot for critical listening. Another plus of many digital consoles is their compact size, but if this goal is achieved by eliminating too many of the console controls, you may find yourself scrolling through endless screens of console parameters or banks of soft knobs to find the control you need.

The best console of all is one that strikes a balance of accessibility of features without becoming too cluttered, but here, this is a matter of personal choice and deciding how any mixer design fits into your working style.

—*George Petersen*

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Once the domain of over-$100,000 boards, moving fader automation has begun appearing on 8-bus mixer designs.

post-fader operation. This feature adds flexibility at the mix, when pre-fader sends are of little value.

• Pre/post-EQ switching on aux sends. Some input modules include internal switches or jumpers that allow the user to configure the sends to be routed either before or after the EQ section.

• Switched pairs of aux sends. Some consoles cut costs (and/or space requirements) by installing a switch that routes a pair of aux controls to a specific numbered pair of aux buses. For example, a console with six aux buses might have only four aux-send knobs, with a switch that converts the 3-4 aux sends to become a 5-6 aux pair. The board may truly have six aux sends, as claimed; however, only four may be active on any channel input at one time.

Regarding design philosophies, recording consoles fall into two basic categories: "split" or "in-line" monitoring sections. The split approach incorporates a separate tape monitor section, usually located on the opposite side of the master section from the inputs. Developed in the early 1970s by MCI, the in-line console places all input, tape monitor and output controls for one audio channel within a single module. By their nature, in-line consoles have dual inputs within a single module, thus doubling the number of available inputs during the mix phase. Many in-line designs also provide switching that allows part or all of the main EQ to be assigned to either of the module's signal paths. The signal paths in most split consoles are easier to follow, and the tape monitor section can double as extra inputs during mixdown.

When it comes to inputs, the in-line board usually gets the edge: For example, a typical 32-input by 24-monitor split console provides 56 (32 + 24) inputs on remix; a 32-channel in-line board would provide 64 (32 + 32) inputs on remix. Both styles of consoles have their fans and detractors in the recording community; what works best for you is largely a personal preference.

Patchbays offer more food for thought in the console decision-making process. These can be either right- or left-side mounted and integrated into the console or located elsewhere. Once the norm, console patchbays with ¼-inch TRS jacks now compete with units fitted with the more compact TT (Tiny Telephone) jacks. An in-console patch bay is not inexpensive, but in terms of future production convenience and the elimination of installation hassles, this is one option that you will never regret ordering. And while you're at it, don't forget to budget for high-quality patch cords in a variety of lengths.

Another consideration that's frequently overlooked is multitrack-to-console interfacing: Most modular digital multitracks require cables with either EDAC or D25 sub terminations on one

end and either XLR or TRS ¼-inch on the other, in order to provide +4dB, balanced line interfacing. But before ordering cables, you'd better know whether the console you're considering handles balanced +4dB signals. While such interfacing offers longer cable runs with greater immunity to hum and noise, using the MDM's -10dB connections may be preferable if most or all of your outboard gear is the unbalanced -10dB type. Paradoxically, a pro console running balanced +4dB levels on all line inputs/outputs may not be as good a choice in that particular situation.

In terms of equalization, switches that take the EQ out of the signal path are essential, while true parametric equalizers (those having continuous control of gain, frequency and bandwidth) are virtually unknown in analog consoles in the under-$25,000 price range. More commonly encountered are equalizers with low- and high-frequency shelving characteristics, combined with sweepable (continuously variable control of frequency) midrange sections. Such equalizers are fine for most purposes: The shelving LF/HF sections are generally quite smooth and impart less phase distortion than sweepable types, and I rarely use much console equalization anyway, usually deferring such processing to a couple of outboard filter sets for surgical correction and to some tube gear for that warm, fuzzy sound.

If you're really hung up about EQ, then go out and get some nice external units to supplement the console. If your mixes require having all 24 or 32 console EQs active, then you're probably doing something wrong somewhere along the way. Equalization is to engineering what spices are to cooking: a little goes a long way.

Automation is a matter of personal preference, as systems can range from simple MIDI control of console muting to a full-blown package handling mutes, function switching and faders. Today's console buyer can select from proprietary systems provided by the mixer manufacturer or from a number of third-party suppliers. Meanwhile, VCA systems have taken advantage of PC-based hardware to offer flexible, user-friendly, cost-efficient packages. And once the exclusive domain of over-$100,000 boards, moving fader automation has begun appearing on affordable 8-bus mixer designs. Even if you don't have the money for automation now, find out whether the console you're considering will support retrofit automation packages, should you decide to upgrade at some future date.

But before you buy any console—analog or digital—be prepared to spend some time critically listening to the mixer's sound, especially in terms of the equalization sections. No matter how expensive or well-designed, no equalizer sounds completely neutral, and the coloration—or lack of coloration—that the EQ imparts on the signal is what gives it character. Before buying, bring some tapes or CDs of audio signals you know and really listen to the sound of the mixer to see how it fits into your musical aspirations. If the sound is right, the price is reasonable and the product offers the right combination of features and functions, then you've probably found the right mixer for your needs. ■

Mix *editor George Petersen lives in a Victorian home on an island in San Francisco Bay. When not writing about or producing audio, he authors technical manuals on industrial safety, OSHA law and toxic waste handling.*

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Different Fur Recording 25 and Counting

BY MAUREEN DRONEY

1985: change of ownership signing. (L to R) Pat Gleeson, Susan Skaggs and Howard Johnston

Staying alive for 25 years is a major feat for any business. For an independent music-recording studio, it's closer to a miracle. San Francisco's Different Fur Ltd. is one of the select few that has managed to do just that, celebrating its silver anniversary last year. Unlike some studios that tend to specialize in a certain style of music, Fur has been home to a rather amazing variety of independent-minded and cutting-edge artists, from Herbie Hancock, Brian Eno and the Kronos Quartet to George Winston, Bobby McFerrin, Faith No More and Primus. There's always been a certain kind of hip vibe about the place that attracted creative types—a vibe that comes from an appreciation for original and unusual talent and the willingness to nurture it.

The main control room (above) and studio (right)

Left: Patrick and Pat Gleason. Below: Randy Newman and Mark Knopfler while on promotion tour in 1988.

Huey Lewis & The News recording session

Tom Lord-Alge (second from left) and Starship with Susan Skaggs

Howard Johnston and Susan Skaggs

Control room as it appeared on cover of Mix magazine in 1987, with Joan Jeanrenaud of the Kronos Quartet

Different Fur Studio 1979: John Storyk-designed control room with Harrison 4032 console

It's not too surprising that Fur has made so many artists feel comfortable; look back to its beginnings and you'll find a unique combination of art and business. The driving force behind the creation of the studio was composer/keyboardist Patrick Gleeson, an electronic jazz pioneer known for his work with Hancock and on the synthesized portion of the score for *Apocalypse Now*, among other projects. Always a risk-taker, in 1968 Gleeson left a successful career as an English professor at San Francisco State University to become a full-time musician/studio owner.

"I always played piano when I was a kid," he says, "and I would have been a musician all my life, but I came from a family where that was not acceptable. So, I was a good boy and got my Ph.D in English. But there came a time when I realized that all I really wanted to do was make music. And I realized that I was going to become an angry alcoholic unless I started doing what I wanted to. So I quit teaching and went in 50/50 with a guy named John Vieira. We bought a Moog synthesizer and began doing little sessions. We didn't know much, but we had a Moog! And almost anybody else who had one at the time knew even less then we did.

"Then, as it was the '60s, it occurred to us to start a commune of musicians. So we did; we had a harpsichordist and a couple of jazz musicians, and we found this little redwood warehouse building for sale for $25,000. Of course, we didn't have that kind of money, but we made a deal with the owner for a lease/purchase. When we moved in, because of the fact that Moogs were monophonic, we realized that to really make music, we needed a recording studio. So John and I began building. And that broke up the commune. Because, as it turned out, he and I were very serious. The other folks liked to make music, but they sure as hell didn't want to haul sheetrock. John and I

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worked 12-hour days; I did soldering, he did design, and we built the first board together."

It was the association with Hancock that really got things off the ground for the studio. "By 1971," continues Gleeson, "I'd been doing a few sessions for the Jefferson Starship and [producer/manager] David Rubinson, and we had an 8-track recorder, as well as the Moog. I heard that David had signed Herbie Hancock, so I called him, told him what I was doing and offered to help out. Herbie came over, and with that my career really started. We worked together on *Crossings* and on *Sextant*, and I joined the group for a couple of years, touring and recording. And even after I left the group, Herbie continued to

Never give no for an answer—that's something I realized when I became an owner.

—Susan Skaggs

record many of the synthesizer parts for *Head Hunters* at our studio.

"So that was how we started. And there were two main things that helped us to survive. One was, out on the road I was playing an ARP 2600, which no one had seen before. And everyone was always asking me where to get one, because you couldn't buy them in a music store. So I started getting them for people, and I became a dealer, a very successful one. And the other thing was, my big Moog wasn't really portable, so people had to come to our studio to record!"

Precedent was set with those early synthesizers. Fur was to be home to many more "firsts" in the San Francisco Bay Area, including the first SSL console, the first Synclavier, Sonic Solutions system, half-inch analog tape machine, and digital sessions with both 3M and Sony multitracks.

In 1985, Gleeson sold Different Fur to two of his employees, engineer/producer Howard Johnston and studio manager Susan Skaggs. "My lawyer said they'd never make a go of it," laughs Gleeson, "but I never had a single doubt."

"We had a good CPA who helped

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us with our deals and found us an investor who leased us the console with no money down," recalls Skaggs, now president of the company. "Somehow we got everything with nothing down—the building, the business, the console—and now we own them!"

You don't get those kinds of deals unless people have great faith in your abilities; there are those who think Skaggs is a booking genius, but she shrugs off compliments with a few words of advice: "Never say no. And never give no for an answer—that's something I realized when I became an owner. If I had to rent a piece of gear, or I needed something and people told me they couldn't get it for me, I'd find a way to get it. And once you have that mind set, it's really not that hard."

Fur has never really been a lockout studio. We have a customer base that comes to us often—doesn't stay long, but comes back often.

—Howard Johnston

There's been lots of construction over the years, from the redesign of the control room when the SSL was installed to the redo of the upper floors of the building, which now house two artist management companies, as well as offices leased by a producer and a recording artist. The cross-pollination those tenants provide has also added to the cachet of the studio.

"We try to be a center," says partner Johnston, co-producer of George Winston's Grammy-winning album *Forest* and the current chart-topping *Linus and Lucy*, as well as engineer on projects for Bobby McFerrin, The Residents and Bobby Brown. "We try to create an environment," he says, "and we are really happy to have the management companies and a producer in the building—it brings more energy here."

So what makes Different Fur different? (The name, by the way, originally Different Fur Trading Company, was the brainchild of contemporary poet Michael McClure, who came up with it

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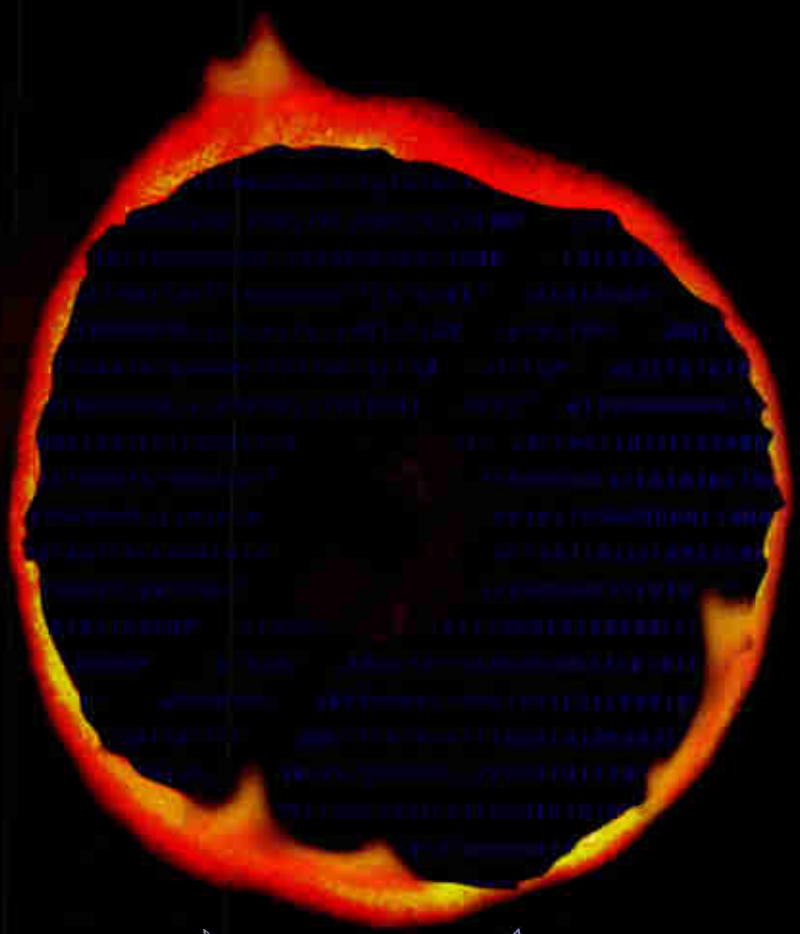

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as he was being recorded by Gleeson.) Or, at any rate, what makes Different Fur successful?

"We're kind of a throwback," muses Johnston. "We're a full-service recording studio in the sense that even to this day we follow everything through, to mastering and CD playback, or as much as a client wants us to—backing it all up with a great engineering staff. We develop real relationships with our clients; we understand budgets and that being time-efficient is important whether the money is coming from an individual artist or from a record label. When new clients come to Fur, we try to point them in the right direction, and they appreciate that and come back. And in general, we try to make everybody's life easier because they come here—we try to make everybody feel special.

"Another interesting thing is, Fur has never really been a lockout studio with long periods of exclusive use by one client. We have a customer base that comes to us often—doesn't stay long, but comes back often. And that's where the booking genius comes in. Susan is very service-oriented, and she does a great job of making room for people efficiently. That's different than in some other studios I've worked at, where it can take two-thirds of a day to get a piano sound. Because everything is modular, all the equipment has to be brought in, and they just sort of slowly roll into action, probably because they are used to lockouts, where you spend the first day just getting ready to record. That's a different mentality than we have at Fur, where we have lots of sessions all the time."

The future? "I don't know, that's a tough one," says Johnston. "I do believe that you have to provide something that people can't get somewhere else, even if it's only knowledge, or cooperation. And as long as you provide something that makes their life easier, or that makes the project go better, or that allows them to think about music more than the project itself, then there's room for recording studios. What do Susan and I see for the future? I guess we hope it's more of the same." ■

Maureen Droney cut her recording teeth in the San Francisco Bay Area, working as a staff engineer at the Automatt from 1980 to 1984, then freelancing at The Plant, Fantasy, Starlight and...Different Fur, among many others. She is now Mix*'s Los Angeles editor.*

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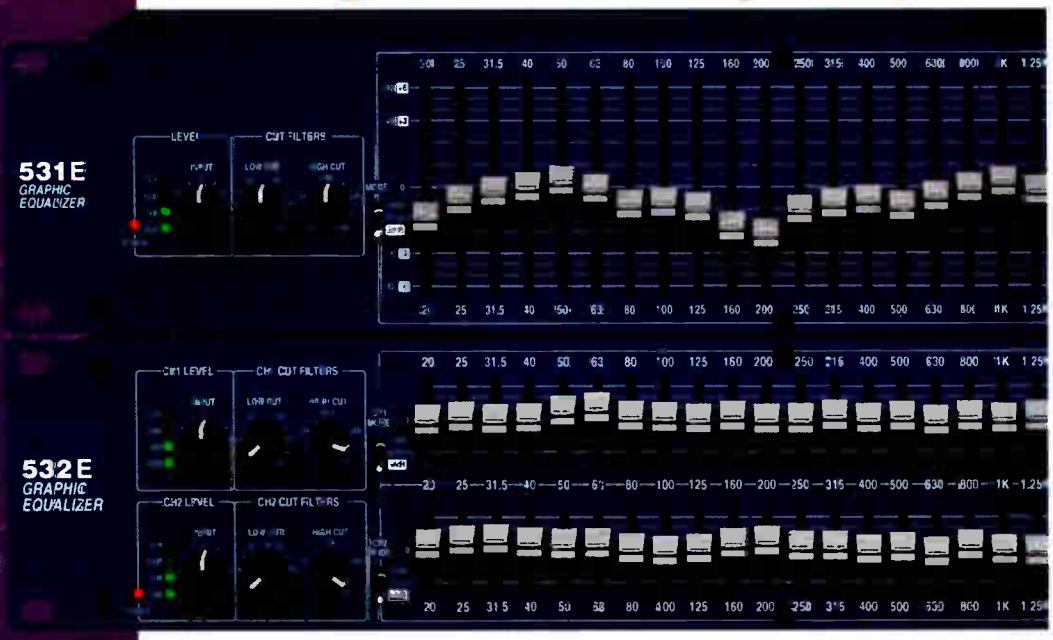
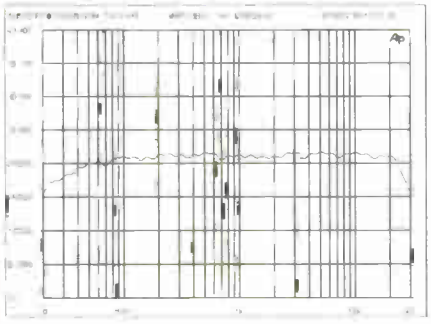
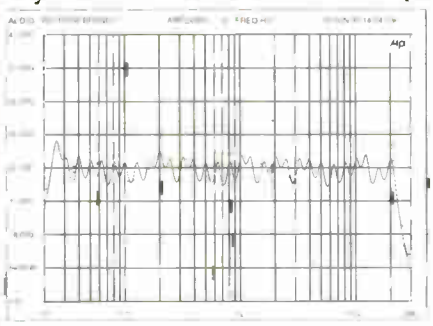




Symetrix 531E Brand X EQ



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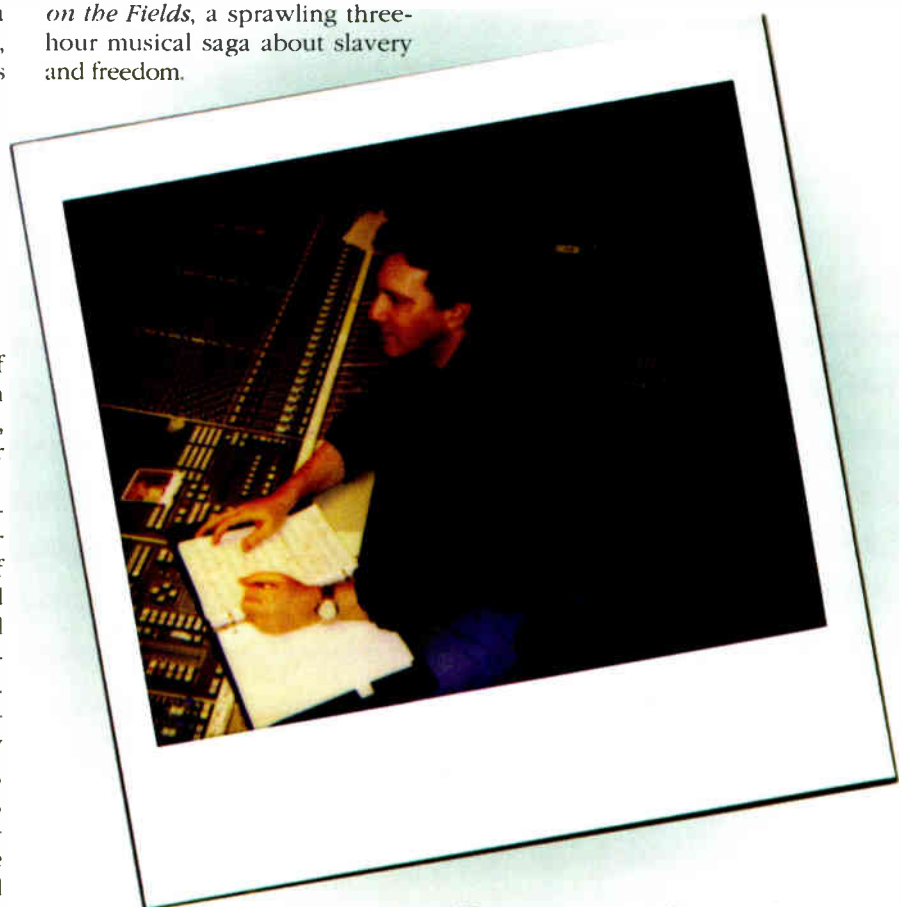
STEVEN EPSTEIN

CLASSICAL MASTER AND ALL THAT JAZZ

Steven Epstein still has the first record he ever owned, a copy of *Mozart's Piano Concerto no. 21* that was given to him at the age of two. Presciently, perhaps, that record had a Columbia label; for nearly a quarter century, and his entire adult life, Epstein has worked as a classical music producer for Columbia/CBS/Sony. He says it's the only job he ever wanted, from the time he was 14 and listening intently to classical music in his parents' living room in Queens, New York. While still in high school, he went to Tom Frost of the CBS Masterworks label, and told him about his dream of being a classical producer; when Epstein finished college in 1973, Frost and Masterworks co-director Tom Shepard hired him.

Since then, Epstein has produced more than 200 records for CBS/Sony, and he has a slew of Grammy nominations (18) and awards (13) to show for his hard work, including trophies for Producer of the Year in 1984 and 1995. In the classical realm, he's produced works by giants of every period—Bach, Mozart, Handel, Beethoven, Brahms, Mahler, Tchaikovsky, Dvorák, Rachmaninoff, Schoenberg, Ives, to name just a prominent handful—and with many of the finest orchestras and musicians in the world: impressive soloists like Yo-Yo Ma, Cho-Liang Lin, Isaac Stern, Pinchas Zukerman, Mstislav Rostropovich and Midori. But he has also worked at the fringes, producing music by lesser known composers from the Baroque period to modern times.

And then there is his 13-year association with jazz and classical trumpet virtuoso Wynton Marsalis, whom Epstein once said "is the closest I'm ever gonna get to Mozart." Indeed, Marsalis is an incredibly prolific composer and musician, equally at home cutting albums of jazz standards, piccolo trumpet pieces from the 17th century, and his own always-ambitious works for large and small groups. The most recent collaboration between the two is Wynton's *Blood on the Fields*, a sprawling three-hour musical saga about slavery and freedom.



Today, Epstein has the exalted title of senior executive producer for Sony Classical, but he's still out there in the trenches, so to speak, producing an average of eight to ten records a year. New discs coming down the pike from him include recordings of Respighi's *Roman Trilogy* ("Pines," "Fountains," "Feste"), the organ symphony by Saint-Saens, a concerto by the Chinese composer Tan Dun (with Yo-Yo Ma), and a percussion-and-orchestra piece by Takemitsu. Somehow, too, he manages to find time to bop from New York to Montreal's prestigious McGill University to teach a course in classical music production. Just a kid from Queens, loving every minute of his dream job.

BY BLAIR JACKSON

What are you working on these days? It seems as though you work on such an interesting variety of music.

Sometimes it seems like a juggling act. Right now I'm making a couple of adjustments in a recording we did of the Concerto for Orchestra by composer Richard Danielpour, with the Pittsburgh Symphony and David Zinman conducting. Richard Danielpour has written some very virtuosic music for orchestra.

Virtuosic? Do you mean "hard to play"?

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to the listener, with its striking melodies and exciting, well-crafted orchestrations. That's a 24-bit, two-mic recording. It's really spectacular sounding. That should be out in April.

Can you hear the difference with the 24-bit?

Yes. In fact, we ran two versions, a 20-bit and 24-bit. Of course, it all gets resolved down into 16-bit [for CD release], but there is a difference in the relative sound. The 24-bit has more resolution in the softer passages, a greater sense of the room and more dynamic range.

I've also been working on a piece by Wynton called *Blood on the Fields*; it's a massive score—three CDs—and it's written for a big band. The core of it is his septet, and then there are three vocalists who sing virtually throughout the work. The singers are Cassandra Wilson, Miles Griffith and Jon Hendricks. This is the first time Wynton has written this kind of extensive vocal piece. It's like a jazz oratorio. We're mixing that now.

What kind of things are involved in mixing a work like that?

Well, it's not your typical big band sort of writing, where the writing is generally in block form, with the usual solos. This is very complex music, densely harmonized, somewhat polyphonic, and with wonderful melodies throughout. Each tune presents its own difficulties as far as what melodic lines to bring out, who's leading. We've been honing and refining it to get it right.

How long did the sessions go on?

They went on for four or five days. It wasn't too bad. The musicians had it down.

When you work with somebody like Wynton for many, many years as you have, and in all different genres, from jazz to baroque, how much does the work itself affect the sort of pre-production you do? Doing* Standard Time Vol 2 *must be different from doing* Levee Low Moan *or* Gabriel's Garden *or the new work...

It does change. The piece we're doing now, *Blood on the Fields*, is actually scored, though the solos, as usual, are done spontaneously, but based on the progressions that Wynton has written. But most of the material is scored out, so you have something concrete on a piece of paper that you can mark up with regard to cues and tempo, like an orchestral score. You can prepare this kind of piece in a much more detailed manner, as opposed to something like *Standard Time*, which might have some charts, but nothing really written out.

When you go in knowing that something is scored exactly, does it give you the latitude of knowing you have more freedom to do punch-ins or multiple takes for assemblage?

Sure.

What is your philosophy on that issue?

My concept of recording jazz, which I know is also Wynton's, is to have it all take place in real time, 99.9 percent of the time, so everyone can play off everyone else, and to know that it's happening in a particular environment, or a particular room, which will also offer a certain amount of character to the recording. Unlike a really dead studio.

Recording jazz for me falls right in between recording classical and recording pop, in that in classical, of course you want a sense of the room, as you do in jazz. But in classical you don't want to get that close to the instruments. You want to have intimacy with jazz, so it's closer to pop in that sense.

In jazz, from a producer's standpoint—at least from my standpoint, and my background is more in classical music—when you're doing something that doesn't have a score accompanying the music, you pretty much have to go on instinct and you have to judge

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whether you think the performance is okay, or "Maybe we could do one that swings a little more." But I certainly defer to Wynton in those cases. If there's something I think is grossly wrong, I'll make a comment, but my main job in jazz recording is to make sure the sound is right, the balances are right, and to help the progress of the session along. And to offer some aesthetic points. But when a jazz soloist is playing a solo, he's composing at that moment. One person can think it's great, one person can think it's not great, but it's not really black-and-white; it's a gray issue. So that's why it's good to have at least two or three takes of a performance that you can compare to decide which is the best.

It must be a different discipline working with jazz players and with classical musicians.

Yes, that's true. In classical you're adhering very closely to the printed page, to the musical score, whereas in jazz that isn't the case. In jazz, yes you want it to sound as good as it can, but if there's an occasional strange note or dirty note, that's fine; it might actually add to the feeling of the piece. In classical, if you listen to a piece of music that's been known through decades or centuries and you hear a flubbed horn note, for instance, you have to do something about it, obviously. At the same time, you want the performance of an orchestra or ensemble to feel spontaneous.

How conscious are you of the recorded tradition of a piece? For instance, all the Beethoven symphonies and piano concertos have been recorded numerous times, and there are certain versions that are more highly regarded than others. If you were going to record the Emperor Concerto, ***would you check out other versions first to see what other interpretations were like?***

I might. If there's a version that everybody talks about, I'll probably check it out just to see what someone else did. But I think the primary goal in my job is to capture what the artists I'm working with are doing, because it's their voice, it's their character and personality that you want to convey from the studio or the concert hall onto the tape. People aren't buying it to hear the producer's interpretation, although certainly the effects of a producer's contribution in a classical recording and a jazz recording—and certainly in a pop recording—will be there, not only from the standpoint of making sure the notes are correct, and making a suggestion or two about interpretive matters, but also in creating the sonic atmosphere and character: the producer's stamp, which should be identifiable by the listener.

I think a lot of people get so used to certain versions of classical pieces that it's difficult for them to be open to new interpretations. I've certainly felt that way about things I know fairly well, like certain Beethoven symphonies. I'll pick up a new version and say, "No, no. This is all wrong. It's too slow!"

Oh, everybody goes through that! It's a very tricky question because you become so familiar with a performance that another version might not seem as valid. In my job I have to be very careful about where I decide to make a comment about tempo or interpretation, because again, it's not my interpretation; it's the musicians' and the conductors'. But on listening to a playback, I might say to the conductor, "Do you think we could have more clarinet in that section?" and he might say, "No, I think it's fine," because that's how he likes it. Or he might say, "Sure, let's bring it up a bit."

In the old days, meaning the late '60s

—CONTINUED ON PAGE 252

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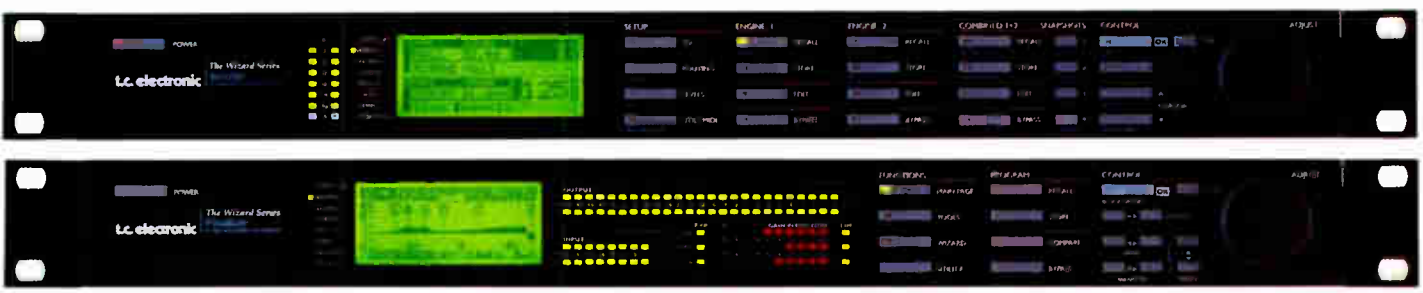

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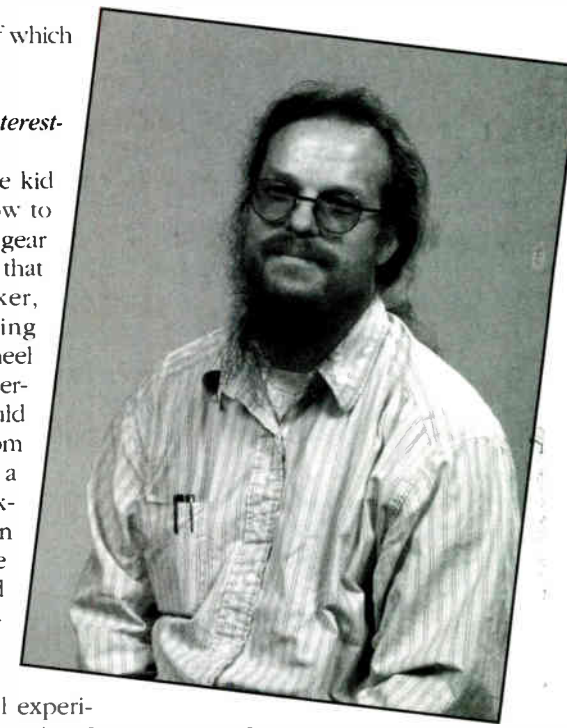

John Meyer is one of those rare individuals who are driven by a single cause: in his case, to improve the quality of sound reproduction. Although Meyer lacks a formal scientific background, he's paid his dues in touring sound, has accumulated an enviable understanding of the physics of sound propagation and has developed innovative ways of overcoming the many inherent limitations of loudspeaker technology.

Meyer Sound products are installed and in regular use at such venues as Walt Disney World's EPCOT Center and Disney-MGM Studios in Orlando; Boston's Symphony Hall; El Teatro Gran Rex in Buenos Aires; and the Royal Shakespeare Theatre in Stratford-upon-Avon, England. Meyer Sound systems are also first-choice equipment for music festivals, such as the Telluride Bluegrass Festival and the Montreux Jazz Festival, and in live theater shows, such as *Les Miserables* and *Beauty and the Beast.*

Born in 1943 in Oakland, Calif., John Meyer took engineering courses at Heald Institute of Technology before joining the staff of Harry McCune Sound Service, a San Francisco multimedia rental firm for which he designed several loudspeaker systems. Invited to Montreux, Switzerland, in 1973 to consult for the Institute for Advanced Musical Studies, Meyer embarked on an extensive program of research into the myriad sources of nonlinearity in audio transducers. The fruits of these studies include a body of fascinating data on distortion sources in microphones, along with an ultralow-distortion horn driver design. Upon his return to the U.S. in 1975, Meyer worked as a consultant in sound contracting and served as technical director for a direct-to-disc audiophile record company. In 1979, he founded Meyer Sound Laboratories Inc., the professional loudspeaker manufacturing company of which he is president.

Have you always been interested in sound?

Yes. I remember as a little kid taking out a book on how to make sound. It showed a gear and a battery; if you put that in series with a speaker, it would make a clicking sound. By moving that wheel around in a circle and interrupting the battery, it would make a musical sound from the speaker. We had a sound department at Oakland High where we ran movies during lunch. We had a pretty sophisticated sound system; in electronics shop we built things like mixers. So that also gave me a lot of practical experience in high school. By that time I had also gotten my license to operate a radio station, and I worked at KPFA and KPFB [San Francisco], where we experimented with binaural sound in the late '50s. So I grew up in that world of high tech, and understood linearity and quality transmitters.

Was audio your first choice of a career?

Yes it was. I always felt bad when I went to concerts. I remember, in particular, a Donovan concert at Oakland Coliseum, because the sound was so bad that no one could hear. I knew that it should be possible [to improve the quality of live sound], so I could contribute by building systems that would be very high-quality. I always wanted to develop sound system design to bridge the gap between an audience and the artist.

And you found that the commercial systems didn't perform the way you thought they should?

Very much so. My first start was a company I set up in 1969, called Glyph. We built large, 8-foot by 8-foot exponential horns, and then a 4-foot horn with Altec-Lansing parts. We also built a flying, quadraphonic sound system in the San Rafael Ballroom, called Pepperland; our first groups were Pink Floyd, Steve Miller and Joan Baez. We [handled sound] for a bunch of people right away. And that led me to a job at McCune Sound, where I built the horn-loaded, tri-amplified JM3.

During the early '70s, while I was with McCune, the company was doing rental work for the concert industry. We handled sound for Creedence Clearwater [Revival], Grateful Dead, Elvis Presley and Herb Alpert. We did the Kool Jazz tour, which was a stadium tour, and got into a lot of concert work.

In 1973 you were invited to the Institute of Advanced Music Studies in Montreux, Switzerland. How did that come about?

I was starting to do more classical work at McCune—outdoor concerts at Stanford, and symphony

BY MEL LAMBERT

music. I got involved with the Institute, which was contemplating building a high-quality P.A. sound system for classical music. My primary search was to discover the origins of nonlinearity in audio transducers. One of the things that became very clear was that horns were a very good way of controlling sound. But we needed some way—a horn or lens—to control the sound and keep it off the walls and the ceiling. But horns were known to produce quite a bit of distortion. Eventually, I came up with a way of countering this distortion, for which I was awarded a patent.

What, in essence, did you come up with in your horn design?

The problem with horns is that air is non-linear; it does not transmit sound the same for all frequencies. You have to move the diaphragm in a non-linear way in order to compensate for this distortion. Basically, there are a couple of different approaches. One is to calculate the distortion and then subtract it from the input. The other is to use electronics and other mechanical means. We opted for a combination of both to provide the correction.

And these developments became part of the Meyer Sound processors that you later built into your active systems?

Yes. We have been slowly implementing it over the years. We have kept refining the process so that each generation we make gets better, with lower distortion. Theoretically, we should be able to get to a very high level of pressure. Air by itself is around three percent distortion at 130 dB SPL, so we have been able to lower this by more than ten times in the laboratory and more than three times in production.

Basically, you're preconditioning the signal to take into account the non-linearity response at certain frequencies of the horn and its interaction with air?

Right.

And that principle is now incorporated in both your P.A. and studio systems?

Yes, to a degree. Now that we have self-powered systems, it's much easier to implement these kinds of things than when you have to use a separate power amplifier. Integrated systems allow us to build a product where everything is much tighter-coupled. The [touring-sound] industry was starting to plateau because there were too many unknowns that would keep you from getting it perfect.

In 1979, you set up Meyer Sound Laboratories with your wife, Helen. Was the company established with the idea of manufacturing systems that incorporated some of these new technologies you'd investigated in Montreux?

Yes. Our charter was to build equipment that wasn't available to the audio trade; it had nothing to do with what anyone else was doing. We wanted to be very out-front so that people who were involved with us weren't looking at the competition.

Meyer in 1985, pre-SIM, working with a Hewlett-Packard test system on location

Your first product was a custom-designed woofer for theaters showing Apocalypse Now. ***How did that connection come about?***

We built a studio monitor in Switzerland called ACD, which I was demonstrating in Berkeley. Tom Scott [engineer at Francis Ford Coppola's original American Zoetrope Studios] heard about it, and we started talking. The studio wanted to have this low-frequency sound for the napalm explosion during the helicopter attack in *Apocalypse*. So we built a special subwoofer that would go down to 30 cycles and be linear; we tried it out at the North Point [Theater, San Francisco]. Coppola said he really wanted to feel that low-frequency sound strongly.

Then we started showing it to the Grateful Dead, and it started to become popular in rock 'n' roll. It ended up being a double 18-inch in a sixth-order box, so it wouldn't be big.

Meyer Sound's next product was the UM-1 Ultra Monitor, again using this ultralow-distortion driver in a bi-amplified stage monitor cabinet with your patented horn and control electronics unit. This is where you're pre-distorting the signal to ensure linear overall response?

The Ultra Monitor's performance was controlled by suspension and how the driver is functioning. You can do it physically or electronically. Most of the pre-distortion work of the Ultra Monitor was done in the driver itself; the driver causes frequency variations that we pick up with the electronics. Technically, they're both designed to make this work.

Who did you get to make this special driver for you?

We first modified drivers built for us by Yamaha in Japan, and we bought about 95 percent of the output. Now we work with several vendors and do more of the assembly work here in the company.

The UM-1 was followed in 1980 by the UPA-1, which was the first speaker cabinet designed to be arrayed.

We started recognizing that when we put a lot of my horn-loaded JM-3 speakers together, they started losing their fidelity. We tried to figure out what this was and discovered that there was a lot of interaction between cabinets that wasn't disappearing with distance. We put a lot of work in the UPA to get the cabinets to work next to each other. The cabinet is trapezoidal. Now in products like our [self-powered] CQ-1 and CQ-2, we can refine that coupling to an even higher degree.

The UPA was, to my knowledge, the first effort to get [P.A. cabinets] to array. Back in the '30s, the first real arrays were multi-cellular exponential horns; they were multiple-section horns made by Jensen and Altec. They pretty much disappeared because when you walked in front of them you could really hear the sound lobes.

In 1981, you unveiled the MSL-10, a high-power, high-Q system. What was the thinking there?

We had a job to do at the Oakland Coliseum. They wanted the audience and the players to be able to hear the system. I wanted to make sure that an

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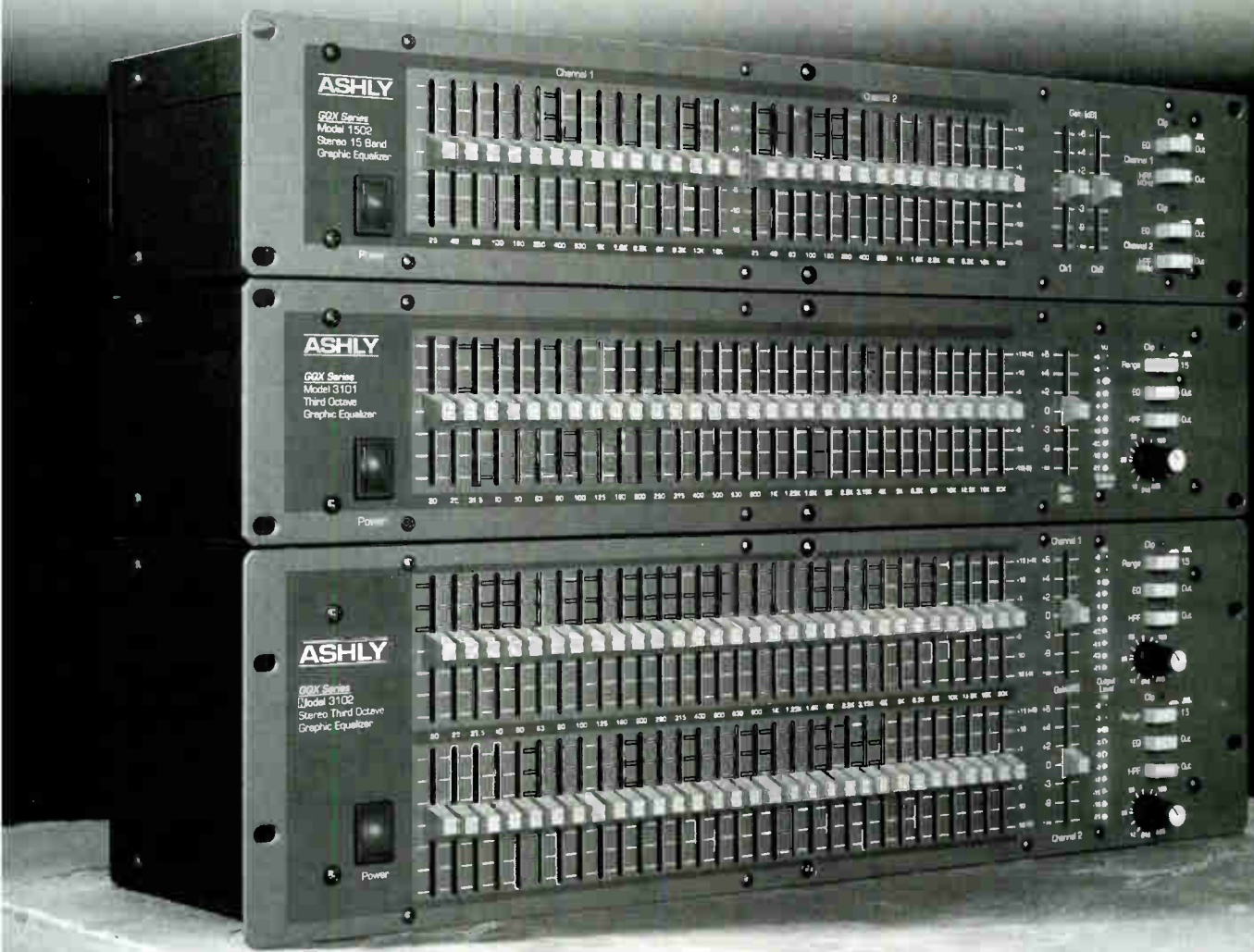

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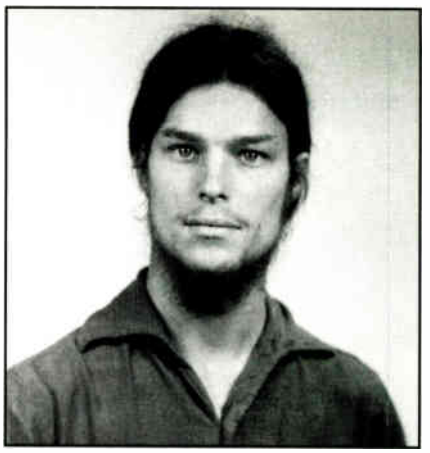
array would work. It eventually led to the development of our MSL-3; the MSL-10 was a perfect way to try it in a fixed, stadium situation. If that worked well, we would go back and break it into pieces, so that users could put them together, depending on the size they needed. We wanted to really understand what array systems were going to sound like in a stadium.

So it's better to build a large-format system, and then divide it down?

Yes. That's what we told Starship and Grateful Dead, who were first going to try it on the open stadium, to make sure it all worked. We did a sound demonstration to make sure that their pieces would work.

How do you think the live sound industry has changed in the past decade-and-a-half? Has it become more demanding in terms of quality and power?

In the '70s, I thought that sound was terrible. Overall levels have increased to a point where it's starting to plateau again; pretty much when you go to concerts you can hear above the screaming of the people. Overall, as a professional community, we've made a lot of gains, but I think that we're just barely started in terms of what can be done—multichannel sound has not been explored yet.



Meyer in 1968

Big doesn't necessarily mean beautiful in live sound. What advice would you offer for somebody designing a sound system?

As our field becomes more professional, and more solvent, a lot of people come to the market thinking that this would be a great place to make some money. You see a lot of consumer-type companies coming into the marketplace to sell something that looks like a "professional" loudspeaker. The problem is that there is more to making a sound system work than having a trapezoidal box. Like how to work in overload, and power fluctuations—things that you need to know about. You should stick with the people who have the experience. For example, I'm not a believer in moving sound through digital fiber optics, if there is a possibility of it causing problems during a concert. If something goes wrong in a small town, where are you going to get parts? Radio Shack? We can't afford to have the sound stopped because the fiber gets wet!

I would also think that cabinetry design—the ruggedness and mounting hardware—is also very important?

We don't ever want an accident to occur. We tie all the tops of the cabinets, through the sides and bottoms; the bigger systems are completely wrapped in steel either inside or outside. I've seen trapezoidal boxes—copies of mine made in Switzerland—with the top off, the whole rigging held in the air, and the box is on the ground. The lid was just glued on. I see corporations come into professional sound from the home entertainment business, and they don't get it.

What are your favorite installations?

I like doing opera. The installation we did with the [San Francisco] Civic Auditorium for live opera sounds wonderful.

To hear an opera reproduced in a [large auditorium] without being aware of the sound system is a great experience.

The Grateful Dead was fun because they always had plenty of equipment and nothing was in overload. The last thing I did with the Dead was to cancel 10 to 15 dB of the low-frequency sound that spilled onto the stage between 30 and 100 cycles. Everything has to work perfectly—be in-phase and wired right—otherwise it doesn't work. The Dead were willing to put the effort into wiring everything correctly and setting it up so that we could try to get some of that bass off the stage.

The work was based on antennae theory—the ability to "steer" the sound off the stage. It works very well and is able to suppress LF by 15 dB. Which made it very exciting for the band [because] it didn't sound like a big "tub" anymore.

In order to get to the next level, where we can really control the sound, we have to become more disciplined in terms of everything being hooked up right. Amps cannot be in overload; if your amplifier is clipping, it's no longer linear.

Who are some of the outstanding sound designers working on Broadway and live concerts?

Tony Meola—I like the work that he's been doing. Abe Jacob, of course, plus Roger Gans, Mark Gray, Jim Lebrecht, Bill Platt, François Bergeron and Jonathan Dean. These are also people who are pushing the envelope. We're starting to develop the next level of technology with steering the sound, and we'll give tools to these new designers. It's already a lot simpler with integrated systems, because they can use more speakers and more elements in a complicated design.

We were fighting against the theory that it couldn't be done; that's always hard, because I only have my intuition and belief that man can do anything.

Let's move on to your studio systems. Obviously, these two threads have run in parallel, but it's only been in the past decade that you've offered studio systems. When was the HD-1 High Definition Monitor introduced?

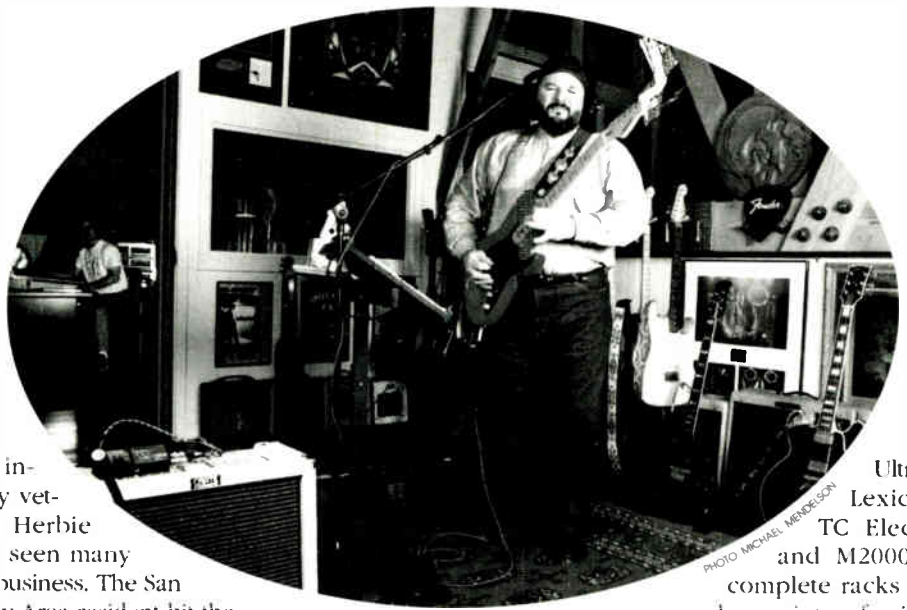
Nineteen ninety one. Actually, we weren't building the HD-1 as a studio product. We were building it as a tester for microphones. I wanted an accurate source that would put out good pulse—to be phase- and time-corrected to a very high degree. I think we started in '85 and were working on a small speaker.

We were investigating how to make a perfect pulse come out of this speaker. Some of the sound will come out right away and some later due to delay. You have to somehow delay the sound inside the system so that all frequencies are phase-coherent. When we got it done, we were very impressed. Mark Johnson [MSLI's marketing manager] said that we had a viable product. So we built a second one. At the time, this was like a 4-foot rack of electronics.

—CONTINUED ON PAGE 249

SY KLOPPS STUDIOS

BLUESMAN'S BASE



Herbie "Sy Klopps" Herbert in the tracking room at his studio. In the control room is engineer Marty Strayer.

Music industry veteran Herbie Herbert has seen many sides of the business. The San Francisco Bay Area resident hit the big time when he started managing Journey in the '70s, then built on this success in the '80s when he took on other acts that also went to the top of the charts including Europe, Roxette and Mr. Big. But after many years as a manager, Herbert felt it was time to move on. (Managing bands, he says, "bears an incredibly strong resemblance to work—it's really a lot harder than anybody thinks.")

Deciding to follow his fancy, Herbert made the move to the front of the stage, reinventing himself as a blues guitarist and singer, adopting (in the tradition of greats like Muddy Waters and Howlin' Wolf) the nom de blues of Sy Klopps. He put together a band, and even before they played their first gig, they went into the studio and cut an album. Many gigs and another album later, Herbert realized that for reasons of both cost and creativity, it would be well worth it to have his own studio. Today, he is well into his latest industry incarnation as the owner of the two-year-old Sy Klopps Studios.

The studio is located on the former site of Herbert's management offices in San Francisco's China Basin. Herbert spent two years working on the conversion, constructing and equipping the space with advice from one of his clients, producer Kevin Elson, and help from engineer Tom Size. Size put the wiring harnesses together ("every bit of wire is Mogami," Herbert says), and Herbert brought in David Carroll Electronics to do the patchbays. The completed 2,000-square-foot facility comprises a big tracking space, a large, acoustically isolated control room and three iso booths. The studio is equipped with 32 tracks of Alesis ADAT XT, KRK and Meyer HD-1 monitors and an Alesis X2 board. However, Herbert says, "When we record, very little goes through the board. We are totally into reduced signal path and go as much direct to tape as we can. That's why we've invested so much in outboard preamps." Focusrite Quad and Red 1, Neve and Avalon M2 are some of the studio's mic pre's. Other featured gear includes GML and Manley EQs, an Eventide H3000 Ultraharmonizer, Lexicon PCM 70, TC Electronic 2290 and M2000 units, two complete racks of dbx gear, and a variety of mics by Coles, AKG, CAD, Shure and Neumann. Herbert also outfitted the studio with a large collection of vintage instruments and amps (he is particularly proud of a sweet '59 Strat and a mint-condition 1960 Hammond B-3). "And we keep adding more toys!" he says.

It's a nice setup for a bluesman to have at his disposal, yet Herbert is not only an artist, he's also a patron: He says that one of the first projects recorded at the studio after its completion was the debut release for San Francisco blues artist Tommy Castro. "There's a great deal of recording going on here," Herbert adds, "I have a lot of friends! We've done a couple of Tibetan music albums, and I have [Journey guitarist] Neal Schon and Kit Walker making an album here right now. When all those people record here, it's for free. They just pay for tape and engineering time." Still, Herbert emphasizes that the studio is a private facility that's mainly used for his own projects. It's really a place for the Sy Klopps Blues Band (with help from in-house engineer Marty Strayer) to do their thang. "We record here and create here," Herbert says, "we roll tape the whole time." ■

BY ADAM BEYDA

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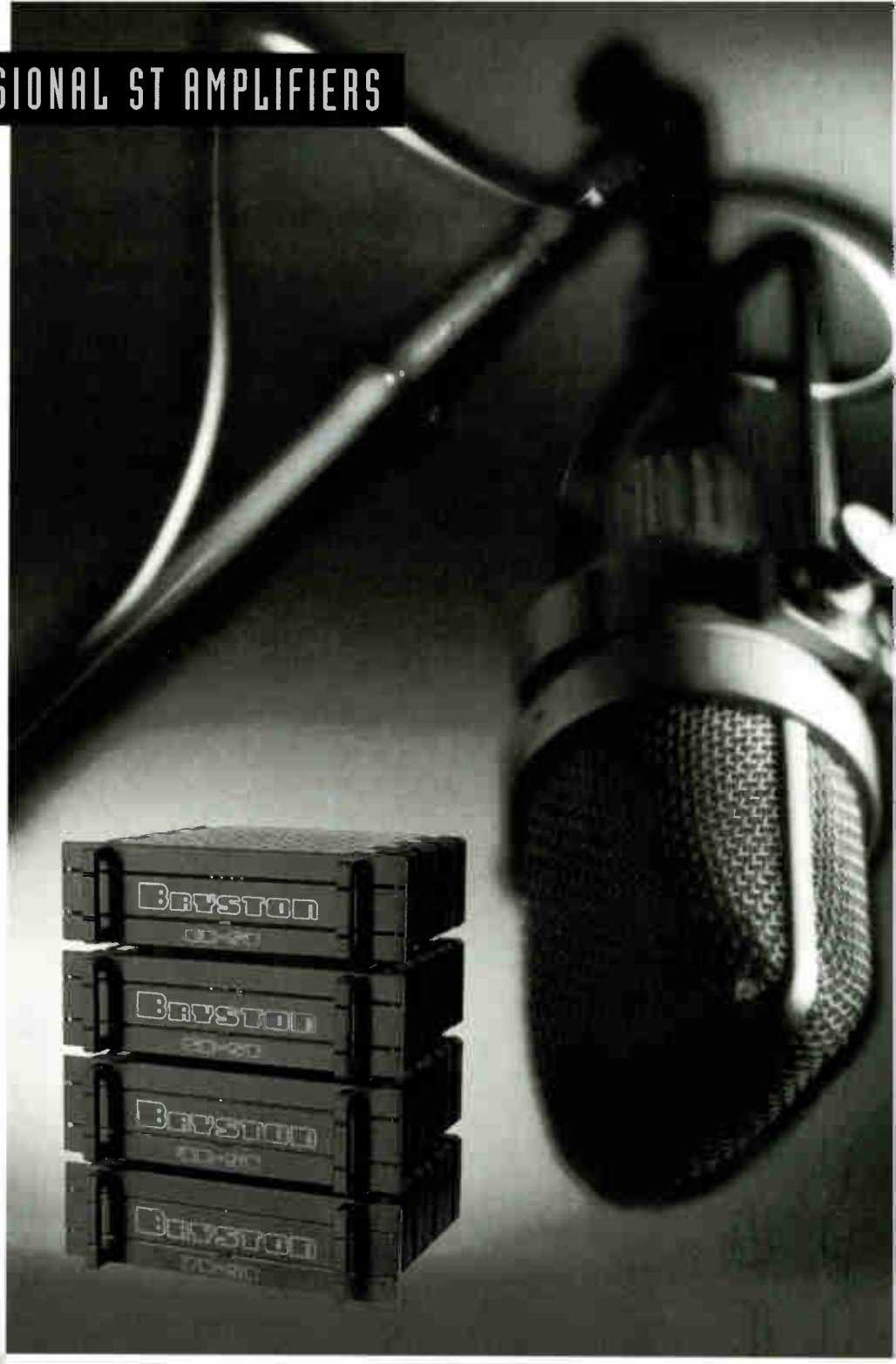

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sound design to a number of CD-ROM and new media projects, including work on RIFFF, a Web site on MSN that allows visitors to interact with various musicians through graphics (a sort of interactive music video) and cyber interviews. Artists featured include Herbie Hancock, Philip Glass and B.B. King.

Barnes and Werner's first gig as Clatter&Din was for a Microsoft children's CD-ROM encyclopedia, and the voice work was a perfect shakedown project. In an effort to be closer to Microsoft, American Production Services opened a satellite office in Redmond this past year.

Although each house feeds a bit off Microsoft, much as New York facilities pick up work from MTV or HBO, each is attempting to capture different markets. Obviously, a house like Bad Animals is searching out bigger projects, a lá Hollywood film scores, while a facility like Earforce is content with local business. However, Nickel admits that Bad Animals must compete on both the smaller and larger projects in order to survive. "The interesting thing about us and really what our niche is and the way I think a bigger studio like ours is going to survive, is that we are able to accommodate a range of projects. We do film work, we do episodic work, and I think we do the bulk of that work in this market. But we also do a lot of commercial work, both locally and nationally, and we do a lot of multimedia work, as well."

Brown adds that the work has changed recently at Earforce, too, and it seems to follow the region's emphasis on new media. "If I took a look at what I was doing five years ago, I'd say it was mostly agency work. Now we do a lot of software and games." In addition to Microsoft, one of the other major clients that post houses mention is Sierra Online, which has used Pure Audio and Clatter&Din recently.

And even though Werner and Barnes admit they are attempting to stretch beyond the 206 area code, their local business keeps them hopping. "We're making our living primarily off of locally generated material, and I don't think that's going to change significantly other than in the new-media realm," says Werner. "It's an ongoing goal of ours to reach out beyond Seattle a little bit more. But being a small place, we don't have a marketing department. In fact, we are the marketing department," he finishes with a laugh. All in all, it's been their hardware purchases, including three Avid AudioVision systems and a Kyma PC-based workstation system, that have kept them competitive in a tough market. "Technology allows us to play with the big boys. People can love us for our creativity and all that, but we have enough rooms that our volume capacity is the same as anybody else in town."

Which is a point as easily made by Nickel, whose Bad Animals is arguably the largest house in the area. "Much of this industry is going in that direction: A lot of smaller boutiques are opening, with equipment being much more affordable. I think you see kind of a shift in the market—one or two good-sized studios to a lot of boutiques—and then you have some of the bigger ones trying to carve out a slightly different niche."

In every city, there's always a surprising entrant in the market, and in Seattle it is American Production Services. APS opened its doors 18 years ago as a video production/post house, and though it has been doing audio post since 1982, it's just recently made a number of significant upgrades in an attempt to become one of the higher-end shops in the area. The largest purchase was an SSL Scenaria, which senior audio engineer Nick Denke says gives the facility a greater ability to go after national business.

Although the company was founded for the purpose of tackling industrial video work, the audio post department has moved into a number of different fields. It's not that they've abandoned the industrial business; in fact, they've recently completed an industrial video for the City of Seattle. But Denke and company are looking to do more radio spots and episodic work. "We did a couple of feature films last year," he says, "and we're hoping to get a steady television series this year."

Of course, APS was not the only company to make vast capital improvements in an effort to grow. The question begs to be asked: Was the switch from music to audio post worth it in the Bad Animals world? "Yeah," answers Nickel, "we've been through a lot of changes here, and like a lot of companies going through a major shift, we had a lot of work to do. It was a difficult year in trying to make all these changes and still keep the business running. We have not done any worse for wear, surprisingly, in spite of all the construction and everything else going on," Nickel says. The construction started after Bad Animals owner Steve Lawson decided that the future for his company lay in post work rather than music production. So, he took six of his rooms and converted them into audio post suites.

Although Bad Animals and Steve Smith's Xtreme New Media truck (which records the Seattle Symphony in the chapel at St. Edward's Center in Kirkland) are working to pave the way for Seattle to become the Hollywood North scoring stage, the folks at Clatter&Din aren't optimistic about capturing that market. "I don't think people are coming up here to do film or television work unless there's a compelling reason to be here. No one would have gone to the Music Source to do ADR for *Northern Exposure* if the show wasn't shot up here," says Barnes. "I don't think we have any illusions of being a destination. I tell people that as soon as Ron Howard moves to Seattle, we'll be doing film work."

That said, the duo quickly agree with sentiments echoed by every other firm: "We don't think of Seattle as a farm team or as a secondary market," Werner says. "It's just where we live and work. We're village cobblers, and people up here need shoes, too." ■

David John Farinella is a freelance writer based in the San Francisco Bay Area.

Bad Animals post-production suite, Seattle

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THE X-Files

BY TOM KENNY

If there were a formula for creating television viewer loyalty, you can believe Hollywood would have capitalized on it by now. *Seinfeld* works, but its clones have failed miserably. *ER* tops the Nielsens week in and week out, but the knock-offs don't approach its numbers. And *X-Files*...well, it's spawned no fewer than three network imitators, and none comes close to its broad-based appeal or cult-like following. In fact, *X-Files* is the only show to approach the perhaps overused definition of "cult-like" outside the various incarnations of *Star Trek*.

Who's to say what breeds such success? For starters, some would say it's the understated-yet-dynamic duo of Scully and Muldur, the scientist-skeptic FBI team that investigates the paranormal and supernatural. Others would say it's the writing, which consistently straddles the fence of believability and intrigue, never providing a pat answer. Still

Seated at the Neotek console in the main room at West Productions are , L to R, mixers Nello Torri and Dave West and facility president Dave Rawlinson.

FACILITY PHOTOS: MAUREEN DRONEY

PHOTO: MICHAEL LAVINE/FOX

others would say it's the genius of creator Chris Carter, who somehow tapped into the collective unconscious fears of the unknown.

The show's success is probably due to all of these factors. *X-Files* is a smart, complete package, with top-notch writing, production values, editing and sound. More than most of the hour-long dramas on any of the four major networks, it feels like a four-reel film each week, and in fact, the audio post-production team at West Productions in Burbank adopts traditional film-style techniques for the three-day mix. The show won big at the Golden Globes in January, with awards for outstanding drama and honors to lead actors David Duchovny and Gillian Anderson. Last fall, the audio crew walked home with twin Emmy Awards for sound editing and mixing.

Top: Gillian Anderson and David Duchovny of X-Files. Middle: Dave West, owner of West Productions, and his father, Ray, in front of Dave's Emmy and Ray's Oscar. Left: Debby Ruby-Winsberg, ADR mixer, West Productions.

FEATURE STYLE

For the past two years, *X-Files* has been broadcast in surround, but even for the first two years when the show was in stereo, there was an apparent richness and density to the tracks. Much of that can be attributed to the score by composer Mark Snow, which fills, on average, 38 to 42 minutes of the 44 minutes of air time. But much of it also is due to the tasty and judicious use of sound effects; the mandate to the editing crew is to spend time on what can be heard on television and not spend too much time on elements that won't.

"Chris [Carter] had the concept of using music a little differently so that it's theme- and emotion-driven," says supervising sound editor Thierry Couturier. "And it really covers so much range in terms of how much track it's going to eat up that how we incorporate sound effects into that is the challenge.

"I have the luxury of going to [composer] Mark Snow's house, where he has playback prior to the mix for the writer and producer," he adds. "It's been really helpful to know overall what the score will sound like and find any of the problem areas—or what accents might work. It gives me a good sense of where to go with certain scenes or when to do trade-offs, so the normal competition of music and sound effects doesn't really exist. We can cut through with two- to four-frame holes, or six-frame even, to let the effects poke through. This show is very big on full music, and the note of 'making music louder' hasn't come up in the last year or so. We also cover the show 100 percent in Foley for the ability to make things heard over the music, and also to make sure the M&Es have everything.

"I think now that we've gone 4-track, we have the ability to put a little more sound in and have it more distinct, even though I would guess that the majority of America will see it in stereo or mono. But even then, I think the product is much better now that we spatially have more chances to push sound through on the stage."

X-FILES GIVES US THE OPPORTUNITY TO CREATE AN ENVIRONMENT WHERE WE'RE LOOKING FOR SHOCK VALUE. WE'RE LOOKING TO LULL YOU INTO A SENSE OF SECURITY, THEN DESTROY YOU.

—DAVE WEST

"Music is king," Dave West, owner of West Productions and lead mixer on *X-Files*, interjects. "Chris is clear. And truly music can add more to a picture in any case than a gunshot ever will. The sound effects are there to make it real. We complement the score, and we love to be able to come out of it and use elements that Mark is using—the vocals and environments that he's created. Chris looks for that epic quality, and we often talk about these pictures as an epic. I feel as if I'm working on *Braveheart* at times.

"But it's the dynamic where *X-Files* is breaking ground," he adds. "The dynamic from what's acceptable and what's not acceptable, from what's bright and what's dark, from what's loud and what's soft. TV has always had a very limited dynamic range. So in our tracks, we look to be transparent enough to continue to support the action but not get in the way and still make it to air. The quieter you get, the closer you get to the dynamic bottom in TV—you get system noise and you have nothing. A sitcom is all small. *X-Files* gives us the opportunity to create an environment where we're looking for shock value. We're looking to lull you into a sense of security, then destroy you."

Certainly, dynamic range has never been a notable feature of television, but with advances in home theater systems, it's a sure bet that most re-recording mixers will soon begin shooting for the high end, rather than the proverbial three-inch speaker. (A parallel can be found in the film world: In the early days of 5.1-channel release formats, mixers spent most of the final mix on the Dolby Stereo print master, then spent the last couple of days "spreading" the tracks for the digital release, the reason being the limited number of theaters that could show Dolby Digital, DTS or SDDS.) In the meantime, the *X-Files* crew uses all available tools to, as West says, "get people to stop thinking about their soup," whether they're listening in mono, stereo or surround. One of those tools is QSound, which Couturier says gives a front-back spatial presence as much as left-right, to add the sense in the stereo field that a sound is actually coming from a different part of the room, alley or hall.

"The first thing QSound does for me is to automate my panning, which is something I need without automation on my console," West explains. "I have fader manipulation I need to be doing, so we basically have an 8-in, 4-out box, because it comes out as an Lt-Rt. I'll then mainly use it in walla and for a lot of ADR, to give it a spatial presence. ADR is often flat and lacking in location. Or I sometimes use prefader reverb with a very dry signal bused through it. I can make a sound float better by using the reverb return only and tricking the [Dolby] SDU-4 box into putting it places. I might bus the signal left-front and rear-sidefill in QSound, which will automatically make some of it splash into the DS4 to the rear surrounds. So I get these lopsided rooms, and by using two or three different reverb programs and differing the busing, I can get this really quirky-sounding space in which I have a variety of stereo programs being bused in a 4- or 6-track pattern, coming out of two speakers at home, and you can hear the difference."

Effective use of reverb and process-

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ing is another way to both create paranormal sounds that poke through and establish unusual environments. But West, the self-proclaimed "king of reverb," cautions against simply slapping a program on an effect or vocal, and he tries to stay away from the more "metal and springy" programs in favor of "body and fullness." And, he adopts some rather unorthodox techniques at the mix.

"I like to use a [Lexicon] PCM 70 with the old broadcast software," he says. "I like the rooms, I like the big halls, I like 'swarble.' I like psycho-echoes, I like some of their circular delays. But all the programs I tend to find most people using I think have too much feedback in the delay cycle, or too much metal. So I'll go in and EQ the return of the reverb to take out some midrange, or I'll highpass it, or I'll use feedback in the fader itself rather than in the box.

"I basically use three reverbs all the time: the Eventide 3000 DSE, a Lexicon 300 and the PCM 70," he continues. "So any time we go in a room, I try to find somewhat compatible programs to play in conjunction with each other, and I bus them to different places. I may bus one left-front, right-surround. I may bus one right-front, left surround. I may bus one center, I may bus one only in the rear. I may bus one to QSound. I try to get them to have different reflections so I get a different sound. If I'm using a slap program, I may have it return into the small-room program so that it's being tainted by another reverb before it actually gets to the track.

"By being able to use a very, very small room, then putting on a little kitchen slap or a bathroom slap from the 3000, or a tiled room from the 70—and having it work in conjunction with a room program in the 300—I get a very complex reverb program that if I play just a little bit of, it doesn't become obvious or sound like reverb. In a lot of cases, the hardest part is the small room, but it's the most effective."

READY TO MIX

By television drama standards, *X-Files* has a luxurious mix schedule: three days. It was two for the first few seasons, as most hour-long shows are, but the producers agreed to three, Couturier says, after looking at the amount of overtime and realizing they would have more of an opportunity for playback, fine-tuning and updates. A mix is generally finished, at the latest, the night before the air date.

But before that...The show comes in to West Productions four to five days before the mix, at which point Couturier sits down with the writers, co-producer Paul Rabwin, executive producer Howard Gordon, the picture editor, and, until he became too heavily involved with the debut of *Millennium* (also posted at West), Chris Carter. The spotting session will last anywhere from two-and-a-half to four hours, and discussion focuses on everything from ADR and additional lines to the paranormal nature of specific scenes.

PHOTO MICHAEL LAVINE/FOX

"We never really talked so much about style or concept for the series," says Couturier, who has been supervisor since remixing the pilot four seasons ago. "At least the first couple of years, we spent a lot of time discussing whether a specific sound was supposed to be electrical or just weird or humming, then, how it moves. Is it simple? Is it real? Is it organic? Mechanical? And where does it go? Because oftentimes it will change, and you say, 'Oh, the spaceship was actually a truck all along.' But what was the initial feeling?"

Once the spotting session is done, Couturier brings the dialog tracks and ADR on DAT and ¼-inch to the editors. Each day, when the show is transferred from film to DCT tape, an audio DAT is made at the same time. A DAT is also made of the finished online, then loaded in to any of the various StudioFrame workstations as a guide track. The final EDL is imported and an auto-assembly is made from the telecine DATs. Essentially, editors can pull from the online DAT, the telecine dailies or the original ¼-inch dailies.

ADR for the two principals is shot in Vancouver, either at Pinewood or Post Modern. ADR shot outside of L.A. or Vancouver is usually supervised over a phone patch. All other ADR, loop group and generic walla are recorded by Debby Ruby-Winsberg at West Productions, shot to and edited on the StudioFrames and brought to the stage on removable hard drives. All dialog and ADR are loaded on to 3-gigabyte magneto-optical drives for the stage, where Couturier has a 16-output DCS system for making fixes in the background while the mix continues.

West prefers that phone-answers, police calls, generic walla reactions and the like be recorded in mono, so "I can take them and hard-punch the tracks left-right-surround. I'll also put some in QSound automated panners that are just circling in various directions, either all 360 degrees, or 180, at different rates. The more bizarre the scene, the faster I run the panning loops—a two-second or three-second loop. You literally have words running around the room, and it becomes an environment more than anything else."

Foley is all recorded by Cecelia Perna at West to DA-88 and played back on the stage from same. Backgrounds and hard effects are edited in the StudioFrame 1000s and delivered on 24-track with additional hard effects and updates delivered on DA-88. Music is mixed by Larold Rebhun at Mark Snow's home facility, edited by Jeff Charbonneau and delivered on DA-88, generally as four stereo tracks.

The mix takes place on a 120-input Neotek Encore console (all Class A Avalon EQ/compressors), with Dave West on dialog, Doug Turner on music and

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Foley, and Nello Torri on effects and backgrounds. At 9 a.m. on the first day of the mix, the re-recording team is joined by Couturier and co-producer Paul Rabwin for a run-through rehearsal, looking for elements that are missing, CGI work that is coming in, troublesome scenes, etc. By 11, they start work on the teaser, that 3-minute intro before the main titles ("usually one of the more complex sequences," West says), which normally takes them up to lunch.

After lunch, they tackle Acts One and Two, which brings them through the first half-hour of the show. On the second day, they finish up Acts Three and Four, as well as pop in any of the ADR that's coming in from Canada and mix any of the CGI scenes that arrived late. By the end of Day Two, they have a finished show, one that Couturier says could easily go to air, with no apologies.

The third day is spent on fine-tuning. At 9 a.m. a 2-track Lt-Rt is sent over the Pacific Bell AVBS network (picture and sound) to the producers and executives on the Fox lot, where it's decoded and previewed in surround, in a smaller playback room, where notes are discussed via land lines with the stage.

"We normally print master while we're making our playback in the AVBS process so we can eliminate that step as a time-savings," West explains. "Then we do print master updates. It can hurt us if we get a lot of notes, because we then have to unravel the print master and go back into the stems. But we find that it gives us an opportunity to yet again ride up against the compressor. Then the rest of the third day is spent in that mode, fixing the stems and fine-tuning." Two, sometimes three, nights later, *X-Files* is on the air.

"We don't try for a good mix, we try for the perfect mix," interjects Couturier. "I certainly wouldn't say that we reach true perfection, but I think we come close to getting the right feeling out of the sound and balance week in and week out."

"If you look at the theatrical format, *X-Files* is a feature every week," West adds in summation. "These are pictures where people eat, sleep and live their show. Just because it's television, they're not going home at 5 o'clock and turning off. This is their lives. It's not *Mad About You*. Every bit of it—the writing, the sound, the music, the color—makes this show different. It becomes more than just what you expected it to be." ■

Tom Kenny is managing editor of Mix.

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BY TOM KENNY

POST SCRIPT

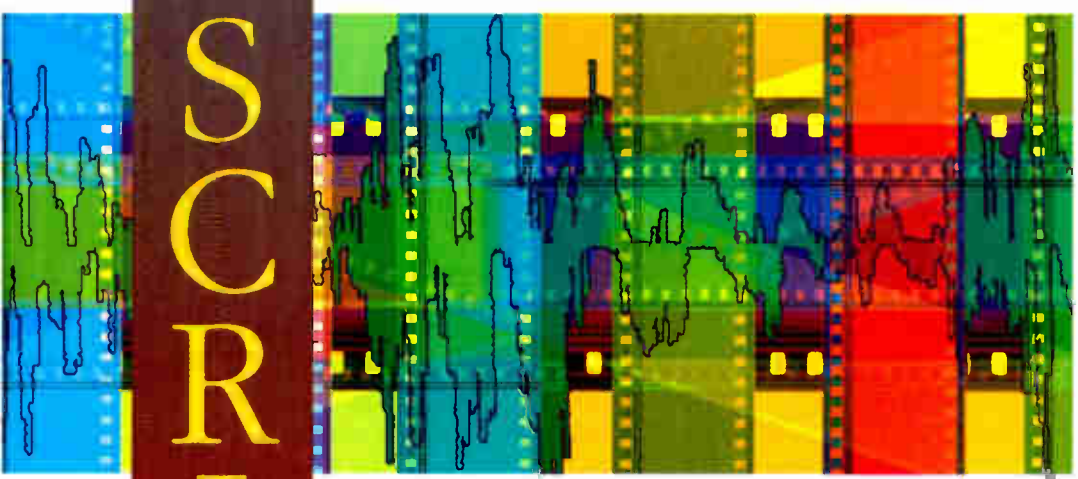
SOUND FOR FILM

TRACK LAYOUTS, PART 2

DELIVERY TO THE STAGE

by Larry Blake

As I was finishing up last month's column and preparing to send it off to *Mix*, it occurred to me that I had managed to ignore a good half of the topic under discussion: how to plan your tracks during sound editing. Sensible sound prep can solve in advance many mixing decisions about what goes where; conversely, badly thought-out sound editorial can create all sorts of minefields.



In the old days of film sound, when optical recording was used for everything, there was really no such thing as premixing. What you cut went direct to the final composite mix; a separate pass was needed to make the music and effects master for foreign dubbing. Thus, "track layout" was simply a matter of keeping everything under 20 or so tracks.

Indeed, most dubbing consoles had rotary faders, with sliders becoming necessary only when each mixer had to handle the increased number of channels brought on by the arrival of stereo mixing in the '50s. As mixes became more complex, it became necessary to premix groups of material (backgrounds, hard effects, dialog, ADR) in order to fit everything into the console during finals.

For the whole process to work, material has to be well-organized from the beginning. Where dialog and ADR have clear delineations, the world of sound effects is much more open to interpretation. The busier the scene, the more tracks—and the more premixes a given track could be in.

The classic method of planning what goes in what premix is to create a "top sheet," with each column describing a premix instead of a track. Some sound editors give premixes letter designations in descending order of importance, with the "AFX" containing prominent onscreen effects (say, the boulder in *Raiders of the Lost Ark*), while CFX would include various rumbles. In all instances, Foley props and footsteps remain in so-named premixes, as do backgrounds, although in the latter, it helps sometimes to state exactly what is included. Rain is a good example; an overall bed might be in BGs, but a gutter sweetener should be kept separate in another FX premix.

The letter system is good for shows that either have great variances from reel to reel or are basically very simple. But the more complex a film is, the more likely you are to dedicate premixes to a narrow group of elements such as guns or creature voices. Of course, a happy medium needs to be found, lest there be too many premixes with just one sound on them in 20 minutes.

It should go without saying that you therefore need to plan *everything* in consultation with the re-recording mixer(s), who will ultimately have to make sense of what you deliver. Your top sheets should indicate the number of tracks for each premix, along with the format on which it will be brought to the stage; e.g., "AFX, 1-22, 24-X SR." This helps not only the mixers, but also the always-important machine room personnel.

Every re-recording mixer has horror stories of having to lay out cue sheets across the room for a busy sequence, finding like items to premix together. The goal is always to make final mixes go as smoothly as possible, which in the real world means keeping material separate enough to allow the director to change her mind, while making enough decisions (EQ, reverb and tricky fader moves) in the premixes so that finals can be devoted to the overall balance of dia-

—CONTINUED ON PAGE SFP16

NONSTOP ACTION AT L.A. EAST STUDIOS

by David John Farinella

Before the turn of the century, the elders of the Mormon Church on West 100 South Street kept their valuables in a huge tithing vault. A hundred years later, the folks at Non Stop Productions in Salt Lake City are keeping that tradition alive by storing some of their most valuable possessions—their master tapes—in the same vault. Of course, the chapel is now home to L.A. East Studios, the Bishop's Office is now an equipment storage room, and the other back rooms of the church are home to a digital editing suite, a smaller studio and Non Stop's offices. That evolution is almost as dramatic as the process that took Randy Thornton and Bryan Hofheins from the Osmond Family's touring trombone players to Emmy Award-winning composers.

Thornton and Hofheins opened Non Stop Productions in 1981 with the goal of producing music for advertising agencies and television promotion work, according

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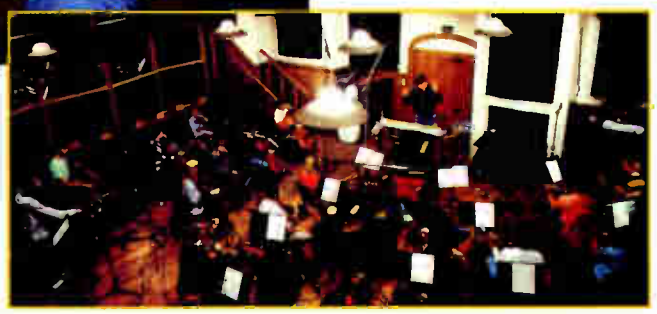

L.A. East founders Randy Thornton, left, and Bryan Hofheins at the Quad Eight Virtuoso console. Below, Thornton conducting in the main hall.

FACILITY SPOTLIGHT

COLLECTIVE CYBERIA

by Gary Eskow

The history of art and music is filled with examples of collective creativity. Schools develop, movements form, artists and playwrights feed off of each other. Styles emerge.

Hans Zimmer (composer of scores to *Rain Man*, *The Lion King*, *Speed*, et al) might blanch at being placed in a pantheon that includes such notable artistic leaders as Raphael, Andy Warhol and Roger Corman, but like them, he has used his success to create an organization that leverages the collective creativity of many individuals to develop a distinctive and consistently high-quality product. First came a film-scoring company, Media Ventures, which he founded with collaborator/producer Jay Rifkin. Then came Cyberia, which opened in 1994 as a commercial music and sound design house.

Cyberia now boasts a staff that includes former Culture Club tunesmith Roy Hay, European sound designer Claude Letessier,

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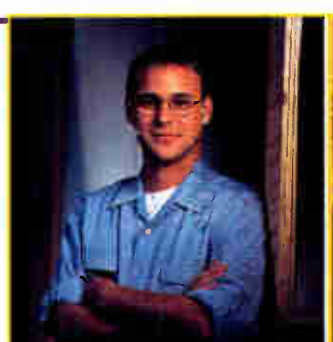


Near right, senior executive producer Mark Levy. Far right, composer/sound designer Claude Letessier. Below, producer/engineer Maureen Thompson and composer Roy Hay.

—FROM PAGE SFP14, TRACK LAYOUTS

log, music and sound effects.

While half of me says that sound editors would lay out tracks better if only they had to mix their tracks themselves, and not just foist it onto others, the other half of me knows that some of the most stage-ready elements that I have ever mixed (including, of course, my own material) have been cut by people who have never sat behind a console. They just *know*, after years of observing, what mixes easily and what doesn't. In addition, sometimes my mixer half tells my editor half that it's easy to get lazy when you know you're going to mix the tracks yourself. It's easy to acquire bad habits this way.

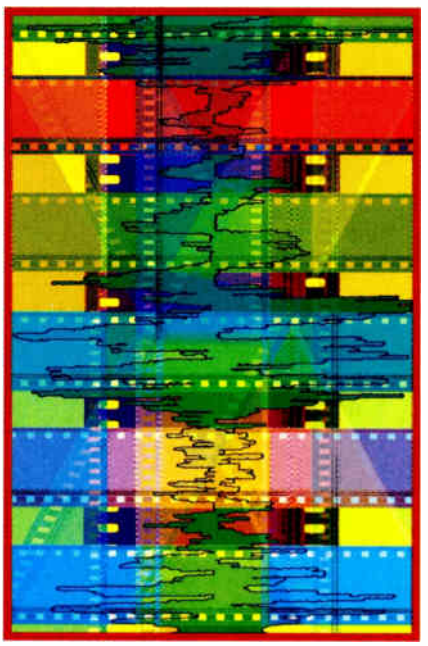
As noted last month, checkerboarding tracks is clearly one of the oldest and most obvious tricks in the book with regard to basic sound editing. You would never think of cutting dialog for the next scene on the same track (of course, assuming that there would be no overlaps that would prevent this in the first place). Nor would you ever cut stereo backgrounds for two consecutive scenes on the same tracks.

The reason for checkerboarding is simple: It's much easier to mix because if the incoming tracks (the "B side" of the cut, in film sound vernacular) need different level or EQ, then you can preset it and easily change it if it's not right. Otherwise, if the A- and B-side elements were on the same track(s), then you would have to punch-in exactly on the cut with the EQ and fader positions locked off. Not the way to run a mix.

Of course, you *have* to checkerboard tracks when there is an overlap, something which occurs even on nondissolve transitions, if only for a frame wipe-out on the A-side and wipe-in on the B-side. While this was very common in the days of mag editing to allow for the chance that units on separate film dubbers would slip in different directions, thus creating a gap if there was no margin for error, this problem doesn't exist if you're mixing from a workstation or multitrack. Nevertheless, short wipes are still a good idea to smooth out all edits.

Backgrounds should be the easiest material to cut and lay out because for the most part they go stem to stem in a scene. However, I think very few sound editors take advantage of what I think is an obvious solution to the scene-specific nature of BGs: devoting groups of tracks to the A- and B-sides of cuts. For example, let's say that you will be stringing off your workstation-cut BGs to two sets of MDM tapes, so you have 16 tracks to play with. I would devote tracks 1-8 and 9-16 to alternating scenes. Even if the first scene only requires one simple stereo pair, the second scene's tracks would begin on tracks 9/10.

Tracks cut in this manner are very instinctive to mix because you have a clear idea of which faders to grab for the



next scene; if you had put scene 1 on tracks 1/2, scene 2 on tracks 4-12, then scene 3 would probably go on 13-16 and 1-4 if it needed 8 tracks. And what if you decide to add another stereo pair to scene 1 later; the next open tracks (that don't butt up against scene 2) are on 13/14. It gets messy real quick.

You start to wrap yourself in circles not only in terms of what faders the material will be appearing on, but also how to bus them, if you want to keep any sort of A- and B-side separation on your premixes. There are obvious exceptions to this rule, such as when crosscutting among three locations, when you would try to keep scenes on contiguous faders as much as possible. This rule also applies when you fill up all eight tracks of a side, say 9-16. If you need more tracks, then you would first jump over to 7/8.

You should lay out each side for maximum flexibility and consistency according to the tracks at hand. For example if you have a large number of MS-encoded tracks, you might want to devote tracks 1/2 and 9/10 to MS material to save the mixer from constantly having to re-bus the sends to the decoder. I also like to keep the last two tracks of each side (7/8 and 15/16 in this example) as wild tracks that are usually separate mono elements. I think that mono, center-speaker-assigned BGs have a very important function in this era of discrete digital mixes in filling up the center speaker, especially for the M&E mix, when the air of the production track is lost. The wild pair can, of course, also function as another LR or MS pair. If they're a second MS pair, at the mix I might assign them center and surround without using an MS decoder.

Cue sheets should always be as succinct as possible, and I think it's a waste of everyone's time and energy to devote two columns to one stereo (LR or MS) pair. Thus, in our 16-track scenario, there would be 10 columns: 1/2, 3/4, 5/6, 7, 8, 9/10, 11/12, 13/14, 15 and 16.

Of course, the exact "scene breaks" differ with the number of tracks you're bringing to the stage; if you will be stringing off to 2-inch, then you have 22 tracks at your disposal. In these cases, I make a clean break at track 10, with the B-side being a mnemonic 11-20. The remaining tracks, 21-22, are wild spillover tracks usually assigned as A- and B-side monos.

Foley layout is primarily determined by the complexity of the show and the time you have to spend on the stage. If you have three days to do a simple film, you probably won't need more than eight tracks; on the other hand, if you have a ten-week schedule, then you might need more than one 24-track tape, and you certainly can afford it!

I have found that the relatively simple films that I end up doing can be accommodated quite nicely by eight tracks. In the standard manner, I usually try to keep the principal character's footsteps on track 1, with secondary characters and background footsteps on 2-3. Props usually occupy tracks 4-7, with track 8 dedicated to the all-purpose cloth movement track that is most useful for M&Es and scenes that are totally looped.

While the needs of a given scene might change the Mason-Dixon line between props and footsteps if you are restricted to eight tracks, always try to be as consistent as possible.

I'll talk more about Foley, along with some opinions on its first cousin, ADR, in next month's column. As always, I can be reached 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/rerecording mixer who lives in New Orleans for reasons too numerous to mention, although he's sorry to report that good Thai cuisine is not one of them. L.A. is still the place.

DESIGNING A CD LIBRARY

by Eric Rudolph

Clive Smith knew he could easily find a wide variety of sound effects and music on CD libraries. But what he really needed was a library of sounds that fell between those two categories. His frustration turned into The Designer Sound Library, a three-CD collection that the musician, composer, programmer, producer and sound designer created in collaboration with composer/sound designer Jonathan Helfand.

The sounds Smith and Helfand created for The Designer Sound Library fall into no previously existing category. "Jonathan and I wanted to address the gray area between music and effects," Smith says. "When sound designers are creating a soundscape, they will often use separate music and effects libraries. However, the least-addressed area is what falls between the two. I felt that the elements of both sound effects and music could be combined to create the missing ingredient."

"The point for me was creating a set of tools, a sound design construction kit, if you will, to give editors a creative library to 'score' to picture," adds Helfand. "The sounds are categorized as verbs, to match motion you might see onscreen. In creating the sounds, I was aware of the envelopes first and the source material second. I said, 'Okay, we need a group of sounds to match motion that is rising.' So I created a set of pitch envelopes in the Fairlight MFX3 that ascended over time, then designed textures to plug into them. The same process was used for descends, wipes, hits, etc. My raw sounds came from location recordings, analog synthesis, digital synthesis and various other sources."

Smith has a long and varied list of credits, including composing the score for the film *Liquid Sky*; creating background theme and promotional music for major prime-time network television shows; live Fairlight performing and/or programming for everyone from Sly Dunbar and Robbie Shakespeare, Hall & Oates and Yoko Ono, to an extensive multi-instrumental performing career with the Electronic Art Ensemble and his own mid-'70s band Conversion. He has also served as a consultant for Fairlight and Technos Inc. (makers of the ACXEL Resynthesizer), and recently released a solo album titled *Clever Animals*, on Exploded View records.

Smith's need for readily available nonmusical and non-effects sounds to integrate with his own musical work helped him identify this under-serviced niche. He describes his contribution to the Designer Sound Library as "rumbles and sparkles, ambient atmospheres and nonrepresentational effects. There are no real-world sounds, certainly no gunshots or door slams. Also, there is no melodic or rhythmic content to my contributions to the library. I tried to keep the sounds elemental enough so they can be used together in different combinations, rather than having a lot of really interesting sonic events that might not be as useful or adaptable. My contributions lean a little bit more toward the musical, and Jonathan's are more like effects."

Clive Smith (L) and Jonathan Helfand

Smith, who has been working with synthesizers since the mid-'70s, used some key pieces of his collection of vintage synth gear to create unusual and often eerie sounds. "I used my reasonably good-sized Buchla 100 Series synthesizer, which I believe was one of the first modular synths," he notes. "Some of the modules date back to about 1967; we're talking about a very old machine. It's been modified, but a lot of the modules are still in their original state; it still has that old-time modular synth approach, which allows you to do a lot more patching. None of the new synthesizers, except the Serge Modular, give you that type of control.

"Also, I had an Oberheim synth expander module modified so that I can have access to all the internal patch points. And with the help of a friend, I built a sort of customized sample-and-hold and track-and-hold unit from an Electronic Music Labs custom kit. With the Buchla, Oberheim synth expander module and the home-built EML unit hooked together, I found I could create some interesting analog atmospheres. I also used the Fairlight Series III and the ACXEL Resynthesizer, which offers a lot of real-time control."

Smith found the resynthesis capability of the ACXEL to be one of his most useful tools. "Instead of just doing playback of samples, the ACXEL analyzes a sound and breaks it down to harmonic components, extracting a recipe for creating that sound. That recipe consists of values assigned to the real-time internal oscillators and determinations of how many oscillators are needed to create the sound. The ACXEL then assigns the amplitude and pitch envelope to however many oscillators are needed to create the sound. What is nice about that is that you can stretch sounds in real time and change their duration without altering the pitch, and vice versa. It is nice to be able to avoid the 'munchkin-ization' you get when you try that with samplers.

"As an example, on the Designer Sound Library, there is a cymbal sound where I took out the harmonics that I didn't feel were interesting. The ones that were interesting I stretched out over time, so a four-second cymbal crash became a 32-second event," Smith explains.

"The ACXEL and Fairlight together made a good team," he continues. "The Fairlight is good at time-domain manipulations because it is a sample playback unit. The ACXEL excels at the frequency domain, so with the two I had the two main ways that sound can be controlled at my fingertips."

The sounds were recorded simply, mostly straight to DAT. Only a few pieces were manipulated with Pro Tools, "mainly because I didn't have Pro Tools when I was making most of the sounds," Smith notes. "I did a lot of combining with the Fairlight. I layered things and sampled them back to a stereo sample in the Fairlight, creating some dense textures that way."

A Roland SN 550 single-ended noise reduction unit was used, especially with the material generated by the older analog synthesizers. "The SN 550 cleans things up nicely, getting rid of general noise. It also locks onto line frequency

and gets rid of 60-cycle hum, which is very handy," Smith adds.

"We're looking forward to getting the Designer Sound Library out; there is a good demand for this type of material, primarily from sound designers and those who do sound for film and television," says Scott Whitney, executive vice president of The Hollywood Edge. "Sound designers can take these sounds and turn them into all different kinds of new sounds. We think we'll even sell some to musicians, who'll put them into a sampler or a digital workstation and work them into their recordings or live performances.

"Scott, Clive and I view the Designer Sound Library as an ongoing project," adds Helfand. "We will release additional discs by Clive and myself, but it's also a venue for other designers, hence the name."

Smith agrees that musicians may well find the library useful. "I would create sounds like these for use in my own recordings, and often I would get so involved with the sounds I would lose the compositional thread," he says. "Having these sounds available is very useful to me as a composer; I assume they'll be useful to others as well." ■

Eric Rudolph is a frequent contributor to Mix.

—FROM PAGE SFP15, L.A. EAST STUDIOS

to Thornton. "We realized we wouldn't make a lot as session players, unless we started our own company and brought work into Utah," he says. So after a trade show, the team bamboozled an ABC executive into giving them a shot at an on-air Christmas campaign. It's been 16 years since their first television campaign, and since then they've branched into the film trailer business (*Independence Day*, *Forrest Gump*, *Quiz Show* and *Toy Story* are just some of their credits), the advertising market (Tombstone Pizza and Velveeta Cheese), as well as continuing in broadcast (including a seven-year stint working on *Good Morning America*, two years on NBC's *Today Show* and music for *The Oprah Winfrey Show*).

The partners spent the first five years booking as much time as possible in facilities located in Salt Lake City, Provo and Orem, until they got tired of spending more time on the road than in the studio. After hunting around, they found the church on South Street, which had been at various times a mortuary, a movie theater, a playhouse and a recording studio. After looking at the space and discovering a room that Tom Hidley had designed in 1976, they inked a deal to rent. After a year, it became clear that the room needed some substantial upgrades, so rather than make the improvements while renting, they decided to buy the building.

Over the past ten years, the staff of L.A. East and Salt Lake City-based acoustic consultant Palmer Patteson have strengthened the dynamics of the Hidley room and completely revamped three other rooms, as well as the chapel proper. "Fortunately, we've experimented as we've gone along," says Thornton. "We haven't made major structural changes and changed things that would have impacted the basic acoustic design that Tom Hidley did."

Within the chapel proper, where the playhouse had staged their performances, the team removed a portion of the stage, repainted the walls and generally restored it to its church-like look, according to engineer Glen Neibaur. "The room itself was very diffuse to begin with, and the reverb time was too long, especially in the low frequencies of 500 cycles and down. At 500 cycles, in fact, the reverb lasted almost five seconds." To correct these problems, Patteson designed some diaphragmatic absorbers to go on the walls for broadband absorption, made some trapezoidal-shaped traps to diffuse the high frequencies and absorb the low to mid-frequencies, and hung some half-cylinder diffusors about 15 to 20 feet off the floor. Ideally, as with most classical orchestra spaces, the diffusors were designed to redirect the sound back toward the players.

When all was said and done, L.A. East had a scoring stage, with about a third of the room on a riser, that could fit a little over 70 musicians. Every so often, a composer would come in with an idea that would require 80-plus pieces, so the L.A. East team scrambled and came up with some quick solutions. First, they installed a closed-circuit television system that connected the chapel to Studio A to the control rooms. "There are those times when we have 70 pieces in the chapel and another 15 in Studio A," explains Judd Mayer, Non Stop's head engineer. "We'll have a projection screen on the conductor so the brass pieces in the other room can see."

While studios and control rooms can be mixed and matched, every project that comes through L.A. East's doors ends up in Studio D, the company's digital editing bay. The room is built around a Studer Dyaxis 640 workstation and a Dyaxis System Synchronizer with timecode card, and also features an Ampex ATR 102 ¼-inch 2-track machine, Marantz CDR600 CD recorder and Amek/TAC Bullet 10x4x2 console.

The control room for Studio A, the Hidley room, includes a Quad Eight Virtuoso console with a Studer A827 24-track recorder and Dolby SR. Also included is an Ampex 104 with Dolby SR 363 and an Otari MTR-12, as well as a couple of Panasonic SV-3700 DATs and Alesis ADATs. In each of the rooms they are running Brainstorm Electronics' SR-26 timecode distributor/reshaper and SR-15 timecode Distripalyzer, and have a number of JVC ¾-inch video machines and Videotek video monitors. Scattered throughout the three rooms are a bevy of effects such as a Lexicon's 480L, 200 and PCM42, a Sony MUR 201 and Yamaha's REV7 and SPX90. They also have two grand pianos in the studio, a Yamaha C7 in Studio A and a Samick 9-foot on the scoring stage.

And as they've been concentrating on making L.A. East acoustically clean and modern, the folks in Salt Lake City are also making sure that they stay one step ahead of their Los Angeles-based brethren. As one of the first music houses in the world with a fiber optics delivery system, which they've networked to nearly all of the available studios, Non Stop and L.A. East are even closer to a client than someone a block or two away. As Mayer explains, "It allows us to compete with companies in Los Angeles because the producer or whoever can sit in on the sessions and hear the music right away." In the end, it seems as if the music production company and the studio are living up to their name: Non Stop. ■

David John Farinella is a freelance writer based in the San Francisco Bay Area.

—FROM PAGE SFP15, COLLECTIVE CYBERIA

sound designer/composer P.J. Hanke and a growing number of commercial composers/arrangers, including John Powell, who scored a Mountain Dew spot late last year that featured the first pitch performance by action hero Jackie Chan.

The composers we spoke with all

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expressed enormous respect for Zimmer, and they say that, although he's top dog, he seeks out composers who can influence his work as much as he does theirs.

Mark Levy, senior executive producer for Cyberia, makes it clear that while Zimmer has hand-picked the staff, they have been brought in to do their thing, not his. "Each of the composers we work with has a strong background and an individual style of their own. Hans does have an influence creatively. He exposes the staff to the large, sweeping kinds of assignments he gets involved with in the film world and makes a point to bring each of our writers into that experience—asking for feedback, being open to their suggestions.

"In turn, the rest of the staff is naturally going to be influenced by Hans and the directions his career has taken," Levy continues. "Since he has had such success, he serves as a kind of mentor, someone who the others can bounce ideas off. Another unifying element to the sound that carries over from Media Ventures to Cyberia is our equipment. We have great gear, and in the area of samples, for example, our collection is one of a kind. During Hans' film career, he has assembled samples from all over the world, featuring the London Symphony Orchestra all the way down to a single animal sound recorded in some remote corner of the globe.

"Particularly in the demo area, the power and breadth of our sample collection gives our composers an edge over other houses who might use off-the-shelf libraries. I can't stress enough that while Hans is a leading figure in giving our entire operation a recognizable sound and profile, his goal and ours is to expand what we offer by bringing in gifted artists, each of whom has something unique to contribute."

Media Ventures/Cyberia has eight writer's rooms. Zimmer's room features a Euphonix console (Euphonix boards are also in all three mix rooms; a 96-input CS3000 is featured in Mix Room A, while six of the others center around Yamaha 02Rs—a whopping 17 all told. Roy Hay currently works on a Mackie 8-bus board, but that will be replaced in the near future by a pair of 02Rs.

About 25% of all Cyberia commercial mixes are handled by the composers and staff engineers in the writers' rooms themselves. Bigger jobs that call for larger rooms and more extensive monitoring are handled in one of the three mix rooms. The writers' rooms are not networked to each other, but all can access centrally located machine rooms via tielines.

Yamaha NS10 monitors are still in favor at Cyberia, although Jeff Rona likes to listen on Genelecs. Spots are generally delivered on DAT, although if splits are required, DA-88s are the preferred mixdown medium.

Levy says that one hole Cyberia recently plugged was in the area of sound design. "In the past, we were concentrating exclusively on composing and arranging, and leaving sound design for outside companies," he explains. "However, we were not always pleased with the final results, and we realized that the commercial marketplace expects that a music house will have both compositional and sound design talent onboard. Rather than go out and get anyone, we waited and explored. Eventually, we brought Claude Letessier over from France to serve as creative director of Sound Tracks. Claude has his own company, Vol de Nuit, in Paris, and through that operation we've been able to branch out and score a number of European spots, as well as use his talents here in the States."

Letessier is a big fan of musique concrète. Is there a European style for spots

and sound design? "The same percentages of junk and creative stuff exist in both the European and U.S. markets," Letessier says. "The biggest difference is the volume of material produced here. Also, American advertising tends to be very straightforward and direct: 'This product is good. Buy it!' In France, people don't respond to this approach anymore. There has to be a more subliminal approach; advertisers must use different paths to reach the same target. Therefore, humor and irony are used more than they are here, and when it works, the results can be wonderful. Another danger that I see in American commercials is the reliance on beautiful, dramatic footage that has no idea attached to it. All of the products that rely on this type of film end up being unified in the audience's mind, and the message or identity that you wanted to establish can be lost."

Letessier, who has had no formal training in music, takes a minimalist approach to the craft of sound design, stripping away frequencies wherever possible, leaving holes that might draw the listener in. "Silence is the payoff, it's the reward," he says. "You have to represent silence—absolute silence doesn't exist. The Japanese celebrate silence. Prepare your mind to fade away from noise and put yourself into the silence. That is a very rewarding experience. Art is everywhere—it's not dedicated exclusively to an elite class. What I have learned from Hans is more human than musical. We all learn from the equipment he uses and how he uses it. He goes very deeply into the machines. He's a very emotional person, he brings a lot of dynamics to his work. We share lots of emotions together."

Cyberia also recently added to its production staff by hiring New York commercial music producer/engineer Maureen Thompson. "I worked at Young & Rubicam for nine years and was an engineer for seven years prior to that," she says. "So I come to Cyberia prepared to share my experiences in both the business of commercial music and its recording." Within weeks of Thompson's hiring, she had snagged a primo job—the Jackie Chan spot for Mountain Dew—from the New York office of BBDO.

"The talks we had with the agency creatives were very helpful," she says. "We got quite specific with them, which let us give them exactly what they needed—a score that was humorous and made you feel as if you were inside a 60-second action film. It was important for us to know exactly how much ethnicity they wanted us to flavor the score with. As it turns out, we had one of the first melody lines given to a koto sample, and that was it. From there on, John Powell's sweeping score for full orchestra carried the day."

So what's different about working with Boy George and Hans Zimmer, Roy Hay? The composer, who began formal music training in piano and theory at the Trinity College of Music in London, laughs. "When we started the band, we were young and we wanted to change the world. In bands, the rule is, 'He who shouts the loudest wins!' Passion rules the day.

"I don't know that you're ever really driven by passion in the spot business, but there are great rewards—financially and emotionally," he adds. "I'm the kind of person who needs to have a reason for writing, a professional pressure that gets my musical bones going. I'll drift off at home and play the piano or guitar, but having that thing where you're just following a muse doesn't seem to work for me—maybe that's a bit sad.

"Differences and similarities in writing songs and spots? The similarities are the best place to start," Hay continues. "I'm a firm believer in the tune. Whether writing a song, a theme for a film or the tune of a commercial, I respond to melody, and I think that a good tune transfers across media. You can keep the chorus-melody structure going in a film, where you're not restricted by a three-minute format, as you would be in the pop market. However, you do have to keep returning somewhere. Wait a second, now that I think about it, 'Do You Really Want to Hurt Me' didn't really have a chorus!"

Hay concedes that for all the benefits of working near Zimmer, there is a down side. "I suffer from the 'Oh, you're a Hans sidekick' factor. I came independently through Hans' partner, and I was brought in to give Cyberia a shot in the arm. We have the ability to create the 'Hans sound,' or at least work in his vibe, but there's a great diversity of talent here, and people are beginning to realize the range of product we can turn out. I kind of think of this place as the Motown of film and commercials. As a creative environment, it's a very exciting place to be. There's lots of technical support and service, but on a pure creative level, it's fun to not be alone!" ■

Gary Eskow is a writer, producer and composer based in New Jersey.

Sound Effects Recording

BY RICK CLARK

> EVERY FILM SHOULD HAVE A SIGNIFICANT AMOUNT OF NEW, FRESH SOUNDS THAT NOBODY HAS EVER HEARD BEFORE.
> —CHRISTOPHER BOYES

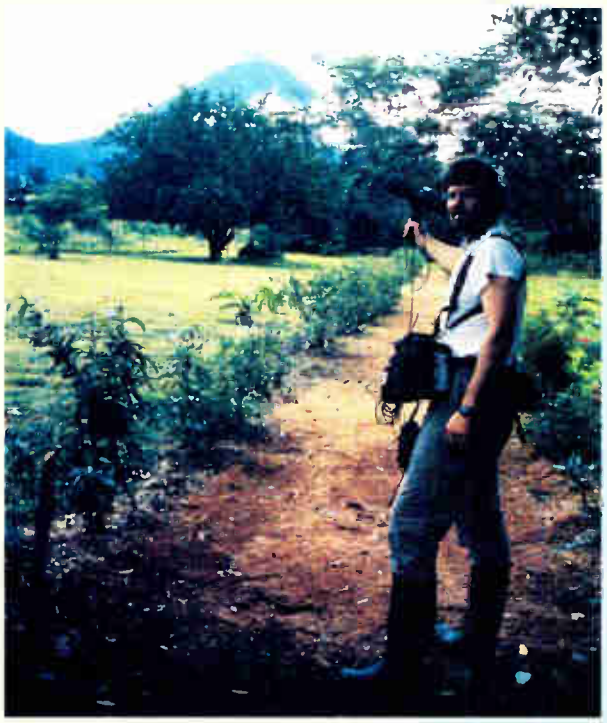
The world is full of sounds that are too often taken for granted. Those of us who spend huge chunks of our lives in studios and listening rooms, analyzing the soundstages and wet and dry properties of a particular musical recordings, rarely take the time to focus our awareness and appreciation of the natural sonic richness that surrounds us every day.

Field recording for film and television and for ambient augmentation in musical settings requires much more than a mere documentary approach. An essential understanding of the gestalt of the cinematic or musical moment in which the ambient recording is to be applied is essential for conveying the proper tone. For example, if a scene is melancholy, then the audio environment around it should enhance or otherwise respond to that mood.

In the following sections, four sound designers/field recordists offer a variety of perspectives on their craft. All these professionals have spent significant amounts of time in the field, alone with their DAT machines, Nagras and mics, capturing sounds in every place imaginable.

CHRISTOPHER BOYES

Christopher Boyes wanted to be a part of movie-making since his early teens. For years, he thought that his call-



Chris Boyes recording the ecosystems and exotic sounds of Costa Rica with the HHB PortaDAT for The Lost World, *the sequel to* Jurassic Park.

PHOTO: GLENFIELD PAYNE

Ben Cheah recording sound effects with a Neumann 191i stereo mic in an MS configuration, onto a Sony Pro II DAT. He also is using an 8mm playback unit (in hand).

ing was in camera work before he finally plunged into the realm of sound field recording, editing and mixing. Wearing the various hats of sound designer, re-recording Foley/ADR and effects mixer, Boyes has amassed an impressive list of credits, including *The Rock, Mission Impossible, The Lost World, Volcano, Mrs. Doubtfire, Jurassic Park, James and the Giant Peach* and many more. Boyes won the 1995 Cinema Audio Society Award for Best Re-recording Mixer for his work on the television special *Indiana Jones and His Hollywood Follies*. He also won the Motion Picture Society of Film Editors 1994 Best Field Recordist and Best Foley Mixer for *Jurassic Park*. His bonzai dedication to field recording inspired renowned sound designer and mentor Gary Rydstrom to call him "the Indiana Jones of effects recordists."

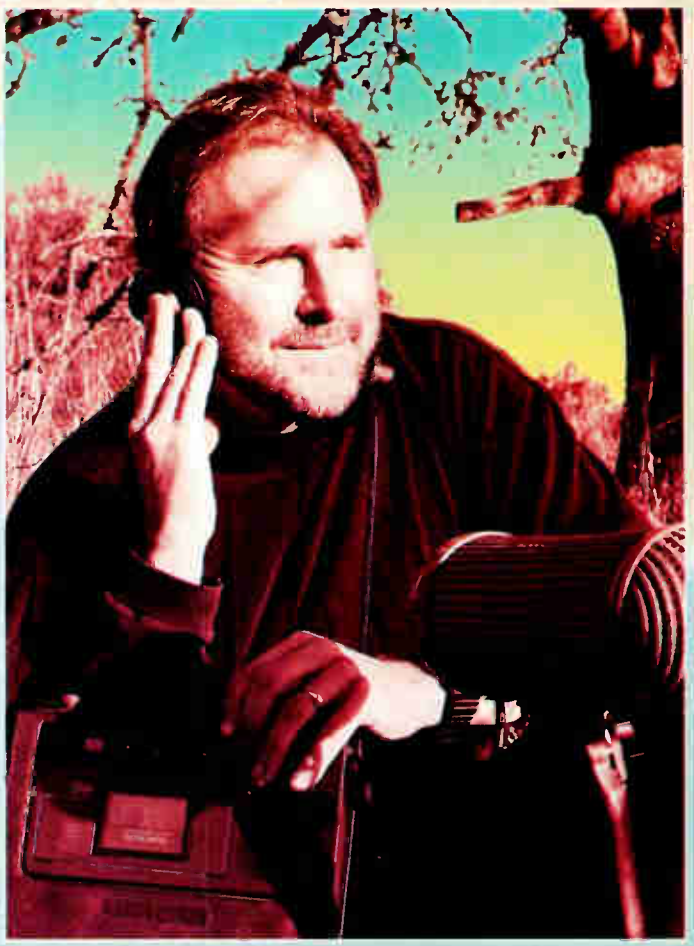
"*Jurassic Park II\The Lost World*, due out this summer] was a big challenge, only because I made it that way. Basically, we knew it was going to be more dinosaurs and more action, and it was going to take place, to a certain extent, in a tropical atmosphere. I flew down to Costa Rica, hired two guides for five days each, and went into jungles, both in the mountainous regions and down on the coastal areas. I recorded 25 DATs worth of tropical ambiences and everything that you can imagine, including volcanoes and alligators. It was a good trip.

"Whenever I go off recording on that kind of scale, I like to capture every time of the day. Audiowise, Costa Rica is really graphic. There is something different happening at every time of the day and night. In the morning, you get these incredible crickets that sound like a burst of a shower nozzle, but with articulation and brightness. They come in right as the sun is coming up. Sometimes you get them at sunset. You only get a three- or four-minute period where this happens. It is the most incredible sound, and anybody hearing it would feel like they are in the most prehistoric place on Earth.

"To get a really clean articulate ambience is difficult. It taxes you creatively and physically, because one, you have to find a place that can give you a beautiful natural ambience; two, you have to get there at a time when you are not going to be adulterated by either motor sounds on the ground or planes in the air; and three, you have to have absolutely superb equipment to get a clean ambience. Everything comes to bear in that.

"The second hardest thing would be animal vocalizations because, unlike humans, they do not perform well. Typically, if they see a microphone, they will think it is a gun. As a result, they clam up, so you have to have an amazing amount of patience. Tame animals are worse than wild ones. At one point, I wanted to record a hippopotamus, and I think I sat there for four hours before it gave one vocalization, but it was worth the wait.

"I have invested a lot of money in microphones and equipment. I bought a Neumann RSM191. On the first night out in Costa Rica we were trying to record owls, and



Dennis Hysom recording sound effects with a Sony TCD-D10PRO DAT recorder

we somehow managed to pull a little bit on the cables going into the mic, and it came apart. We took it apart, and it was like jewelry inside, and you breathed on the cables and it looked like they could come apart. Luckily, I was able to fix it with my Swiss army knife and gaffers tape. I think it sounds great, but I think it's not robust enough for the kind of stuff that we do. For field recording, the most durable mic that I have used is the sister mic to that Neumann RSM191, the KMR81.

"Granted, not everyone tromps into the jungle like I do, but from my point of view every film should have a significant amount of new, fresh sounds that nobody has ever heard before. If someone is doing major sound effects for major films and not doing things like that, then you have to wonder if they are recycling effects. I am a really strong advocate of recording effects for the purposes of sound design for each film that are fresh and new.

"I don't really like the idea of a broad mic for some ambiences. In the jungle, it's amazing. You move your mic 180 degrees—especially if it's a slightly directional mic—and the sound you hear is absolutely different than the sound you heard in the previous position. I would rather get the ambience in one location from two or three perspectives, as opposed to getting that whole ambience from a 360-degree perspective. Then I can mix it as I like. This isn't to say that I wouldn't use a nice set of omnidirectionals for some ambiences. Certainly, some ambiences aren't that directionally sensitive, in terms of the quality of the sound. But when you are deep in the jungle, there is all different sorts of wildlife.

"By and large, 90 percent of the stuff we do is done with DAT. [Boyes uses an HHB PortaDat, or a Sony D8; but he only uses the Sony for laying down numbers, and then only in conjunction with a Luna-tech preamp and Apogee AD1000 A/D converter.] I would hesitate to use a Nagra for ambiences. That is an area where DAT really shines. DAT has totally revolutionized effects recording because of its portability and also its economics. On the other hand, the Nagra is, by all means, a viable player. I wouldn't want to work on a production where there wasn't access to one. I do love them. For *Volcano*, we recorded a lot of loud explosions. I had some guys out at a rock quarry, dumping dynamite down 30-foot holes, for base effects for lava bursting up through the Earth. We sent out a DAT and a Nagra, and, without any doubt, the Nagra was much better in terms of low-end response and dynamic range, and in terms of forgiveness if there was any sort of apparent distortion. It was sort of sucked up in the analog medium, whereas the DAT would have a problem.

RATTLING OFF EQUIPMENT LISTS ISN'T THAT REVEALING. WHAT'S MORE IMPORTANT IS DECENT MIC PLACEMENT AND A SOUND SOURCE WITH CHARACTER.
—ROGER PARDEE

"At one point in Costa Rica, while I was waiting around to record any given ambience, I noticed that the mud I was standing in, which was around six to 12 inches deep, made a very powerful sound. I started recording that. That turned out great and is going to make its way into *Lost World* and *Volcano* in separate entities, for things like dinosaurs eating and for lava glops. You can be anywhere in the world looking for one thing out in the field, and if you stumble across something else, you never know what you'll use it for."

ROGER PARDEE

Roger Pardee grew up in the Midwest with a desire to get into the movie business. Getting into the industry via the academic route seemed to make the most sense, so Pardee studied film in graduate school at the University of Southern California, where he discovered that recording sound held the greatest appeal. Pardee hooked up with supervising sound editors Jay Wilkinson and John Larsen to work at John Glascock's Location Sound Services in the early '80s. It was the beginning of what has been a successful, ongoing relationship.

Pardee's film credits include *Waterworld*, *Tombstone*, *Geronimo*, *Last Action Hero*, *Trespass*, *Raising Cain*, *The Doctor*, *Red Heat*, *Rambo III* and *To Live and Die in L.A.*, among many others. When he isn't working on productions, Pardee teaches courses in film sound recording to undergrads and grad-school candidates at USC.

"Sometimes the logistics of field recording can get difficult. For *Men in Black* [currently in post-production at C5 in New York], Hamilton Sterling somehow tracked down a gentleman who owned a small jet engine and could trailer it out to Mirage dry lake and tow it back and forth, while Hamilton and I recorded it. It was worth it. To record a real jet screaming past a few feet from your face could make you nervous—you might spill your coffee and hurt someone.

"I have recorded an awful lot of vehicles. It seems to be a kind of a specialty. The first time I had to record cars was for *To Live and Die in L.A.* [1985]. I filled up tape after tape, teaching myself how to do it. There is no big trick to recording a car starting and driving away, or a car driving by. The trick is for the shots where you are tracking alongside the car. It is not an interior sound. It's more of a mixture of the sound that comes from the engine compartment, and also the exhaust, and a little bit of tire work. That kind of sound doesn't always play well in a movie.

"Basically, what I ended up doing was putting a mic under the engine compartment and another mic back by the tailpipe and mixed the two together. I used the term 'onboard' to distinguish that from an 'interior' sound. An 'interior' sound is distinctive, too, but it's not real exciting, in terms of drama, if you are just driving along in a car, with the windows rolled up. You don't really hear a lot of engine, yet that's an element that you would like to have, when you have a shot of the good guy driving along inside the car. So what I do is record a simultaneous onboard track and a stereo interior track, using two synched DATs. That way, when you are inside of the car, you could play the interior and sweeten it with the onboard engine sound. We have used that technique with quite a bit of success. For onboards, I tend to use dynamic mics, like RE-15s, because they are very sturdy and can take a little bit of heat. You could put a condenser mic in the en-

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gine compartment, but it's not the best treatment for an expensive condenser mic.

"Miking the engine compartment isn't hard, but miking the tailpipe gets tricky because of the wind noise when the car is in motion. After some extensive R&D, we designed some special wind-noise attenuators. It's true that they look like old coffee cans, lined with carpet, but that is only because we never got around to painting them! I tend to use an RE-15 or a Shure dynamic back by the tailpipe. We tend to have those pretty rigged.

"I use a Sony TCD-D10 Pro DAT recorder with Schoeps hypercardiod mics, typically. For more rugged stuff, we have some EV RE-15s that go back many years; they're practically indestructible. And I have some other mics I've accumulated. But rattling off equipment lists isn't that revealing. What's more important is decent mic placement and a sound source with character. I've recorded some really nice effects using analog cassette decks and $40 mics; I just happened to be standing in a good spot during a good sound. You don't have to be an audiophile. After all, you can take Madonna's voice and run it through some Art Deco preamp the size of a cinder block, but it's still going to come out sounding like Madonna. Personally, I'd rather hear some low-fi recording of Billie Holiday.

"There are guys waxing enthusiastic over certain mic preamps now, like they are some kind of fine wine. The gimmick is to have huge knobs and dials on everything. It's like a fad. I'm sure they sound fine, but it sometimes strikes me as absurd and trendy. It's like 'Here is my Rack-O-Gear.' Yeah, I've got a rack-o-gear, but how interesting is it to rattle on and on about what's in the rack. If having a rack full of the latest shiny gear gives you goosebumps, then go ahead. It's harmless fun. But I'm not sure it's that important. I'd rather hear sophisticated dialog out of a crude sound system than the reverse. Isn't it what you do with it that matters?

"When I teach intro film sound classes, I like to reassure the students that they do not have to be engineering or computer wizards to do creative sound work. In a sense, you need to become just comfortable enough with the technology so that you can ignore it, because if you're busy thinking about SCSI drives and file management, then you're not thinking about the story and the feel of the sounds.

"I like to start by playing a series of sound effects and getting people to discuss the feelings they evoke. Then you can start to analyze the causes of the feelings. Some sounds have subjective memories and associations linked to them: The clickety whir of a Lionel train set can trigger intense nostalgia in some baby boomers. Or you can look at the objective character of the sound—maybe one reason that gentle surf is so soothing is because it's analogous to the heavy, regular breathing of someone sound asleep. Once you start thinking in those terms you begin to appreciate how even fairly mundane sounds like air conditioning can have character. In the end you ask yourself, is the sound interesting? Is it involving? Does it do any good?"

BEN CHEAH

With over 30 features to his credit, Ben Cheah's sound effects and field recording work have graced films like *Fargo*, *Big Night*, *Casino*, *Lone Star* and *Get Shorty*. Cheah currently works in New York at C5 Inc., one of the East Coast's premier post houses. Prior to his job at C5, Cheah spent the last half of the '80s in Australia working as a sound engineer.

"Part of making quality sound effects is recording the live, organic elements of those sounds. Without good original sounds, it's difficult to make original sound effects. It doesn't matter how simple or complex the sound is going to be, it all depends on the source sound that you have. It's important to have original source material in every soundtrack for making things sound like they don't just come from a [sound library] CD. Otherwise, you find different sound editors from every sound house using the same sets of CDs, and that really limits the amount of fresh material that's coming in. When you are doing location recording, you are able to fine-tune perspectives, whereas the people who are limited to just using libraries are usually stuck to the one perspective that has been offered.

"There's a lot to be said for recording with Nagras, especially for percussive sounds—gun shots and explosions. Generally, I record to Sony TCD-D10 Pro II DAT and [usually] use two mic setups: a Schoeps MS pair, and a Neumann XY pair. I also use a high-quality French mic preamp called an EEA. I think the Sony is a very hardy machine, and it's at a good price. If I get another machine, I might get the HHB. I like the fact that it has a flexible sampling rate.

"Our job is highlighting drama in a scene, be it a very subtle moment or a very violent moment. We are trying to create more interesting elements and dimension through the use of sound. You are often overacting the drama with sound, but that is the way that you can translate things into telling the story. It adds a whole extra dimension to the scene. The emphasis is on drama, and recording it in the correct situation.

"For instance, when you are recording vehicles, the real thing usually doesn't sound big enough. If you find the right vehicle, and you drive it in and follow the action, it doesn't sound dramatic enough, so you have to screech the car in and out to make it sound right. Otherwise, the difference between reality and filmmaking falls apart."

OUR JOB IS HIGHLIGHTING DRAMA IN A SCENE. WE ARE TRYING TO CREATE MORE INTERESTING ELEMENTS AND DIMENSION THROUGH THE USE OF SOUND.
—BEN CHEAH

DENNIS HYSOM

Dennis Hysom has enjoyed substantial success wearing the hats of producer, composer, musician and field recordist for numerous environmentally inspired audio CDs that feature his extensive field recording work and evocative compositions. Of particular note is his series of releases for The Nature Company, inspired by the Nature Conservancy's Last Great Places program to protect wilderness habitats of rare and endangered species. The titles include

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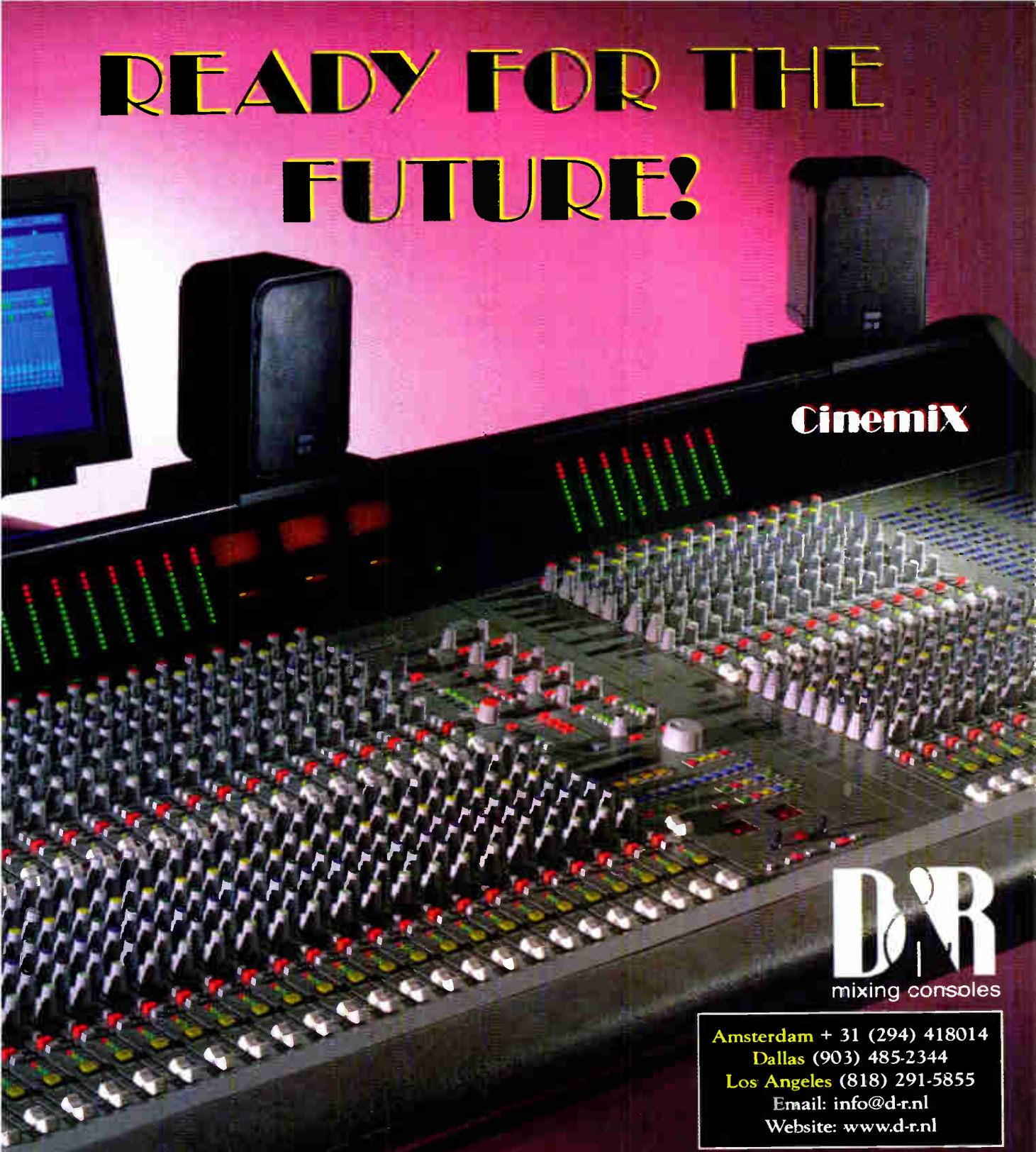

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IT IS GETTING TO BE A VERY CROWDED WORLD, AND IT'S VERY DIFFICULT TO GET TRULY NATURAL SOUNDS FOR ANY LENGTH OF TIME AT ALL.
—DENNIS HYSOM

Cloud Forest, Glacier Bay, Caribbean, Bayou and *Badlands*. Hysom (currently a recording artist for the BMG Kidz label) has also recorded six children's albums, including the Parent's Choice Gold Award-winning *Song Play Hooray!* He resides in Sonoma County, Calif., north of San Francisco, but for his environmental recordings, Hysom has traveled from Alaska to Costa Rica and points in between to capture desired sounds.

"Most of the problems that you find in field recording can be solved if you are patient and persistent and if you plan carefully enough. If you have done your research and know where your species are and have talked to all of the various park rangers involved in managing the wilderness areas, then you can pretty much locate what you want to record. So most of the problems can be avoided.

"For my very first Nature Company project, the one that I did in the Costa Rican rainforest, I took a Nagra. You get these little reels that will last a total of about seven minutes, which in the field is just nothing. It's also very heavy. After I got back, I bought a Sony TCD-D10 Pro portable field recorder. I also bought a Sanken CMS-7. It has a front microphone, as well as two side microphones that are configured in a figure-eight pattern, so that you can move the stereo sound around to be as wide as you want. It is really a wonderfully versatile and durable microphone. I have had it in rainstorms, in steamy, hot weather, and I've never had it fail. I also have a backup machine, which is a Tascam DA-P1. It's a nice, quiet machine, but I don't think it's built as durably as the Sony, which is a real solid workhorse.

"It is getting to be a very crowded world, and it's very difficult to get truly natural sounds for any length of time at all. With its sensitivity, the gear can pick up a lot of human sounds like machines, boats, saws and airplane noises. Consequently, I have to do a lot of editing. For every hour I record, I may come up with a minute of sound that is not only quiet but also interesting. You can sit out there in the field for eight hours at a time and not get anything until something special takes place. In North Dakota, for example, I sat out most of the night trying to record coyotes. Then, finally, there may be two or three cries right near you.

"While we were in Alaska, we went out for a couple of days to record stellar sea lions. There were these small little islands all over the area where they gathered. The boat captain actually took me out on the bow of the boat, and he pulled up fairly close to the two colonies. Each colony of sea lions is looked after by an alpha bull, and both of them were warning me away with these really low belching sounds. I had this really great stereo recording of a bull on the right and a bull on the left warning me away from their harems. We were floating in a rough sea, and we were going extremely up and down, and I was up there trying to balance myself, holding the microphone. It was frightening because the rail of the boat wasn't very high, and it would've been very easy to lose equipment or fall over into the freezing water. We were within 12 to 15 feet of rock outcroppings, and the boat captain was constantly having to backpedal because the water was pushing the boat toward the rocks. It was pretty wild.

"My favorite part of an entire production, from the concept planning stage to the final mastering and duplication process, is scouting out a location and going in and recording. Most of the time, there is something so peaceful about doing it. It's pretty serene, even though it can get a little hairy once in a while." ■

Rick Clark is a Nashville-based writer, songwriter and producer.

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BRINGING IT ALL BACK HOME

Commercial Audio Post In San Francisco

BY TOM KENNY

San Francisco has long lived in the entertainment-industry shadow of Los Angeles. Commercials, film productions and television shows that are shot in the Bay Area, taking advantage of some of the most dramatic backdrops in the continental U.S., often end up in L.A. or Chicago or New York for video and audio post-production. It's the old industry adage of "following the negative home."

But much of that is changing, especially in the television commercial market. What was once seen as a hotbed of creativity, where producers came to the Bay Area to work with Industrial Light & Magic or Western Images, then went back to New York or L.A. to finish, has matured into a bona fide industry, with all the associated services close at hand. Varitel and Western Images have made huge capital investments, first-rate film editors ("the general contractors of the industry," as Music Annex owner David Porter calls them) have set up shops, telecine and color correction have established themselves, and two major audio post facilities have expanded—namely, the Annex's upgrade of Studio 1 and Russian Hill Recording's unveiling of Crescendo, a two-room facility in the heart of the "ad ghetto," down by the Embarcadero.

In fact, audio facilities have been popping up all over San Francisco recently, driven largely by the sound-for-picture market. One Union opened a two-room editorial/mix facility in the ad district two years ago and just recently went all-digital with the purchase of a digital router and Yamaha 02R consoles. Dubeytunes opened last fall as a sound design/composition facility in the SOMA Contract Design Center, downstairs from Western Images. And earwax productions, which leases space from Crescendo, has been providing music for regional and national spots for years. A number of other established facilities serving the commercial audio market thrive in the Bay Area, including Skywalker Sound's commercial division, which had six spots air on the Super Bowl telecast; now the rest of the world is taking notice.

Senior mixer Patrick Fitzgerald at Music Annex's Studio 1, San Francisco, with a Euphonix CS2000P console

"The client perception of an industry is bigger than what any one facility can provide, be it telecine, editorial, audio post or any of the elements," says Porter. "The concern becomes: How much work is there? Does it grow in lockstep? Is there enough audio to support the video editorial? Do these elements grow up in sync, or does one aspect grow out of proportion? For a long time, people came to shoot pictures of our bridges, so there were a lot of shooters in town, and every car commercial on the planet was shot out at the Golden Gate Bridge. But no post. So they took the footage back to L.A. There has to be a big enough talent pool in the various areas of [production and post-production] to create an industry. It has to be in proportion."

For Porter, who opened the audio post satellite of Menlo Park-based Music Annex on Green Street about ten years ago, audio for commercials has always been a steady part of a diet that also includes long-form video, film, new media applications and music. Now that the infrastructure for a commercial industry is in place, he's reacted by slightly reconfiguring his four-mix-room facility, with plans to add a fifth room in the coming year. The investment formula he has followed, since opening the Annex 20 years ago, has centered around the triangle of talent, technology and amenities, in that order. The proportions change, he admits, depending on the market (ad clients demand more amenities, for instance), but talent drives the machine.

"I believe that the best clients are attracted to the best mixers," he says, singing the praises of John Grier, Patrick Fitzgerald and the recently hired Amy Hunter. "And the best mixers are in turn attracted by the best equipment. With that in mind, I have always invested our resources in talent first, then supplied them with the technology and amenities they require to do their best work. As the audio services industry evolves, the need for client services, both technical and nontechnical, will change continuously. So an ongoing program of reinvention and reinvestment is required if a facility is to remain attractive to clients. If at any given time too many resources are committed to any one of these elements [talent, technology and

PHOTO: DAVID W. HAMILTON/IMAGE BANK

At right (and on this month's Mix cover): Crescendo Studios, San Francisco, showing the reception desk, lionhead fountain, lobby entrance and main studio.

PHOTOS: ROBERT WOLSKI DESIGNS

amenities], to the degradation of the other two, the facility is no longer in balance.

"Studio 5 is going to have more client appeal because it will have skylights and lounge areas—it will be a nice place for my client to bring their client," Porter adds. "But what we're really doing by building Studio 5 is reshuffling the real estate so that we can expand our long-form department," which he sees as growing at a faster pace than the commercial business. With Grier moving up to the third floor once Studio 5 is completed, Studio 3 will become a long-form room, and additional editorial, ADR and Foley rooms will open in the basement, creating what Porter says will be his miniaturized version of a full-service, New York-style audio post-production lot.

Certainly, agency clients are different from film clients, who are different from CD-ROM clients. Ad bookings are generally for three hours, a half-day, or a full day. In and out, with revisions. Ten people may be in the room, and five may want to talk on the phone at any one time. They may not care what mic is being used on the voice-over, but they usually know which attitude they like best. And if they want a latte, they're used to getting one.

At the center of this collective creative mayhem sits the mixer, who more often than not is the reason a client picked the facility. Part-time recording engineer, part-time editor, part-time sales rep, part-time sound designer, part-time counselor and full-time mixer...it's no wonder talent sits atop Porter's triangle, and it's not at all surprising that when Russian Hill owners Jack Leahy and Bob Shotland decided to open a satellite in the ad district, they embarked on a nationwide search for engineers. The rooms had been laid out and the Otari Status consoles selected before Jay Shilliday (formerly of Waves in L.A.) and Tim Claman (formerly of Pacific Ocean Post in Santa Monica) came onboard in June for a September 1996 opening. Even with the all-inclusive client services and stunning Italian piazza flavor to the facility (designed by Walters-Storyk, built by Dennis Stearns), the likes of which San Francisco has not seen in terms of creature comforts, the owners knew Shilliday and Claman would end up being the draw.

"It's not like we wanted an L.A. engineer," explains Crescendo and Russian Hill director of operations Cindy McSherry. "We wanted people who mix commercials—they do it because they like doing it, they do it well, they have a client base. They're not engineers who really want to be music engineers. We wanted people who do this passionately, and we found two guys who do it passionately.

"We built this place, conceived it, with advertising clients in mind," she continues. "So it's a place with a lot of attention to customer service, mix rooms that are extremely comfortable for large numbers of people with all the amenities they've come to expect in a world-class facility—like a special producer area with a phone and a mini-bar, and full-time concierge services to take care of all of their needs from breakfast to when they walk out the door."

Very few high-end facilities outside of L.A., New York and perhaps Chicago can afford to focus on such a narrow market segment. Rather, it seems, post studios have followed the "diversify or die" slogan first proposed by Record Plant founder Chris Stone so many years ago. It was a philosophy that worked, and Russian Hill and Music Annex could both be considered what McSherry calls "hybrid facilities," where they do a little bit of everything, from feature films, to ADR work,

to TV commercials, to radio spots, to new media, to music sessions. But as the San Francisco ad market began to reach maturity, the need to specialize, if only to maintain scheduling sanity and full, uninterrupted service, became apparent to the Russian Hill owners.

"In the last five or six years, this ad production ghetto started to develop," McSherry explains. "Agencies were always down here, but then production companies and post facilities started to move their facilities down here. Real Time Video and Varitel moved here. Editorial companies started to spring up. And we found that it was harder and harder to market [Russian Hill]—just through the tunnel—because of location. Clients began to get used to walking across the street to a mix, and for really serious deadline projects, they could go right from the edit into the mix, back to the edit, back and forth. Location became an issue when we started to see a slight decline in the market. So we had to decide whether we wanted to lose this market altogether or go where they are. We knew how to service this type of client and felt we could provide them something they haven't had before. We had a lot of feedback where clients were looking for world-class audio facilities similar to what they were seeing in L.A., with the types of services and level of service. Taking all that feedback to heart, we figured we could do just as well as they do in L.A. and bring San Francisco what they want."

"This market is different than L.A.," adds Claman. "The client's view seems to be more experiential and less technical. They need to feel a session went smoothly and quickly and they had a good time. Nobody is going to ask what preamp I'm using. Their focus is broader, and it has to do with the whole facility.

"I'm used to this level of service we have at Crescendo, but it was clear to me when we opened that most of our clients were not," he adds. "Little things like I have an assistant who stays with me the whole session—I'm not sharing him with someone else, he's not also the dub guy, he's not also the guy who makes coffee. We have a concierge, and she's separate from the receptionist. The dub guy is available to make dubs full time. Clients up here appreciate that. I think they had experienced that in L.A., but I don't think they really expected that up here.

"And even though we only have two identical rooms, it's built infrastructurally like a big facility. We have a central switcher/router, and even though with two rooms you would think that everything could be handled with a few patch cords, we have the speed and flexibility of a larger facility. I assume this would make it very easy to add a third or fourth room."

Technology? Take your pick. Music Annex added a Euphonix console in its Studio I upgrade, Crescendo chose Otari Status. Annex bought in early on the NED PostPros, the high-performance workstation of a few years back, and have added Pro Tools systems; Crescendo purchased Fairlight MFX3s, the current high-performance machine, and also has Pro Tools in an editing/production room. Both have purchased Doremi Labs' V1 disk-based video player/recorders. Annex has D-2 and Digital Betacam; so does Crescendo.

The point is, speed is crucial in the advertising world, and both facilities seem to realize, in their own way and implement at their own pace, that: Talent drives the industry; technology is there to serve the mixer; amenities are expected and encouraged. And once the Porter triangle comes into proper balance, whether within a facility or within a market, an industry matures. ■

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Paul Sandweiss (left) and Sound Design Corp. systems engineer David Crivelli

Paul Sandweiss

Talking Live, Thinking Post

by Joyce J. Jorgenson

During the past two years Paul Sandweiss has handled production sound mixing and audio coordination for the American Music Awards, the Screen Actors Guild Awards, the Blockbuster Music Awards, the VH-1 Honors, the Academy Awards, the Daytime Emmy Awards and the MTV Movie Awards. If that doesn't make him sound busy, go ahead and add the Aspen Comedy Festival, a couple of Network magic specials for NBC, the Big Help Telethon, the Lou Rawls Parade of Stars Telethon, 12 Def Comedy Jam shows, some episodes of *Roseanne*, Countryfest at the Atlanta Motor Speedway and the Jerry Lewis MDA Telethon to his schedule. Then try to imagine how he found time to open up a new audio post-production facility and knock out 13 half-hour specials for Showtime's new Friday night hit, *The Latino Laughs Festival*, which was taped on location in San Antonio, Texas.

Sandweiss' new post facility, Sound Design Corporation, is situated within the Hollywood Center Stages complex in Hollywood, Calif. With this venture successfully under way, he is poised to add a new dimension to his life; up until now, his work has primarily revolved around live events. In a recent conversation with *Mix*, Sandweiss offered his views on live broadcast technology and on making the jump from live sound to post.

Why have you decided to open a post facility when your background is heavily entrenched in live events?

My beginning in professional sound was at Wally Heider Studios, where I became chief engineer of mobile operations in 1976. Wally was a pioneer in audio recording and had all the latest in technology, as well as a number of great people working with him—people like Tom Scott, Jack Crymes, Biff Dawes, Terry Stark, Ken Cailat, Billy Yodelman and Ray Thompson, to name just a few. Heider Studios was without a doubt a special place to be in the late '70s. We would travel around the country working on great shows. If you wanted to record live, and money was no object, you called Wally.

I remember working on shows like The Last Waltz, or Springsteen live at the Roxy. I was lucky to have started at

such a great place when this was a much smaller business. I think I have always wanted a home to hang my hat in since leaving Wally in 1980, because I spent most of my time in remote trucks around the country. Since there are so many great recording facilities already established in Los Angeles, it made sense to head in the post direction, which is really where my interests lie when I'm not working on live television. With the amazing speed, sonic quality and creative license available to post-production audio facilities, operating in the digital domain was a natural for me. Having spent the last twenty years in an analog/linear-type environment, moving into a digital/nonlinear realm was like jumping off a cliff, which I think everyone should do at least once in their career.

Now that you've opened Sound Design Corporation, are you still going to mix live television specials?

Well, for the immediate future, I think that a steady combination of the two formats will keep me busy and content. Looking toward the future, I think that I will continue to mix live events, but I'll tend to concentrate more on post-production. Maybe just mix ten or 12 live events per year and spend the rest of the time in the new studio. I have worked with so many great people over the years in live production, it would be kind of hard to just go quietly into a steady diet of post, although it's nice to get a second pass at a mix every now and then. There are many great engineers out there who spend their lives in remote environments, working hard to get through the complexities of live television. You develop a special kind of "war" bond with each other. I want to retain those relationships by continuing to mix live events, but not every week...

What are some of the major changes you've seen over the past 20 years of live television specials?

Things have become much more intense and, at the same time, much more organized and professional at some levels. I mean you can't expect to just show up at some major event and piece things together. Shows today require a lot of pre-production and groundwork long before you show up on location. There is much more interaction with artists because of their audio requirements, which range from the onstage monitor mix and house mix all the way to the air mix, which usually comes directly under my control.

I remember working on the Grammy Awards and the American Music Awards back in the late '70s and early '80s when only one or two of the bands would perform totally live. It is not uncommon these days to have as many as ten or 12 live performances on one show. It is one thing to do a festival show where ten or 12 acts perform live and you just rotate the equipment from one act to the other; it is quite another to do a live awards show where you need to dedicate specific pieces of equipment for each and every act—there's no chance of just swapping out band mics, instruments, cables and stands.

When we do one of these shows live, if there are ten live performances, we must have ten sets of equipment. In other words, if each act has 30 inputs, we need to supply 300 microphones, end of discussion. In turn, each microphone must be fastened down securely—sometimes we even use chain—because the equipment risers are physically rolled into place during commercials from the wings, sometimes from as far away as 500 feet. This all happens very quickly, and there's not much time for repositioning microphones that have wandered during the journey, so we have to make sure they stay in place. Each microphone must additionally be hand-plugged into a subsnake system before it can be checked through to the mix locations. Things like guitar and keyboard rigs must have prescribed amounts of time after power-up to be ready for performance. There are so many people and pieces of equipment involved in live awards shows these days, it's kind of surprising they work at all.

Sounds like the potential exists for a few discouraging moments in this line of work.

Some days you find yourself sitting in an airport the morning after and you overhear someone telling a friend how great Springsteen or whoever sounded on the Oscars last night. But before you can feel good, the friend replies, "Yeah, sure, but how about when Angelica's lav slipped off her dress and you could barely hear her with the mic dangling down around her thigh..." It's a very unforgiving medium, and you need a lot of excellent mixes to get past an up-cut podium or commercial billboard. Wrapping the theme music too hot around a plug for one of the sponsoring airlines can land you in a coach seat for quite awhile, too.

Do automated consoles serve your needs better than manual ones in these live situations?

Over the years, we have tried every type of automated or manual console made, at all kinds of mix positions, from Soundcraft and Yamaha boards to Euphonix and Cadac, Neve and SSL, Saje and Auditronics, API and Gamble. Each system has its advantages and disadvantages. I can-

not say with absolute certainty that any one console is superior to another overall in these applications. Automation only gets you back to where the performance was the last time the band played—assuming that, in the best case, no mics were mispatched, and no amplifier or instrument knobs were diddled with outside of your automated environment. You still have to manually mix the live performance as it comes off the stage regardless of your level of automation. There definitely seems to be an adrenaline-type thing going on during most live tapings. We just continue to try new things and hang on to the ones that work.

In most of the shows you get involved with, you not only mix the musical acts, but the production elements as well. That must be a bit taxing...

If you break it down on a show like the Academy Awards, we normally have six or seven musical performances that typically run three to four minutes each. The show is supposed to run for its allotted 3 hours, minus 36 to 45 minutes of commercials and 20 to 25 minutes of musical performance. The majority of the show is made up of movie clips, acceptance speeches and people taking long walks to and from the podiums. Blending all those elements around the performances is really the bulk of the job and requires a fair amount of focus to stay on top of it.

Most of these shows are done following a script until somewhere around commercial number one, when everyone realizes that we are running long. We then abandon the script in favor of moderate pandemonium. It's really quite fun. As for being taxing, well, things have indeed become more difficult. Now, when we do a show in New York or Chicago, we have to pay state taxes to those states as well as to our state of residence.

How about your new post-production facility? What type of system are you running for post?

We are trying to maintain a digital signal from start to finish on any project we do. We start out by laying down from D-2 or Digital Beta into our Fairlight MFX-3 using 9-pin control of the video device from the Fairlight. From there we work digitally, internally in the Fairlight domain through our new Yamaha 02R mixer all the way through to a digital layback to D-2 or Digital Beta, depending on the client's specifications. We are controlling machines 300 feet away in the machine room with 110-ohm Belden digital cable. We may add some analog elements during the mix, including voice-over, live instrument or Foley, using a Neumann M149, AKG 414, Sennheiser 416, or other analog microphone. We put this through a John Hardy M-2 mic preamplifier, converted to AES/EBU digital by an Apogee or NVision A/D converter and recorded directly to the Fairlight. We use a TC Electronic M5000 effects unit that is currently interfaced as an analog machine to the 02R.

The speed and flexibility of the new MFX-3 is absolutely incredible. And the sound through the entire process doesn't experience any generational loss or unnecessary A/D or D/A conversion. Also, we load in source audio from DA-88, Sony 800, DAT, CD, or directly from Avid offline sessions. We've just started using E-mu's e-6400 Emulator for quick access to sound effects and storing edited audiences, which we use to get across edits.

When many shows are posted for later broadcast, it's not unusual to pull little pieces of time from the show to cut down on overall running time. Sometimes, this means that a person onstage receiving a standing ovation in a reverse shot may, in the blink of an eye, resume dialog at a later point in the original dialog with a quiet audience. In audio post, you need to bridge that edit by trailing off the original applause much earlier. The e-6400 is a pretty powerful sampler in that application. We load it up with source audience from the original recording, and we can start and stop the audience literally on a dime. We chose the Fairlight and 02R as our main mix system to basically keep our work surface as small as possible and make our environment more like a living room, which has turned out to be quite pleasant. I worked with David Crivelli, our systems engineer, to design the mix suite at Sound Design, and now that we have had the opportunity to post several shows in the room, we are quite pleased with the way things turned out. We are already starting plans for a second mix suite, which we hope to bring online soon.

One last question: What major differences have you found doing post compared to live events?

So far, I think I can safely say that we seem to spend less time in hotel rooms, and we tend to drink a lot more fresh-ground coffee. I also have the luxury now of telling clients not to worry so much. They can fix it in post. ■

Joyce Jorgenson is a freelance writer based in the Chicago area.

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Scoring on The Road

BY CHRIS MICHIE

ARMIN STEINER AND LE MOBILE PULL INTO DENVER

A significant portion of the scores for American-made films are recorded in Los Angeles, usually on the Paramount, Sony, Warner Bros. or Todd-AO soundstages (20th Century Fox's scoring stage is being rebuilt). According to veteran mixer Armin Steiner, it's unusual to go to a remote location for scoring work, but last January Steiner found himself in Le Mobile's remote recording truck recording the Colorado Symphony Orchestra. When released later this year, *Warriors of Virtue*, a mythical adventure that pits five kangaroo-like characters and their young assistant against an evil villain, will feature an original score by Don Davis, recorded with the CSO in Denver's unique Boettcher Concert Hall.

Above: Three of the four Law brothers, (L-to-R) Christopher, Ron and Dennis

Right: Composer Don Davis in Boettcher Concert Hall, Denver

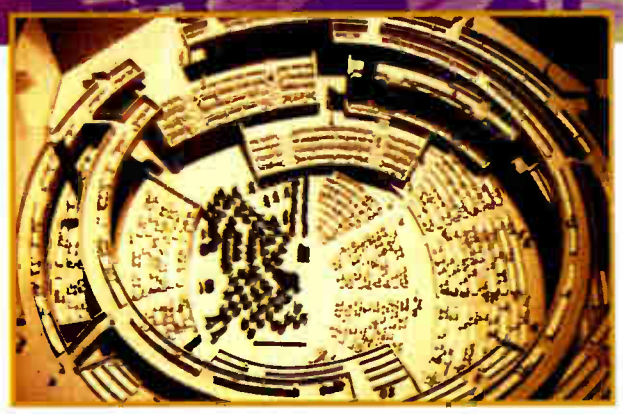
The decision to record in Denver was driven by the fact that the film's producers are sponsors of the arts in general, and patrons of the CSO in particular. The producers, the four Law brothers, are all successful and respected surgeons in the Denver area and apparently felt that the score presented an opportunity to show off the orchestra and the hall. According to Steiner, their faith was well-founded. "The project turned out quite spectacularly," he says.

"The composer, Don Davis, contacted me about a year-and-a-half ago," says Steiner, alluding to a production schedule that has stretched over two-and-a-half years. Eventually, post-production was completed, and the scoring sessions took place from January 3 to 7. Steiner contracted Guy Charbonneau's Le Mobile recording truck for the date, a decision based on more than just technical criteria. "I'm familiar with the crew, I'm familiar with the equipment, I'm familiar with the kind of quality that the truck can give," says Steiner. "Guy is a fanatical perfectionist and keeps everything pristine. He has the most wonderful-sounding truck available for this type of music, in my opinion. I consider Le Mobile to be the best, most musical facility around."

Independent engineer Charlie Bouis set up the truck before its departure from Southern California. Bouis, who is involved with many of Le Mobile's projects and has assisted Steiner before, preassigned all of the mic channels according to Steiner's faxed session notes and set up the busing for simultaneous recording in stereo and 5-channel surround formats. This preparation allowed Bouis and the local Denver crew to spend all of the first two days of January running cables and setting up mics. In addition to a stereo headphone setup with video playback for composer/conductor Davis, the setup called for 90-plus single-muff headphones for the players. Bouis also set up a separate stereo playback suite, complete with video monitor, in a lounge area below the stage.

According to Steiner, the Boettcher Concert Hall is a "very live room" with a decay time close to four seconds. The hall's nontraditional ovoid plan puts the orchestra fairly far out into the room, and the acoustic design relies on suspended "clouds" and other reflective surfaces to both project and reflect the orchestra's sound. Steiner notes that, because of the room's large cubic capacity, the orchestra can get "very, very loud. You would never have a studio with the cubic volume you have in a concert hall. Because we have so much cubic volume, the dynamic

PHOTOS STEVE GROER



Above: The Colorado Symphony Orchestra; right: a model of Denver's Boettcher Concert Hall

range is far more satisfactory" than in a more traditional scoring environment.

Steiner describes his microphone technique as "a really very simple classical recording technique: I don't do anything that other people don't do all over the world." Over the orchestra, he placed three Sennheiser MKH80s (in omni pattern), arranged in a triangular configuration with the center mic placed slightly forward. "I've used them before," says Steiner of the MKH80s. "I think it's just an extraordinary microphone."

WARRIORS OF VIRTUE, AN ADVENTURE THAT PITS FIVE KANGAROO-LIKE CHARACTERS AND THEIR YOUNG ASSISTANT AGAINST AN EVIL VILLAIN, WILL FEATURE AN ORIGINAL SCORE BY DON DAVIS, RECORDED WITH THE COLORADO SYMPHONY ORCHESTRA IN DENVER'S BOETTCHER CONCERT HALL.

The principal mics were supplemented with two outlying MKH20s, also in omni, "to widen the pattern a little bit." One Neumann TLM170 was placed about 15 feet over the French horns, the brass section was assigned another TLM170, also "way up high," and the timpani got another TLM170. Two Neumann KM184s were selected as woodwind mics. "With the transformerless output, they really sound wonderful," says Steiner. He placed one Neumann M149 tube mic (in cardioid) as a distant piano mic; the harp also got its own distant mic ("probably a KM84"), and a pair of supplementary mics were set around ten feet above the percussion section, "just in case they had any whispering kind of instruments that would require additional help."

The synthesizer was taken direct and treated with Steiner's special program for the Roland R880 reverb. "I use that in order to match the reverb content in the hall itself," explains Steiner. "[The Roland] is several years old and has been discontinued, but I love the sound of it, and I use it rather exclusively for my recordings, especially for pop recordings." To provide ambience for the

two surround channels and the stereo soundtrack recording, Steiner placed two Neumann KM130s (in omni) in the second tier of boxes. "That's all you basically need, because it's going to give you everything that was played, except for the synth," explains Steiner, adding that no equalization was used in the recording.

Inside the truck, the surround monitoring setup comprised three Genelec 1031As as left-center-right monitors and Radio Shack Minimus 7s for left and right surround channels. Le Mobile's console is a 1976 Neve 8058, which has had ten VR input strips added to its original 32 Class A Neve inputs. "It's a very good-sounding board," says Steiner. "That was probably one of the best-sounding consoles, and...it's probably better than the day it came out of the factory." According to Steiner, Le Mobile's chief tech, Dave Gallo, has done all of the modifications and has replaced all of the condensers in the board.

The sessions, which ran for five days, at the rate of two three-hour sessions a day, were recorded in the 5-channel format to Tascam DA-88s, with a sixth track used for a combined mono surround track. At the same time, Steiner created a stereo mix for the soundtrack album, which was recorded on a Studer DAT machine. Rather than use the DA-88s' internal A/D converters, Steiner chose to run the console's analog outputs through a Studer D19 MultiDAC to the digital inputs of the DA-88s. Steiner also had Bouis run a 24-track Studer A800 (at 15 ips, with Dolby SR) as protection and backup in the event that subsequent production decisions necessitated a remix. A pair of Panasonic 3500 DAT machines were run in tandem with the DA-88s to provide listening copies.

As Steiner points out, a mobile recording setup must duplicate the complete communications infrastructure of a permanent studio. Bouis created and distributed multiple cue sends, including a stereo send for the conductor and a mono click track for the orchestra's headphones. A CCTV system allowed those in the truck to view the stage, the conductor and also an area of the orchestra, and a private intercom connected Bouis and Steiner with their stage manager, Eric Johnson.

During recording, Steiner and Bouis were joined in the truck by music editor Lori Eschler, who was responsible for all timing and synchronization issues. Eschler's laptop Oracle computer allowed her to create click tracks for each cue, reset timings and insert the video "streamers" that indicate upcoming cues. Yvonne Mateer, Le Mobile's driver, ran the video and timecode machines.

"The orchestra performed brilliantly," says Steiner, who has particular praise for the CSO's regular conductor, Marin Alsop. "She's done a wonderful job of putting this orchestra together," he says. As well as complimenting the players for their musicianship and discipline, Steiner praised the positive and helpful attitude projected by all involved in the session. As part of his setup, Steiner chose to place the second row of woodwinds, the French horns and the trombones on risers, a setup that was unfamiliar to the orchestra. "[The CSO's] David Aeling and his crew were most cooperative and most understanding," says Steiner. "They were all musicians and all understood the music and were not only able to move things and do things for us, but they also understood why. That was something I hadn't experienced before. They really went out of their way." ■

Chris Michie is the technical editor of Mix.

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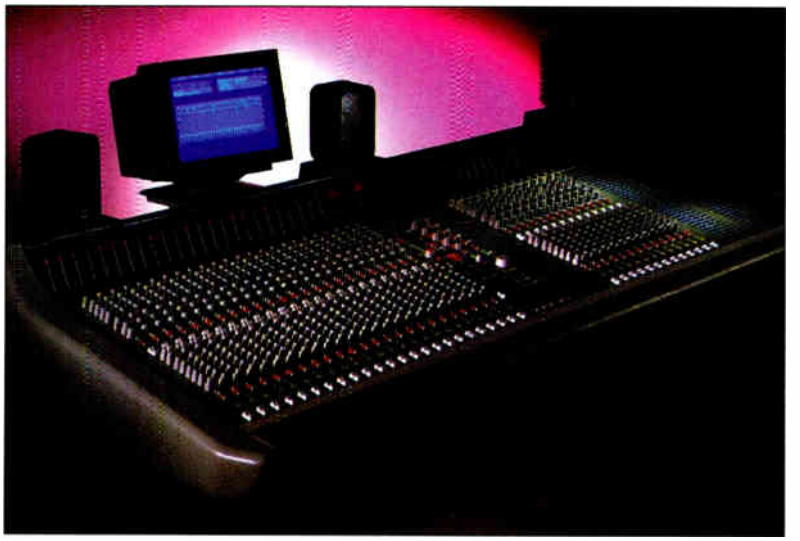
D&R CINEMIX

FILM/VIDEO POST-PRODUCTION CONSOLE



With more facilities looking to handle surround sound mix to picture, in addition to music re-recording and scoring sessions, the D&R Cinemix might just be what the doctor ordered. Laid out in a conventional in-line format with dual-input signal paths and full routing to 24 multitrack buses and six output buses (LCR+LS/RS and sub-bass), Cinemix features microprocessor-controlled routing and recall of primary switch functions, as well as automation of the console's pair of integral joysticks. In other words, Cinemix is not just a dressed-up music board with a few bolted-on extras for multichannel mixing, with their inevitable compromises; instead, it's a from-the-ground-up design that offers a remarkable amount of mixing power for the dollar. (For the trivia-minded: The name "D&R" derives from the firm's founder and chief analog designer, Duco de Rijk.)

Cinemix is available in two mainframes, housing either 32 or 48 mono channel modules. Upper- and lower-channel signal paths are functionally identical, enabling virtually any signal source to be accessed, equalized and routed to any console output bus and/or aux send. In addition, both frames will accommodate up to five dual-path stereo modules. These normally serve as dedicated 2-channel effects returns but can also be used for other applications; in this way, the 32-frame offers 84 simultaneous inputs in remix, while the 48 will handle 116 sources. D&R's Power VCA (standard) or the optional PowerFader servo-controlled level/mute automation can be fitted to either or both signal paths.

An optional Film Module enables the creation of various stems via the 24-track output matrix, which can then be collapsed to create a master surround-sound mix. In addition, D&R offers a multifunction PowerDynamics Module for Cinemix.

However, the pricing of such technology need not break the bank. The various configurations of Cinemix are affordable: For example, a 32-channel frame partially loaded with 24 VCA-equipped modules (for 48 automated inputs) is $37,500; the Cinemix 32X, with 64 mono and 10 stereo inputs fitted with moving faders, costs $64,900; and the top-of-the-line Cinemix 48X, with 96+20 servo-controlled faders and 96 PowerDynamics Modules, is under $89,000. And all configurations include a comprehensive 816-point, balanced TT patchbay with 256 tielines.

BY MEL LAMBERT

DUAL-INPUT CHANNEL TOPOLOGY

In a typical post application, the dual-input channel module might be used to provide multitrack outputs from the upper section, with stem returns being routed via the lower section and its VCA/moving-fader automation to the master 6-channel outputs. The upper channel is referred to as Channel and the lower section as Mix, to denote its normal configuration. The upper bank has a 60mm fader; lower faders are long-throw 100mm units. Internal routing of signal sources plus in/out switching is via D&R's microprocessor-controlled Advanced Routing Multiplex (ARM) system. In-place/PFL solo is standard, along with selection from the upper or lower signal paths to a bank of 13-segment LED bar graph meters per channel. High-resolution peak meters are optional. Six master analog VU meters for the main outputs are provided within the master section, along with a central phase meter.

Derived from the firm's Merlin music-recording console, Cinemix features ten aux sends per channel source, with 4-band EQ on every path. From the master section, you can set up automated assignment to the multitrack and 6-channel outputs, as well as the pair of assignable joystick controls. "Virtual Vision"—a matrix display of automated surround-sound panning status—proves handy for the easily confused.

The Cinemix 4-band EQ per signal path is sweet-sounding, with plenty of boost/cut (±16 dB) if you need it. The four bands overlap nicely, with the LF section running from 10 Hz to 500 Hz, the low-mid from 40 Hz to 1 kHz, the upper-mid from 800 Hz to 16 kHz, and the HF section from 4 kHz to 20 kHz. The upper and lower EQ

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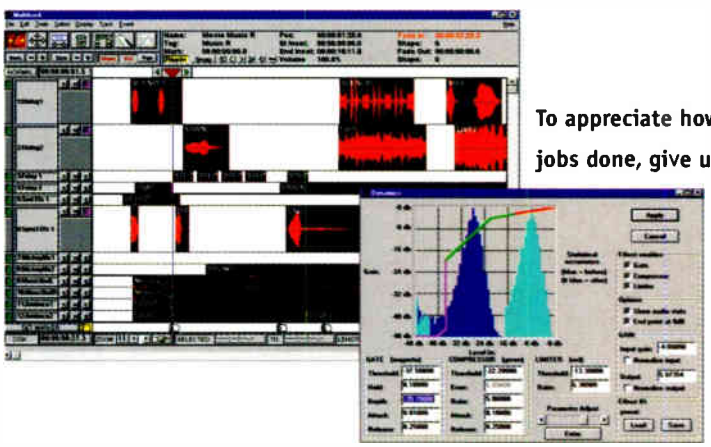

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bands are shelving, while the pair of MF bands feature peak/dip bell response, at a fixed Q of 1.5. The upper Channel signal path also boasts an extra highpass Butterworth filter with a 100Hz turnover point, together with a mic/line switch plus a phantom-power on/off and dual gain controls for the two channel paths. The lack of adjustable bandwidth on the mid-band EQs is slightly annoying, but otherwise Cinemix's equalization capabilities are outstanding.

As would be expected, each Channel path is provided with conventional 2-channel panning between the odd/even multitrack buses and/or the six output buses, while the Mix section offers true LCR panning, plus a front-back surround control. Although the upper section does not offer full 6-channel surround panning facility in its normal default mode, it is possible to flip or swap the two signal sources, so that the LCRS pan can be used within the Channel signal path—while developing multichannel stems, for example—with the Mix section now providing simple 1:1 assignment to return premixed and localized tracks into a master 6-channel mix. For more detailed control of localization from the lower or upper signal path—and to automate an element's static position in a surround-sound mix—the user can also call up one of the pair of assignable joysticks instead of the conventional dual-concentric pots.

In addition to the familiar aux controls from either signal path via dual-concentric controls, some with and pre/post switching—Aux 1/2 and 3/4 being derived from the upper section, and 7/8 plus 9/10 from the lower—sends 5 and 6 can be accessed from either path, or re-assigned to the bus outputs, to provide an additional 24 effects outputs from each channel during remix; a neat and very flexible touch. Aux 1/2 and Aux 7/8 are normally reserved for developing dedicated stereo foldback/cue outputs for the voice talent, musicians, etc.

The stereo return module is virtually identical in layout to the dual-input unit, aside from stereo EQ and aux sends, plus mono A/B selection from the upper section, balance controls and other cosmetics. As might be expected, the 4-band section is less comprehensive than that fitted to the mono channel. All four bands provide ±16 dB of cut/boost, but the LF section operates at a fixed center frequency of 60 Hz, the low-mid at 250 Hz, the upper-mid at 5 kHz, and the HF section at 10 kHz. The upper signal path again offers a high-pass filter with a 100Hz turnover point.

The functional layout of both types of channel modules is extremely clear and easy to follow; after just a couple of minutes with the Cinemix, you are off and running. Color coding on the EQ sections helps to denote important functions, while a neutral gray background on the channel and master modules improves legibility of the screened legends and control markings.

AUTOMATION FUNCTIONS

Settings of the various crosspoint and assignment switches can be scanned and stored/recalled from 64 internal ARM registers as user templates; individual routing settings can also be copied between modules. Assignment of the various functions to the relevant module can be achieved either by using a dedicated ARM Access button, or by dialing up the channel using a rotary control provided on the master section. ARM provides an elegant solution to the complex problem of module layout and dramatically reduces the clutter of input module switches that can complicate a console's physical layout and confuse visual monitoring. You can clearly and quickly interrogate the routing of any signal path, or the status of individual modules, simply by touching a button. It's a straightforward, powerful system to use and understand.

The ARM matrix is elegant, allowing up to 34 aux sends (ten per channel, plus the 24-track buses) from aux 5/6 during mixdown; while access to the main group buses from both signal paths simultaneously or individually during tracking provides a comprehensive range of signal-routing options.

Snapshot automation of important switch functions via ARM's master status and individual channel status switching is provided, as is full dynamic automation against timecode for Channel and Mix mutes, Channel and Mix faders, joysticks, aux send masters, Mix Master faders and Stereo Channel faders/mutes. The console used for this evaluation was fitted with PowerFader automation, yet there is no reason to believe that the VCA-based alternative is any less powerful. And a comprehensive Help manual can be accessed easily from the center section.

All of the conventional read/write/update automation modes are featured, together with a very simple user interface on a companion color monitor,

which connects to a master 486-based PC controller. An integral offline editor allows automation data to be copied and edited against all normal flavors of timecode (NTSC-based 30 fps and 30-drop frame, PAL-based 25 fps and film-based 24 fps).

One possible drawback of any analog design that integrates such a high degree of microprocessor-controlled routing is the problem of high noise, digital crosstalk and degraded sonic performance. Apparently, D&R's Dutch design team studied the subject with rigorous attention, because never once during my extended evaluation session did I hear the slightest pop, tick or other nasty while reconfiguring large sections of the console. And while A/B/X comparisons are difficult to make on source materials that are not your own, I was impressed with the transparency and openness of the Cinemix mic preamps and line input buffers, along with the output stages and EQ. Without a doubt, the console is comprehensive, but that sophistication and technical complexity does not compromise its outstanding sonic performance.

MASTER SECTION

The master section offers controls for dynamic automation on all six output buses plus the joysticks. D&R's Virtual Vision provides full visual control of automated 360-degree surround panning via a 7x5 LED matrix display—a compact, yet elegant system. Also featured are solo controls for the discrete center, stereo surround, and sub-bass outputs. Interfacing is also provided for matrix-type encode/decode processors to provide in-place monitoring with and without 4:2:4 and related systems.

A digitally controlled six-way control room monitor enables storage of listening level presets suggested by major manufacturers of encode/decode processors. Up to five stereo sources can be accessed and summed from the center section, in addition to monitoring of aux 1/2 and aux 7/8 for stereo foldback/cue systems. Also featured is an extensive communications system, oscillator section, pair of studio foldback/cue systems, recall/automation controls, ARM selection, and a bank of ten aux send masters with automated mutes.

Flexible subgrouping is also provided via the VCA or moving-fader automation. Currently, up to eight discrete subgroups can be developed and assigned to any fader as an overall submix master; in the near future, I understand, this limit will be extended to offer more flexibility.

The optional PowerDynamics package provides a pair of gates, expanders, compressors and limiters per channel strip using the system's existing VCA gain-control elements. (A hard limiter is also being developed.) Comprising a relatively simple hardware and software update to existing systems, PowerDynamics costs around $100 per input; the user simply decides how many input sources—either Channel or Mix paths—will be provided with the enhanced functionality. System settings can also be stored in user registers.

ALL TOGETHER NOW

The D&R Cinemix is a truly remarkable system. In a quiet and unassuming way, it simply puts a great deal of mixing and processing power into the hands of the post or music-scoring engineer, and lets users get on with the job at hand. The console's control surface layout is clear and very easy to follow—even in the heat of a busy session—while the flexibility offered by the dual-signal channel strips and swap functions is extremely powerful. And the combination of mono and stereo channel strips provides enhanced functionality for the TV and post user; the provision of full 6-channel output assignment and panning extends its already powerful surround-sound functionality.

I liked using the Cinemix during these evaluation sessions, but more than that, I consider it to be a rare example of unassuming design allied with superb electronics. Don't let its budget price fool you; the D&R Cinemix is a serious contender for your attention.

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• • •

Thanks to Steve McCrum and his crew (including Brian Webster and Greg Montgomery) at Desert Moon Productions, Anaheim, for providing access to the facility's 116-input D&R Cinemix. Their patience—so early in the morning—with my endless questions is much appreciated. Thanks also to Audix for loaning five Nile 10 surround sound speakers for my evaluation sessions, and to M&K for the use of its excellent M&M self-powered subwoofer. ■

Mel Lambert heads up Media&Marketing, a consulting service for pro audio firms and facilities.

New Audio Products For Film/Video Production

NADY ENG-12 WIRELESS

Nady Systems (Emeryville, CA) offers the ENG-12 Transmitter, a plug-in transmitter that converts any mic with an XLR connector to UHF wireless operation. Compatible with all Nady portable and rack-mount receivers, including the 661 VR and 950GS models, the ENG-12 transmitter offers 120dB dynamic range and will operate up to 1,500 feet from a receiver. The ENG-12 features

a recessed power switch, a pop-free audio on/off switch, channel group and channel select switches, and battery strength LED indicator. 9VDC phantom power is available.

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FOSTEX TIMECODE DAT

Fostex (Norwalk, CA) has upgraded its portable PD-4 Timecode DAT Recorder.

The new PD-4 (Version 2) incorporates a 4-head design that enables off-tape monitoring and adds remote-control functions and timecode memory retention during battery changes. Additional features include a built-in 3x2 mixer with three-position pan, 48V phantom power, three-position mic attenuator, variable low-cut filters and slate tone. Output sampling frequency is 40.048 kHz, and the unit will record for 1.5 hours on an NP-1B battery. The PD-4 (Version 2) is priced at $7,395. Owners of earlier PD-4 recorders may upgrade with the 9710 upgrade package, available for a limited time for $199.

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AMS NEVE LOGIC DIGITAL FILM CONSOLE

AMS Neve (Burnley, England) introduces the Logic Digital Film Console (DFC), a flexible multiformat film-dubbing and post-production audio mixer featuring configurable mix buses, one-touch routing, automation and a wide choice of analog and digital I/O interfaces. The Logic DFC may be configured with up to 256 audio paths, which may be a combination of mono/stereo channels or 4-, 6- or 8-wide pre-dub inputs. The console surface is semi-assignable, accommodates three operators and offers a 48x8 routing matrix. The system includes an integral machine controller, AMS AudioFile MT (multitrack) hard disk editor and Encore dynamic automation software, which runs under a Windows interface. I/O options include 16- and 20-bit digital, 24-bit AES/EBU, SDIF, MADI and TDIF.

Circle 192 on Reader Service Card

RSP 5.2.5 ENCODER

RSP Technologies (Rochester Hills, MI) announces a new 5.2.5 encoder for its Circle Surround® system. The new encoder will be available with an optional four-joystick pan controller that will allow for the encoding of stereo surround channels and the panning of signals anywhere in the sound field. An optional encoder metering panel will place LED meters in mix position sight lines.

Circle 193 on Reader Service Card

APPLIED DIGITAL CONCEPTS EVENTS CONTROLLER

Applied Digital Concepts (Canyon Country, CA) offers the EC4000 Events Controller, which is useable with any device having external trigger or mute capacity. Three ports allow triggering of up to ten events each, with real-time, single-frame accuracy. Cues can be advanced or retarded in one-frame increments. The EC4000 includes support for reading and displaying drop-frame/non-drop-frame SMPTE timecode and maintains sync in Jog mode. The unit also offers frame conversion for film and tracks zero footage offset. A Remote Output Module controls up to 100 outputs via fiber optics; a Laser Projection System module provides projection of data and images for heads-up editing.

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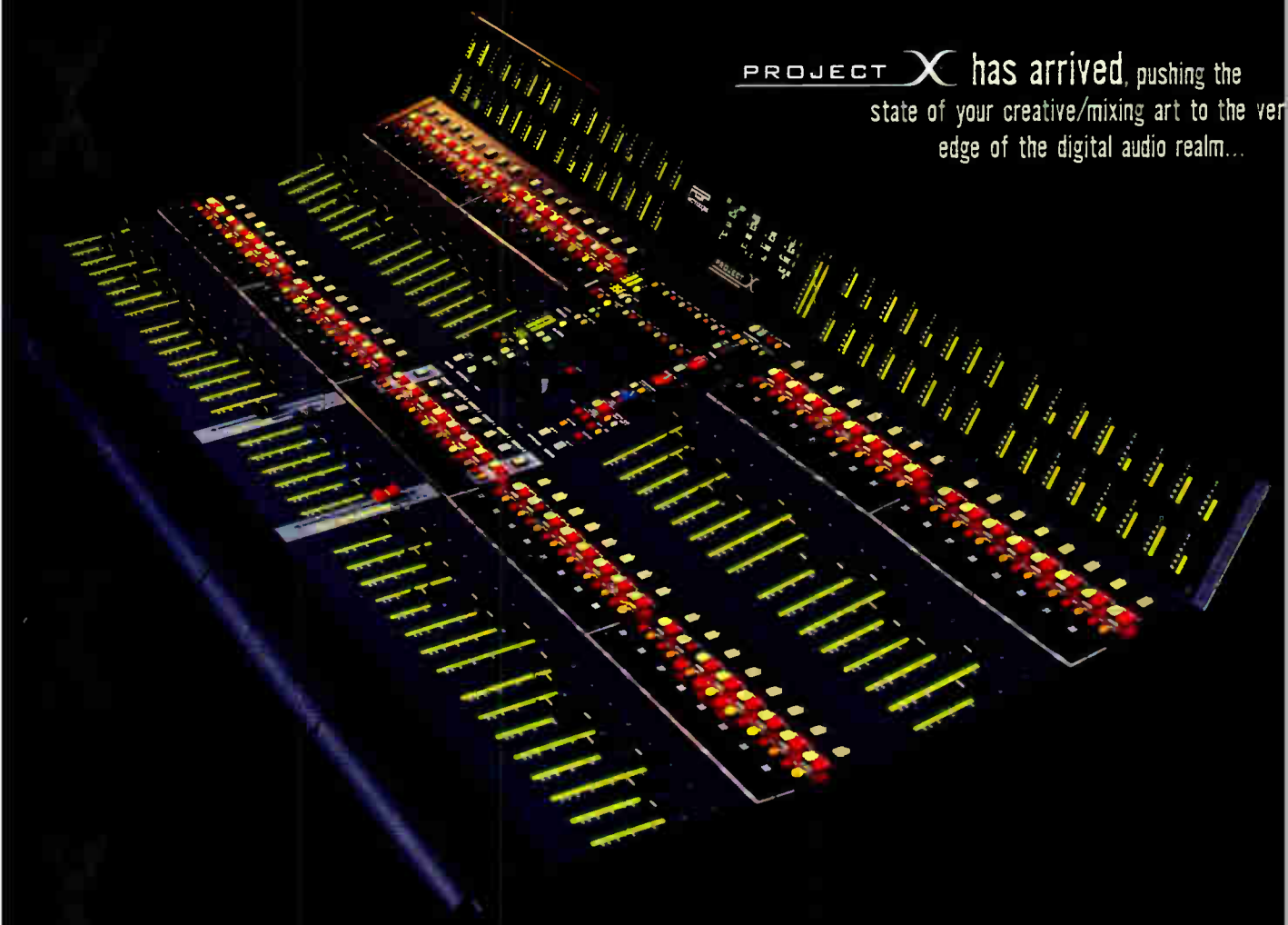
Pushing the State Of Your Art



PROJECT X has arrived, pushing the state of your creative/mixing art to the ver edge of the digital audio realm...

RSP Technologies® proudly introduces an incredible new all digital, fully automated, modular mixing console. Custom configure your Project X to suit the most demanding of needs. Choose from analog with 20 bit converters, AES/EBU, TDIF®, or ADAT® I/Os to interconnect directly with MDMs or DAWs. Expandable in configurations up to 64 inputs, Project X offers 110dB* dynamic range, multiple DSP effects, complete automation of every mix function and snapshot. Each input channel includes dynamics control, HUSH® noise reduction, 4-band parametric EQ, Hi & Low pass filters, digital delay line, stereo linking and 8 aux. sends. Control it all without stretching from the comfortable center sweet spot in front of the Master Module and the joystick panner for the integral digital Circle Surround® Encoder. A full Project X console is only five feet wide! All I/O cards are located in the CPU rack along with the power supply and optional microphone preamplifiers. Interconnects between the control surface and the rack unit are via a power supply and serial digital cable per module. Having no connections between modules allows for many visually exciting and ergonomic console design possibilities. . The digital audio world will never be the same. Neither will your art.

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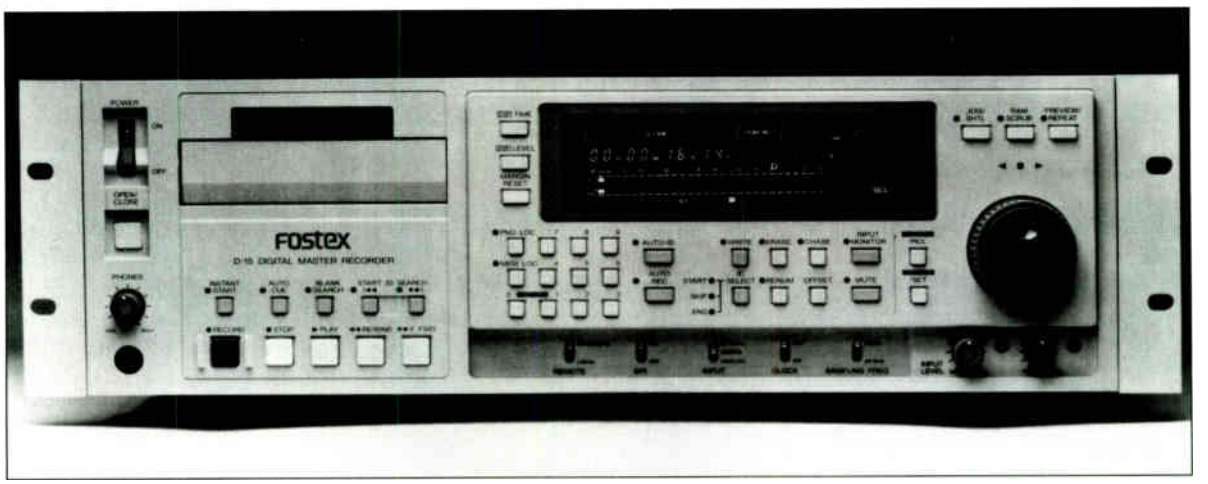
FOSTEX D-15

STUDIO DAT WITH TIMECODE

In most audio-for-video applications, a timecode-capable 2-track is an essential piece of equipment. Back when dinosaurs ruled the Earth, a ½-inch, 4-track machine did the job, typically with a stereo mix on tracks 1/2 (track 3 was left blank as a guard band to prevent crosstalk from the SMPTE on track 4). Eventually, the ¼-inch format was popular, with timecode on a center track, carefully placed between the two stereo channels. And as DAT recorders became a ubiquitous studio fixture, the first timecode units began appearing.



There was just one snag to these cute SMPTE DAT machines. Priced from $6,000 to $13,000, they were anything but inexpensive. And many users have wondered why the lowest-priced timecode DAT on the market costs more than an 8-channel MDM recorder equipped with chase sync capability.

At last November's AES show in Los Angeles, Fostex offered an affordable solution. Retailing at $3,295, the new Fostex D-15 is said to be the lowest priced timecode-capable DAT recorder available. However, you'll have to add the optional Model 8335 sync card ($595) if you want features such as chase lock, word clock, video sync, tape striping from external timecode sources and the ability to output LTC or convert absolute time to LTC. But even at the "fully featured" price of $3,890, it's still quite a deal.

Essentially, the D-15 is like a Fostex D-10 on steroids, and other than the timecode functions—available via various submenus—the two machines are very similar in appearance. Both are three-rack-space machines featuring a fast four-motor transport, jog/shuttle, scrubbing/locating, instant start mode, GPI output, XLR (+4dBu) and RCA (-10dBV) analog I/O, 44.1/48kHz sampling rates and AES/EBU (XLR) and S/PDIF (TosLink optical) digital I/O.

There are a few important differences between the two decks: The D-15 has a parallel interface for connecting an optional desktop wired remote; the D-10 is controlled by an infrared wireless remote (included); and the D-15 has slots for the all-important 8335 sync card and the ($195) 8336 RS-422 (Sony 9-pin compatible) serial control interface. Slated for release by this month's NAB, the 8336 card was not available for this field test.

At least 90% of the D-15's functions are easily available from the front panel via dedicated switches. And these, combined with a large, multicolor function display and illuminated transport keys, simplify most D-15 operations.

However, wandering within the somewhat labyrinthine setup menu allows one to set up the deck according to various user preferences. For example, the 29-step LED bar graph meters can be set for peak-hold times of 1/2/3/4/5 seconds, or for zero/infinite holds. One menu enables software disabling of all front panel controls, while another allows one to set a reference level of -12, -18 or -20 dB. And timecode parameters, such as frame rate (all rates—24, 25, 29.97, 30 and DF—are supported), sync offset, etc. are determined within the setup menus. Some of the menu displays, i.e., "CU EL VL 2001-003"—which refers to a -55dB triggering level for auto-cueing operations—are cryptic at best. So unless you possess some amazing memory skills, you'd better keep your D-15/8335 manuals close at hand. The up side of all this is that, once created, your setup presets are stored in nonvolatile memory, and in many cases may never need resetting.

The 8335 card has timecode inputs and outputs on both balanced +4 XLR and -10 unbalanced RCA connectors. Word clock in/out and video sync in/thru (all on standard BNC connectors) are also standard,

BY GEORGE PETERSEN

as are 75-ohm termination switches on the sync terminals.

Timecode must be laid down on the DAT cassette at the time of the audio recording. When mixing to picture, this is no problem—just take the TC from the master source, feed it to the D-15 and push the Chase button on the front panel. In every case, the D-15 locked flawlessly. Receiving timecode from a disk-based video system, the D-15 could lock up from a stopped position in three seconds. Results from tape-based video (Sony BVU-800) took slightly longer, due to the wait period for the VCR to come up to speed. On another case, working with a 10-minute video clip, I took the D-15 out of Chase mode while rewinding the videotape. With the D-15 tape parked at the 10-minute mark, I started the video, and once it was up to speed, I put the D-15 into Chase mode. The total time for sync-up (including audio rewind) in this case was 15 seconds.

With any system, there is some point where incoming timecode quality can be so bad that nothing will sync up. However, the D-15 handled short TC dropouts and third-generation timecode very well.

In other operations, the D-15 also excelled. The action of the jog/shuttle is smooth; the instant-start function was flawless; and the four-motor transport drive was fast and quiet. There is no SCMS circuitry in the D-15 (hooray!), so users can make as many copies of their material as needed. The unit offers both AES/EBU and S/PDIF digital I/O, but unfortunately, the latter is provided only in TosLink optical format. I prefer coaxial S/PDIF interfacing, as it is more commonly found in studio gear, samplers and digital I/O cards for PCs and Macs. The audio quality, based on 18-bit, 64x oversampled ADCs and 20-bit, 128x oversampled DACs, was excellent.

At $3,890 with the 8335 card, the Fostex D-15 sets a new price/performance mark for timecode DATs. Although it doesn't offer frills such as rock 'n' roll punch-in on-the-fly edits to timecode (if you need this, other Fostex models handle more advanced functions), the D-15's accurate lockup, great sound and flexible features make this the TC DAT for the rest of us.

Fostex Corporation of America, 15431 Blackburn Avenue, Norwalk, CA 90650; 310/921-1112; fax 310/802-1964. Web site: www.fostex.com. ■

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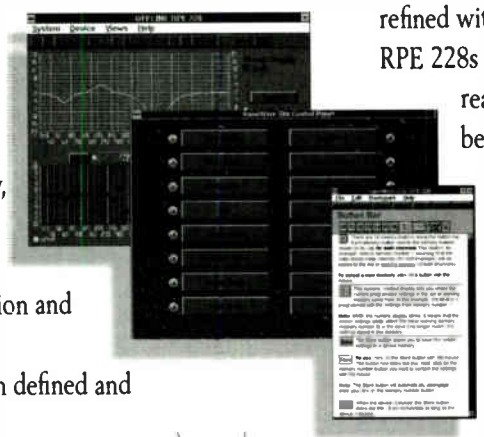

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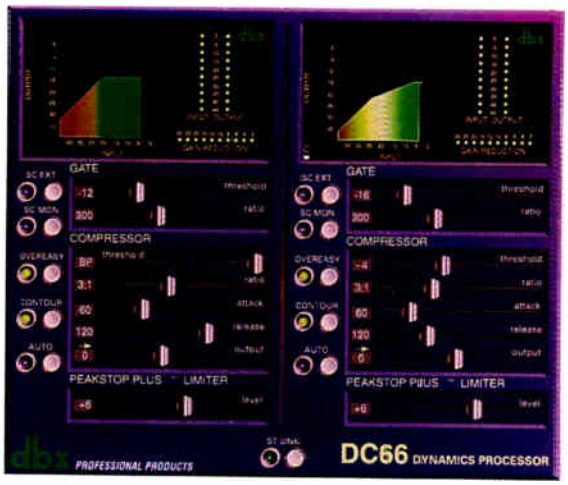
P U R I T Y B Y D E S I G N™

PREVIEW

dbx COMPRESSOR PLUG-IN

dbx (Sandy, UT) has developed a dual compressor/limiter/gate TDM plug-in for Pro Tools. Modeled on the characteristics of the dbx 1066 hardware compressor, the DC66 software provides comprehensive control of compressor, limiter and gate functions via a representational screen interface. Computer-rendered sliders and buttons control threshold, ratio, attack, release and output levels for the compressor, and threshold and ratio for the gate. A single slider controls the PeakStopPlus™ limiter threshold. Onscreen buttons switch among hard-knee, OverEasy,® auto and bass contour compression curves. Parameters may be changed by manipulating the slider controls, typing in new values, or by "capturing" a value from the meter display portion of the screen, which displays each program contour in a tricolor graph and also includes individual LED ladders for input, output and gain reduction. Channels may be stereo-linked, and the gate function may be triggered from an external source. Price is $999.95.

Circle 226 on Reader Service Card



ROCKSONICS MULTIBAND STEREO COMPRESSOR

Rocksonics (Los Alamitos, CA) offers the MB-3X multiband stereo compressor, a one-rackspace unit that promises dense program compression without "pumping" or "breathing" through the use of three-band threshold detection. Single front panel controls set low, mid and high thresholds for both channels, and LEDs indicate gain reduction in each frequency band. Compression ratios are variable from 1:1 to 4:1, and there are two release times. The unit also provides post-compression, 3-band EQ and a "brick wall" limiter. Its ¼-inch TRS outputs are +4/-10 switchable. Noise figures are kept to a minimum by automatic VCA muting. Price is $599.

Circle 227 on Reader Service Card

KORG REFERENCE MONITORS

Korg USA (Melville, NY) introduces the SoundLink DRS RM8 reference monitors: magnetically shielded, ported loudspeaker cabinets, each with a 7-inch long-throw woofer and a 1-inch dome tweeter. Developed by Korg and famed speaker manufacturer Boston Acoustics, the DRS RM8's windowpane bracing minimizes cabinet resonance and reduces distortion; a high-power neodymium tweeter magnet allows placing the woofer and tweeter close together for improved imaging.

Circle 228 on Reader Service Card

FOCUSRITE GREEN 4 AND GREEN 5

Focusrite (distributed by Group One, Farmingdale, NY) adds two models to its affordable Green signal processor range. The Green 4 dual compressor/limiter is a 2-channel unit with controls for threshold, attack, release, auto release, ratio, makeup gain and soft/hard knee operation. The limiter controls affect threshold and release, and a Look Ahead feature provides overload protection in digital applications. High/lowpass filters and a Stereo Link mode complete the package. The Green 5 Channel Strip is a combination mic pre, six-band EQ and compressor/gate/expander that accepts mic, line and instrument inputs. The EQ may be inserted in the compressor sidechain and the gate/expander may be triggered from an external source.

Circle 229 on Reader Service Card

ART QUADRA/FX

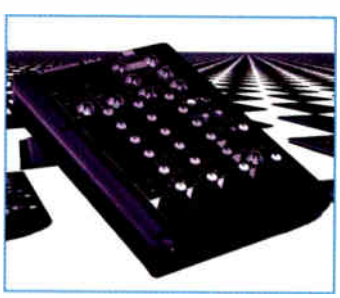
Applied Research and Technology (Rochester, NY) announces the Quadra/FX Processor, a 4-channel multieffects processor offering a wide range of effects including reverbs, delay, chorus, flange, tremolo, panning and pitch shift. More than 3,600 effects combinations are possible and a More feature allows users to create variations on any program by increasing effects parameters such as reverb/delay time, predelay, EQ, etc. with a single button push. Retail: $299.

Circle 230 on Reader Service Card

SAMSON MIXPAD 4

Samson Technologies' (Syosset, NY) Mixpad 4 micro mixer offers four inputs, balanced outputs plus pre-fade aux/cue output, headphone monitoring and two aux returns—all in a compact package. Three-band EQ, aux send, pan and level controls are available for the two mic/line inputs (XLR or TRS) and the stereo line inputs. Also featured are phantom power for the mic inputs and LED peak output meters. Power is via three 9V batteries or an external supply. Retail: $219.

Circle 231 on Reader Service Card



PREVIEW

ADL DISCRETE STEREO TUBE DI

The ADL 300G Discrete Stereo Tube Direct Box from Anthony DeMaria Labs (New Paltz, NY) features an all-tube design with no ICs or chips. Frequency response is 5 to 70k Hz, ± 1 dB; S/N is 94 dB. Front panel controls include individual channel gain (up to 20 dB, input to output), tube/direct switches to route the TRS inputs to the tube circuits, and ground switches on the transformer-isolated mic-level XLR outputs.

Circle 232 on Reader Service Card

OTARI DTR-8 DAT UPGRADE

Otari Corporation (Foster City, CA) announces the DTR-8S pro DAT recorder, which has all of the DTR-8 features, plus the ability to monitor input signal without a tape loaded. Features include balanced analog I/Os on XLR connectors (+4 dBu and -10 dBV, switchable) and AES/EBU and S/PDIF digital I/Os. Wireless remote control, rackmount adapters and auto maintenance alerts are standard; 48/44.1/32kHz sampling rates are selectable; autolocate is at 300x play speed. Retail: $1,395.

Circle 233 on Reader Service Card

STUDIOMASTER TRILOGY CONSOLE

Studiomaster (Anaheim, CA) has targeted the 4-bus Trilogy console at sound reinforcement and studio recording applications. Available in two configurations, the 16-channel TR-206 ($1,395) and the 12-channel rack-mountable TR-166 ($1,195), Trilogy is expandable via the 10-channel TR-140ex ($749) and can be configured as a 6-bus monitor mix console with the addition of Stage Mode switching. Each input channel has XLR mic and TRS line input, insert point, direct out, 3-band sweep mid EQ, highpass filter, six aux sends (switchable pre/post), PFL/Solo and 60mm fader. Two stereo inputs and four aux returns are included.

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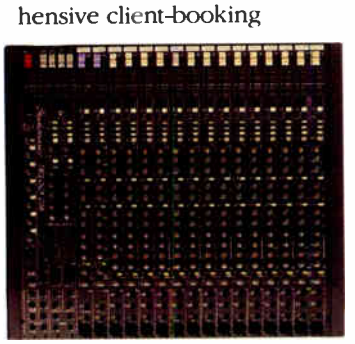

APOGEE STUDIO MANAGEMENT SOFTWARE

Apogee Electronics (Santa Monica, CA) announces Session Tools, studio management software for Windows 95 and Macintosh. Developed by Bob Clearmountain and Ryan Freeland, its database records and organizes all of the information needed for scheduling, documenting and invoicing sessions in a busy studio. Features include comprehensive client-booking functions, including multiple rates and lockout provisions, materials and time logging, tape library management functions, and complete invoicing, including sales tax calculations. Session Tools can also print tape box and media labels, track sheets and equipment lists. Price is $289. Download a demo at www.apogeedigital.com.

Circle 235 on Reader Service Card

PRESONUS BLUE MAX

The Blue Max from PreSonus (Baton Rouge, LA) is a single-channel compressor/limiter featuring intelligent dynamics control with 15 presets designed specifically for various instrument and vocal applications. Built in a half-rack case (with internal power supply), the stereo-linkable unit also includes a Manual mode with full control over levels, attack/release times and ratio. Dual LED meters indicate input/output levels and gain reduction.

Circle 236 on Reader Service Card

LA AUDIO GCX2 COMPRESSOR/GATE

SCV London (London, England) introduces the Millenium Series signal processors with the LA Audio GCX2 dual compressor/gate. The GCX2 provides two channels of soft-knee compression, each combined with a fast-acting noise gate. Compressor controls include two program-dependent attack/release modes and threshold, ratio and gain pots. Gates have threshold and release controls and a sidechain insert. Channels may be linked for stereo (master/slave) operation with true RMS dual level sensing. Inputs and outputs are balanced +4dB XLRs and -10dB TRS jacks.

Circle 237 on Reader Service Card

ONEMUSIC LIQUIDTRAX

The OneMusic Company (Nashville, TN) debuts LiquidTrax™, an innovative way for digital audio workstation users to create a wide variety of mixes of a single musical theme. Cuts from the 200-album OneMusic production library will be accompanied by additional stereo submixes; using one or more LiquidTrax submixes as a basic bed, the producer can mix in melodies, synth pads, sound effects and percussion to create a harmonious and thematically related score.

Circle 238 on Reader Service Card

ADB MULTI!WAV PC CARD

AdB International (Duluth, GA) upgrades its Multi!Wav Pro18 PC card for Windows-based digital audio editing/mastering applications. The Multi!Wav Pro18 is now available with 24-bit digital I/O as the Multi!Wav Pro18/24 for approximately $595. The upgrade for a Multi!Wav Pro18 is $149. The Multi!Wav Pro18 is also now

A Portable Mic-to-Line Driver with Phantom Power and a Built-In Headphone Amp.

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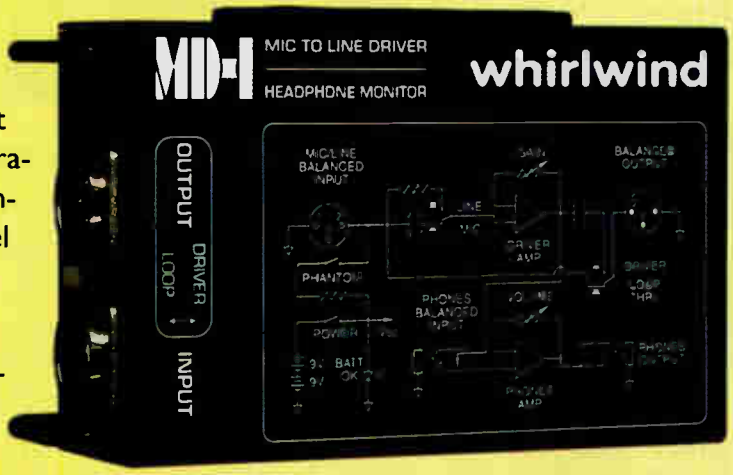
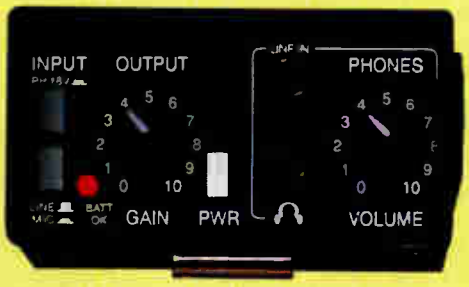


The Whirlwind MD-1 combines a high quality mic/line input stage with a transformer-isolated line driver and independent headphone amplifier. It's ideal for boom, parabolic and interview mics, and provides phantom power, local monitoring and a line-level balanced output for noise immunity over long cable runs.

The MD-1 is housed in a rugged steel chassis designed to easily withstand the wear of daily professional use. It comes with a belt clip and is powered by two standard 9V alkaline batteries that are accessed through press-latch trays in the side of the unit (changing batteries does not require opening the case).

The MD-1's input stage features a level control with a 40dB range and a MIC/LINE input level switch, plus switchable 18V phantom power for condenser mics. Its output can be switch selected between the isolated gain stage and a straight loop-through.



The headphone Volume control provides a 60dB range of adjustment to the post-transformer input signal or to signals inserted at the headphone Line In jack. Because of its flexibility, the MD-1 is an ideal general purpose audio signal tester and amplifier for the production toolbox. It's another great audio problem solver from Whirlwind.

PREVIEW

available with a quad output driver offering four simultaneous outputs (two analog, two digital). The upgrade is $129, and the Multi!Wav Pro18/4, preconfigured for quad, will be approximately $595.

Circle 239 on Reader Service Card

AMS NEVE DIGITAL INTERFACE

The TDIF-1/MADI Interface from AMS Neve (New York City) is a 1U, bidirectional device for connecting up to six Tascam DA-88 or DA-38 transports to a MADI-equipped digital console via a single MADI port. Multiple TDIF machines may emulate a single digital multitrack (up to 48 tracks), or machines may be used independently; each of the six TDIF-1 ports may be independently selected for 24-bit operation. The interface supports co-ax or fiber-optic cable. Sync protocols include TTL wordclock, AES/EBU sync, MADI or TDIF-1.

Circle 240 on Reader Service Card

HARRIS A2D2A 20-BIT DAC

Harris Corporation (Quincy, IL) offers the A2D2A 20-bit D/A and A/D converter for demanding production applications. The single-rackspace A2D2A's 20-bit delta sigma oversampling technology provides 100dB dynamic range (A-weighted) in both A/D and D/A signal paths. Selectable sampling rates are 32/44.1/48 kHz, and the unit can perform D/A and A/D conversions simultaneously. The unit supports both AES/EBU and S/PDIF standards and analog I/Os are low-impedance, balanced and unbalanced jacks.

Circle 241 on Reader Service Card

FORSSELL TUBE MIC PRE

The M-2a transformerless vacuum tube microphone preamp from Forssell Technologies (Sandpoint, ID) is a 2-channel unit housed in a 2U steel chassis and weighing 23 lbs. Featuring an all-tube, Class A design with no transformers in the audio signal path, the M-2a offers phase reverse switching, variable gain control (20-60 dB) and 48VDC phantom power switch for each channel. Options include ¼-inch instrument inputs, precision stepped gain controls and vacuum tube balanced outputs. A high-voltage version for B&K mics is available. Price is $2,395.

Circle 242 on Reader Service Card

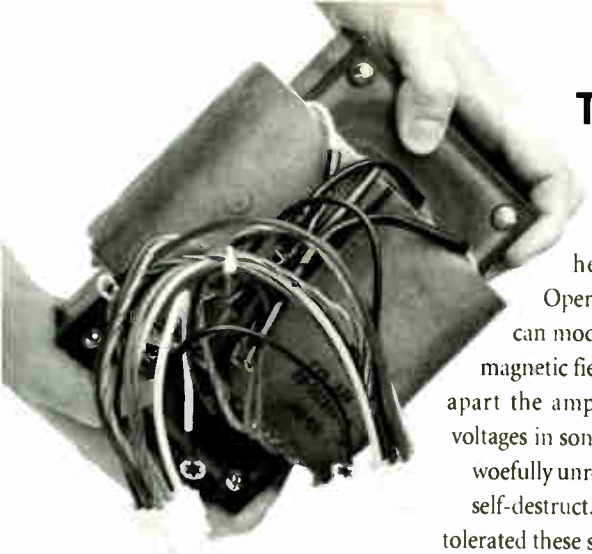
TRACER'S BIG DAADI

The Big Daadi from Tracer Technologies (York, PA) is a rack-mountable, 20-bit D/A and A/D converter designed to replace noisy analog cards in computer-based digital recording applications. Providing AES/EBU and S/PDIF connections and calibrated LED indicators for left and right channels, the Big Daadi uses 20-bit delta sigma oversampling. The unit supports 32/44.1/48kHz sampling rates and can lock to an external AES/EBU reference. Retail: $599.

Circle 243 on Reader Service Card

HOT OFF THE SHELF

A new low retail price for the **Fostex D-5 DAT recorder**: $1,195. At your dealer now, or visit www.fostex.com... The second edition of Paul Gilreath's ***The Guide to MIDI Orchestration*** has 200 pages explaining orchestration and sequencing, with "how to" sections on mixing, ranges, trouble-shooting, libraries and equipment. $24.95 plus $4 S&H. Call 800/469-9575 or visit www.paulgilreath.com... **Innovative Technology's voltage surge protection** products are designed for use in motor vehicles carrying sensitive electronic equipment, such as broadcast and recording trucks. Three new models provide 12-, 24- and 48-volt DC and all feature EMI/RFI suppression, internal fusing, thermally conductive encapsulation and remote monitoring via BNC connector. For more info call 800/647-8877 or visit www.itvss.com...The **BBE Sound DI-10 active direct box** runs on a 9V battery, 9VDC supply or 48V phantom power, includes a switchable speaker simulation filter and accepts line and speaker level inputs on ¼-inch jack input. Outputs are ¼-inch and balanced XLR. Call 714/897-6766...The **Furman Sound PlugLock** AC outlet strip has an adjustable clamp over each socket to hold as many as five "wall wart" transformers in place. Retail: $58. Call 707/763-1010 or www.furmansound.com... **The Olympus CD-R2x6 two-speed CD recorder/six-speed** CD-ROM player priced at $499 (internal) and $649 (external), is said to be the lowest price yet for a 2x/6x CD recorder. Call 516/844-5325 or surf to www.olympus.com...**Spot Rocket™**, from Cosmic Inventions is a Pentium-based system using MPEG compression and TCP/IP transfer protocol to send approval-quality video and CD-quality audio over ISDN lines between any two locations. A 30-second commercial can be sent from NYC to London in about ten minutes. Call 513/621-3334 or www.spotrocket.com...**Bretford's TPM13-BK** is a ceiling-mounted adjustable yoke-style projector mount designed to carry popular LCD projector models from Hitachi, Proxima, 3M and Polaroid. Call 800/521-9614...Redesigned: **Peavey Electronics' PS™-2C and PS™-4AC** electret microphone power supplies. The battery-powered PS-2C will supply 9-volt phantom power for one or two Peavey condenser mics. The AC-powered PS-4C will supply 48V phantom power for up to four condenser mics. At your dealer now, or visit www.peavey.com...**Neutrik Z Series XLR connectors** feature heavy-duty rubber covering and gold-plated contacts, with fast and easy assembly. A digital version includes a new locking mechanism. Call 908/901-9488...***Understanding Sound Systems*** is a 108-min. videotape covering basic concepts of sound and sound systems, from microphones to mixers, from loudspeaker design to trouble-shooting. Price is $39.95 (plus S&H). For info call 919/876-8432; to order call 800/701-SOUND. ■

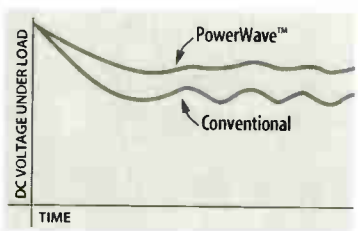


THE PAST...

High power amplifiers with old fashioned iron core transformers are dinosaurs. While effective at delivering raw power, these big, heavy, and slow devices have weaknesses. Operating at AC line frequency, the supply voltage can modulate the audio signal under clipping. Strong magnetic fields induce AC hum. Big transformers can tear apart the amp and racks on the road. Poorly regulated voltages in some popular high end brands cause them to be woefully unreliable and inclined to self-destruct. Audio engineers have tolerated these shortcomings because there was no other alternative. Until now...

...AND THE FUTURE

PowerLight™ amplifiers use patented PowerWave™ power supplies, the most efficient power supply available in audio. Operating at 114kHz, a one pound PowerWave™ transformer has more current capacity than a 50 pound conventional 60Hz transformer. Primary capacitors operating at a higher voltages more than double their energy storage. The result—a stiffer supply with more power and more energy storage for gut-wrenching bass. AC magnetic fields never enter amplifier circuitry—reducing hum to inaudible levels and increasing dynamic range. Reliability is increased because light weight prevents transit damage while the robust design and Intelligent Amplifier Protection™ keep the things working under conditions that would kill a conventional amp.



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QSC's PowerLight Project Team *(clockwise from left):* **Darrell Austin,** *Technical Services Manager* **Pat Quilter,** *Chief Technical Officer* **Robert Becker,** *Design Engineer,* **Greg McLagan,** *Market Manager (Live Sound),* **Doug Teulie,** *Industrial Designer*

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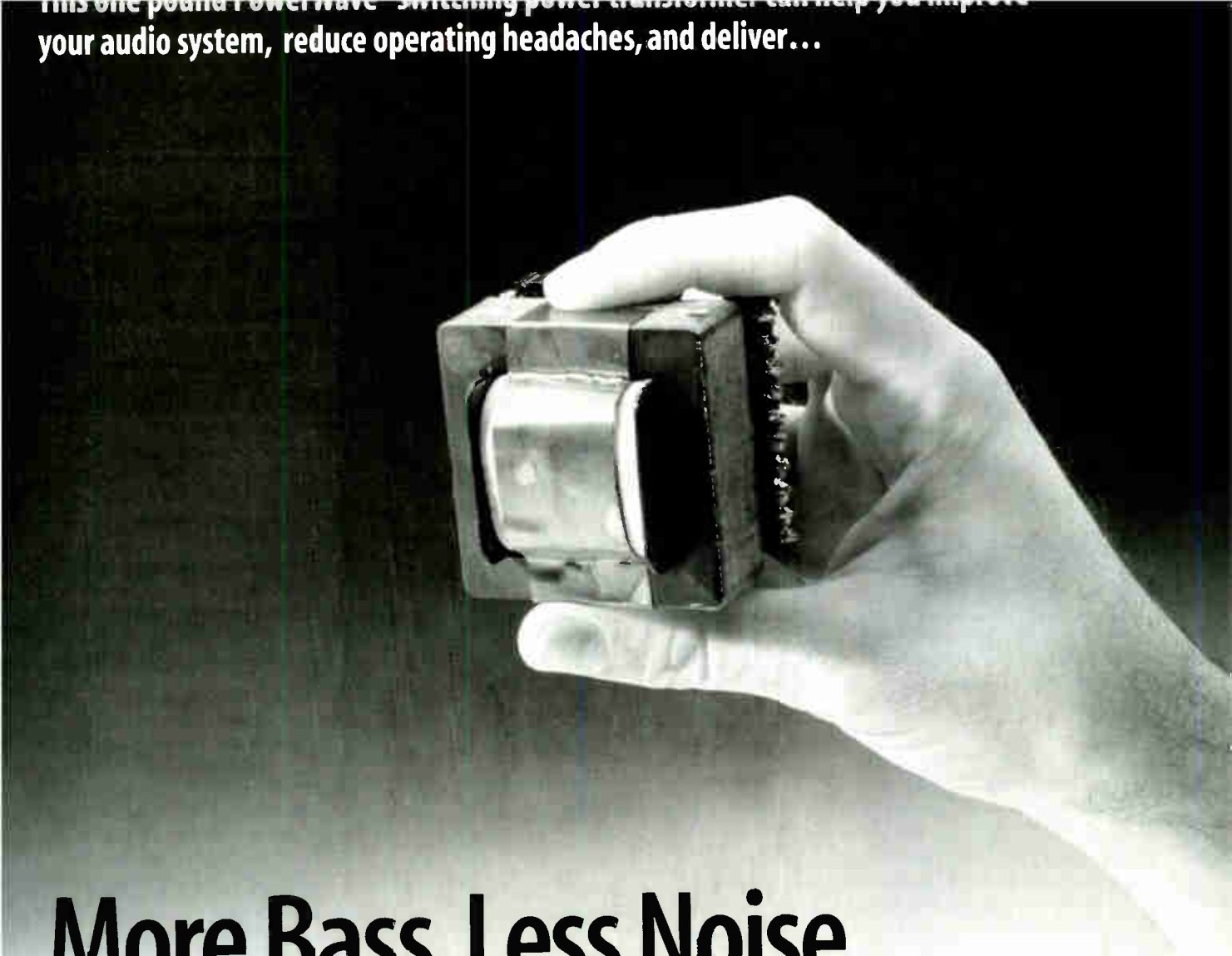

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Z-SYSTEMS z-q1

STEREO DIGITAL EQUALIZER

I first heard of Z-Systems a couple of years ago, when a then-new company came out with an affordable, studio-quality sample rate converter. The company has since marketed a number of successful peripheral products—routers, matrices, interfaces, etc., designed to simplify life in the digital studio. So I was intrigued when Z-Systems began developing high-performance digital equalizers last year.

As with all Z-Sys products, the z-q1 and z-q1m (mastering version) equalizers take a no-compromise approach to digital audio. The main DSP engine is TI's TMS320C31 chip, a 32-bit floating-point powerhouse that's capable of handling the equalizers' 16- to 24-bit inputs.

The two units are sonically identical—the sole difference between the two is that the mastering version has displays that show the equalization parameters of all its bands simultaneously. Both units are 6-band stereo/dual mono equalizers, with four true parametric bands and two bands switchable between shelving and high/lowpass operation. I/O is strictly AES/EBU digital (although S/PDIF coaxial is an option), so don't expect any analog ins or outs. Apogee UV22™ Super CD encoding is optional ($900), and other options, such as 88.2/96kHz support and snapshot automation to SMPTE/RS-232/RS-422 will be shipping by summer. The basic z-q1 has a list price of $2,999; the pricing of the z-q1m mastering version varies, depending on configuration.

Despite the simplicity of its front panel, the z-q1 holds extraordinary power. Up to 80 EQ presets can be stored, recalled and instantly compared. Input word lengths up to 24 bits are accommodated, and 24/20/16-bit output resolution with or without dither (or UV22, if installed) is available with a touch of a knob. The z-q1's back panel is sparse, having only two XLRs (110-ohm transformer isolated) for the digital I/O and a socket for the AC cord.

To use the unit, merely connect the EQ between two AES/EBU ports, power up and go. An Audio Lock LED indicates the presence of a valid digital input signal. From there, just select a band and start tweaking. In many ways, the z-q1 behaves like an analog equalizer: There are three rotary controls for gain (±12 dB in 0.2dB steps), center frequency (28 to 18k Hz) and "Q" or bandwidth (from a narrow 0.4 to an extremely wide 8.0 setting). The two shelving filters are fixed at gentle 6dB slopes but have the same frequency and gain ranges as the parametric bands.

But there are several major differences between the z-q1 and analog EQs. First, all four of the z-q1 parametric bands have a 100% overlapping (28 to 18k Hz) range, which offers a high degree of versatility. And second, the ability to save settings allows A/B/C/...X comparisons, which few analog units can match.

In session, the zq-1 was nearly flawless. The EQ controls are absolutely glitchless—completely free of any zipper noise or even the phase shifting that occurs as you change frequencies on an analog unit. The 24-position rotary encoder knobs have finger indents supposedly to help tweaking, but the knob diameter is too small for this to be any real advantage; the red paint used to mark some controls is hard to read against the flat black paint; and the minimalist front panel interface requires a bit of getting used to when doing routines such as saving/recalling presets. A dedicated 2-digit display indicating the preset name at a glance might help. However, most EQ operations can be learned in less than a minute, and anyone who's used an analog EQ will immediately be comfortable with the z-q1.

Using the z-q1 as a premastering tool, I began to appreciate the idea of combining dithering and noise shaping functions in the same unit as equalization. This way, various EQ settings can be auditioned along with UV22, undithered or the onboard modified-TPDF dither to find the combination that best fits the program material at hand.

Auditioning a variety of 16-, 20- and 24-bit sources, I was immediately impressed with the sound of the z-q1. I never expected to hear a digital equalizer sound this good. The equalization is smooth, musical and—dare I say—"warm." The net effect is a sonic improvement: transparency without colorization or harshness. If you're looking for clean, the unit's -135dB THD+N spec says it all. And the digital filter algorithms minimize round-off noise. Even users in the "I hate digital equalization" camp are bound to be impressed.

Anyone seeking a top-notch digital equalizer should audition the Z-Systems z-q1. It offers clean, musical processing in a versatile package that analog EQs can't hope to match.

Z-Systems Audio Engineering, 4641-F N.W. 6th Street, Gainesville, FL 32609; 352/371-0990; fax 352/371-0093. Web site: www.z-sys.com. ■

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RØDE CLASSIC

TUBE STUDIO MIC

When I first heard that Australian company RØDE was offering a multipattern, large-diaphragm tube condenser mic for only $1,999, I was a bit skeptical. The cost of manufacturing a quality vacuum tube microphone is usually very high. So how good could the modestly priced RØDE Classic be? Very good, it turns out. The RØDE Classic's audio quality and construction are both top-notch. And, considering its low price, the package includes a surprisingly generous allotment of features and accessories.

INSIDE AND OUT

The RØDE Classic is quite retro-looking. Its almost perfectly cylindrical shape and unadorned nickel finish are reminiscent of vintage European tube microphones. The mic's beefy size (approximately 7x2.75 inches), hefty weight (more than 2 pounds) and quality construction make a very favorable first impression. The hand-polished, solid brass body is fitted with a small, gold-plated Tuchel connector for the remote power supply. A very sturdy, wire mesh head grille is supplemented by a finer internal pop screen and an internal shock-mounting system for the capsule.

The hand-assembled capsule is mounted in a side-address orientation and features 1-inch, gold-sputtered, dual diaphragms that are 6 microns thick. The Classic's shock-mounted GE 6072 vacuum tube is matched to an internal, Mu-metal cased output transformer that was custom-designed by Jensen. There are no switches on the mic body, and all adjustments are made remotely from its external power supply. A small, gold, slotted screw just below the head grille is the only visual clue identifying the front of the mic. It's a very minor niggle, but an otherwise identical silver screw adorns the back of the mic, making correct setup in low light a rather squinty-eyed task.

A thickly jacketed, custom-made, 10-meter multicore cable mates the RØDE Classic to its remote power supply via gold-plated Tuchel connectors. I've had occasional problems with Tuchel connectors getting stuck on other mics, but the ones on the RØDE Classic unscrew and pull out easily. Besides providing a bomb-proof connection, Tuchels also offer superior RF rejection.

The RØDE Classic includes a full-featured, remote power supply and a generous (8+ feet long), detachable AC cord. Three large knobs on the front panel control the mic's polar pattern, bass roll-off and padding, respectively. Polar patterns are adjustable from omni through cardioid to bidirectional in nine steps (achieving intermediate patterns along the way). The three-position highpass control selects flat response, or -6/-12 dB/octave roll-off of bass frequencies at 125 Hz. The mic can be padded 10 or 20 dB, or left unattenuated. A large, red front panel LED lights when the supply is powered up, which is good, as the on/off positions of the rear-panel power switch are unmarked. Audio output is via a standard 3-pin XLR (pin #2 hot) on the rear panel.

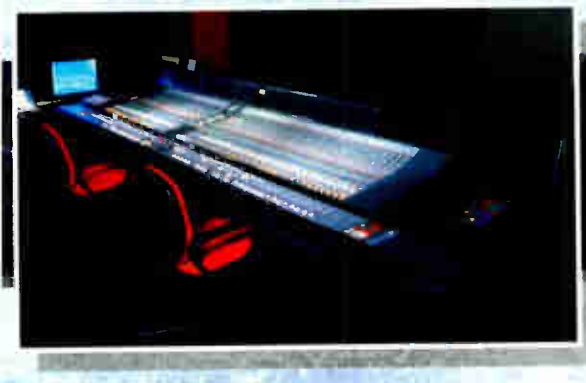
Amazingly (considering the price), the RØDE Classic also has a beautiful, foam-lined, aluminum flight case (lockable, with keys) for storing the system. In fact, the only items lacking are an external foam pop filter and external shock mount. A "naked" Classic can pop on a breathy singer, but a Popper Stopper stocking screen solved the problem. And although the Classic is a little susceptible to rumble, the highpass filter cures any problem nicely without throwing the baby out with the bath water. Both the highpass filter and polar pattern controls switch positions silently. However, changing the pad setting causes a loud pop in the audio path.

Mounting the Classic to a mic stand is simple. A large, knurled nut secures the mic to a sturdy L-bracket, which mounts in turn on top of a mic adapter. The circular nut can be loosened to allow the mic virtually 360° of rotation about a horizontal access, greatly easing accurate placement (and allowing you to hang the mic upside down). One caveat, though: the mic's considerable weight does tend to make it slip out of position if you don't secure the nut with a very firm twist.

TECH TALK

Nothing out of the ordinary here. Sensitivity is a capable 13 mV/PA, maximum SPL is 130 dB (150 dB with the 20dB pad). The broadband self-noise spec. of 24dB is fairly typical of tube mics but does prompt some caution for critical

BY MICHAEL COOPER



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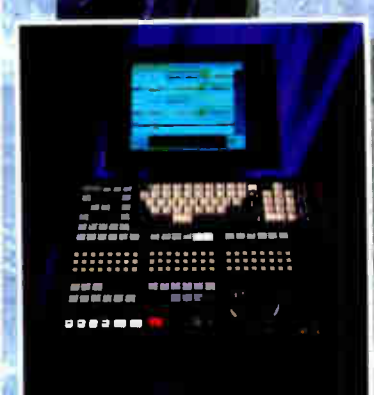

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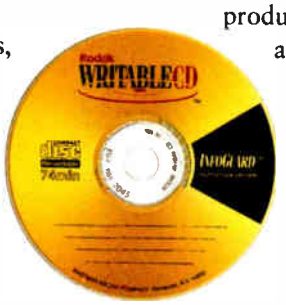

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applications—the Classic can be a tad noisy on exposed sources such as classical harp and wind chimes.

Like most multipattern mics, the Classic offers many timbral possibilities. The frequency response is quite flat in the bass and midrange, and never more than 3 dB down at 20 Hz for any polar pattern. Response at 20 kHz is only 2 to 4 dB down, depending on the pattern chosen. As is usually the case, Figure-8 mode has the least amount of "top," though it's by no means dull-sounding at 0° on-axis. In all other respects, it's the flattest of the patterns offered. Omni mode has a slight, smooth dip in the upper mids around 2 to 3 kHz and a hefty 6dB boost centered around 11 kHz. Cardioid mode exhibits a broad 2dB boost in the upper midrange, rising moderately to 4 dB around 11 kHz.

All of my critical listening tests (and overdubs) were performed with a Millennia Media HV-3 mic preamp, chosen for its neutrality and extreme accuracy. The Classic's off-axis response is outstanding, with one exception. In Figure-8 mode, close-miked sources 180° off-axis had a lot more low midrange content than sources miked 0° on-axis at the same distance. This makes it difficult to find the right balance on opposing background vocalists, although one could always use omni mode for this application. On the positive side, the rear side of the mic in Figure-8 mode yields by far the thickest (if not the blurriest) sound of all, which can be very useful when trying to add support to extremely thin or nasal instruments.

IN THE TRENCHES

Miking male vocals in cardioid mode at 7 inches, the Classic sounded warm and lush with rich texture. The mic has both a big, fat bottom and an articulately detailed high end. If you're looking for a mic with plenty of tube "splatter," you won't be disappointed—here, the Classic really delivers. However, the mic has a somewhat full lower midrange that can make it a tad cloudy on inherently woolly-sounding vocalists, who would be better served by a more open mic such as the AKG C-414TLII. This is not a criticism; I could say the same thing about the C12VR, U87, etc. That's why every studio stocks a variety of mics for different singers.

I got similar results miking a husky, alto female vocalist. Spoken word sounded awesome—big, detailed, tonally balanced, three-dimensional and lush with pleasing harmonics. When she sang over a dense, busy mix, however, the Classic sounded a tad cloudy. The singer's natural sibilance was also a little emphasized by the mic. Unfortunately, I never got to hear the Classic on a soprano vocal, but I would hazard a guess that it would probably fatten it up nicely.

Next up: a Fender Strat played through a Mesa Boogie Subway Rocket. The Classic was put in bidirectional mode, about 45° off-axis and 20 inches from the cabinet. This sounded downright awesome—creamy, fat, rich and detailed, with the perfect blend of thick body and raspy cut.

In cardioid mode on classical harp, the Classic demonstrated outstanding transient response. The tonal balance was very pleasing, with both a bright, vibrant top and deep, full bottom. The sound was considerably lusher and fatter than that provided by my B&K 4011s, though the latter mics were chosen in the end for their open upper bass and superior signal-to-noise. The Classic's self-noise was a little obtrusive dur-

ing quiet passages on this most dynamic of instruments.

Noise was also a problem on wind chimes. But if it's possible for wind chimes to sound fat, then the RØDE Classic is your ticket to obesity. Simply put, I've never heard a more flattering mic (from a timbral standpoint) on this instrument. The sound was full and lush, yet sparkly and detailed.

Overall, the Classic is no noisier than a C12VR and exhibits better RFI rejection. Interestingly, much of the Classic's self-noise (no, it was *not* transformer hum) lies in a broadband low-frequency region, where it can easily be rolled off on background tracks, chimes, etc., for perceptibly better noise performance.

Finally, we take a vicarious trip to India for overdubs of sruti box (similar to harmonium) and tamboura. The Classic is a great mic for sruti box, lending a rich and full—yet present—sound. And the tamboura sounded absolutely incredible. Here, the Classic perfectly balanced the sonorous, low-end drone of the instrument's body against the rich, tangy buzz of the strings. The pluck of the strings was also very faithfully reproduced. The power supply's switchable highpass filter removed excess low-frequency thumping in the string attack without robbing the instrument of its warmth and body.

CONCLUSIONS

The RØDE Classic is the richest and biggest-sounding mic I've heard in its price range. It imparts gobs of rich tube luster to whatever it touches, and its unusually good transient response (that is, for a large diaphragm mic) makes it a very versatile performer. The Classic's only limiting factor is its self-noise level, which is about average for a tube mic. While noise won't be an issue in most situations, it could be a problem in critical applications such as classical or a cappella recording. When you weigh the Classic's beautiful tonality, tight off-axis response, beefy construction, generous feature set and quality flight case against its modest asking price, you can only draw one conclusion. It's a bargain.

Distributed by Event Electronics, PO Box 4189, Santa Barbara, CA 93140-4189; 805/566-7777; fax 805/566-7771; Web site: www.event1.com. ■

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

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AMB TUBE-BUFFERED DI

DIRECT INJECTION BOX

Direct boxes are nothing new. Today there are dozens of units to choose from, ranging from simple $29.95 passive models to elaborate multichannel rack-mounted systems. Now available in the United States, the AMB Tube-Buffered DI is a German-made model that should appeal to anyone seeking a high-end, high-performance DI solution.

Outwardly, the Tube-Buffered DI Box is simple. The front panel has ¼-inch input and output jacks, a balanced XLR output and switches for ground lift and normal/boost modes. Internal jumpers are provided for changing the XLR from pin 2 to pin 3 hot (assuming anyone would want to do such a thing). The back panel has an IEC power cord socket, power switch, 110/220 VAC selector, and a switch that isolates the chassis from audio ground. By the way, that switch is recessed so there's no chance of accidentally moving it when engaging the AC power switch.

One feature that sets this unit apart from the competition is the construction quality. The case itself is stainless steel, with polished, etched end panels, so six months from now, you won't be wondering which position is "off"—there are no silk-screened markings to wear away. This solid DI not only exudes roadworthiness, but it has the look and feel of an heirloom that your great-grandchildren will be using long after you've moved on to mixing for Jimi and Janis. Remove the Torx screws holding the cover in place, and the immaculate quality of the internal construction is revealed: 1% metal film resistors, Jensen JT-DB-E transformer, toroidal power transformer and ECC83/7025A tube. No corners cut here, down to the power-on LED, which is waterclear blue.

The Tube-Buffered DI operates by using a very high-impedance tube input stage (>20 Megaohms), which avoids loading the instrument pickups on a bass or guitar. The second stage of the vacuum tube buffers signal, lowering the output impedance of the signal sent to the ¼-inch output jack to <8 kilohms, at unity gain, allowing cable runs of up to 15 meters without degradation. The boost switch increases the gain of the signal sent to the output transformer by 15 dB. This boost can either be used to handle extremely low output instruments, or more creatively as a means of clipping the output transformer to yield various amounts of warm, second-harmonic distortion.

Over a period of months, I used the Tube-Buffered DI on all sorts of sessions, with a wide variety of basses, guitars and amps. Most immediately noticeable by all the artists was the fact that they liked the way that their instruments sounded with their amps. The lack of loading on the pickups produced a clearer tone with more definition. The box got a universal "thumbs-up" from all the players who tried it. At the other end, in the control room, all I heard was warmth, punch and clarity. Just to check it out, I put the unit on the bench and found the frequency response was ruler flat—only 1 dB down at 40 kHz and extending well beyond 100 kHz.

One of the drawbacks of using the boost switch is that it doesn't affect the ¼-inch output that the player hears in the studio. And getting just the right amount of clipping requires some experimentation and critical listening over studio monitors; for me, the boost feature is best left for control room overdubs. I sure didn't need the boost switch for acoustic guitar overdubs with my Gibson J160E in the control room. It had plenty of gain, and I've never heard this particular instrument sound better: rich harmonics with low fullness and top-end bite. Sweet!

Retailing at $595, the AMB Tube-Buffered DI is not exactly what you'd consider pocket change, but when it's still serving you faithfully 20 years from now, you'll appreciate the investment.

Distributed in the U.S. by The John Hardy Company, 1728 Brummel Street, Evanston, IL 60202; 847/864-8060; fax 847/864-8076. ■

BY GEORGE PETERSEN

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THE TRAGICALLY HIP

GET INTO "TROUBLE AT THE HENHOUSE"

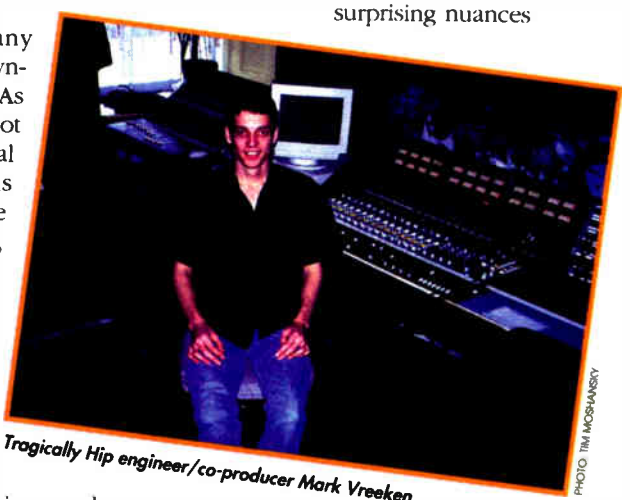
In less than ten years, the Tragically Hip have risen to become one of Canada's best-kept musical secrets, a band that filled first bars, then concert halls and now stadiums across the country. With a legion of devoted followers in their homeland, the Hip seem poised on the verge of well-deserved international stardom. Their recent appearance as the musical guest on *Saturday Night Live* (at the insistence of host Dan Aykroyd) gave the world its first real glimpse at what all the fuss is about.

Their first two records, *Up To Here* and *Road Apples*, were raw, punchy, straight-ahead rock 'n' roll productions that proved these five guys from Ontario could combine strong songwriting talents with a quirky, oddly eccentric edge. Singer Gordon Downie's elusive and cryptic lyrics told tales of love, lust and bitterness in an intensely objective yet human way. Here were songs that you often had to dig into to get at the layers of meaning.

Within the songs were snippets of arcane Canadiana and references to oblique Canadian heroes such as Group of Seven painter Tom Thompson, hockey star Bill Barilko and David Milgard, a man who spent 20 years behind bars for a crime he didn't commit. If there is one thing about the band that I like, it is that they are never afraid to say how screwed up life sometimes is.

At one of their many outdoor concerts, Downie said to the crowd: "As Canadians we take a lot of pride in our national heritage. I think this is largely a myth. We're ravaging our forests, wildlife and water with carelessness and greed. There's an election coming up this fall; I don't care who you vote for, but make sure it's somebody who puts the environment at the top of their agenda. Someone who looks beyond their own fingertips; someone who places a higher value on *anything* but profit. This is 'The Last of the Uncut Gems.' "

Over the years, the Hip have experimented more with their musical styles and approaches and have even (dare I say it) *mellowed* a bit musically as they have grown and matured. Anyone who was a fan of the band and also grew up a bit has been rewarded with more recent albums such as *Fully, Completely* and *Day For Night*, with their pleasantly surprising nuances and subtleties. Their latest album is *Trouble at the Henhouse*, co-produced by the band and Mark "Dutch" Vreeken, who has worked with them since *Road Apples*.



Tragically Hip engineer/co-producer Mark Vreeken

PHOTO: TIM MOSHANSKY

In 1989, Vreeken was working with a P.A. company in Kingston, Ontario, the band's hometown. "They were rehearsing in a ware-

—CONTINUED ON PAGE 146

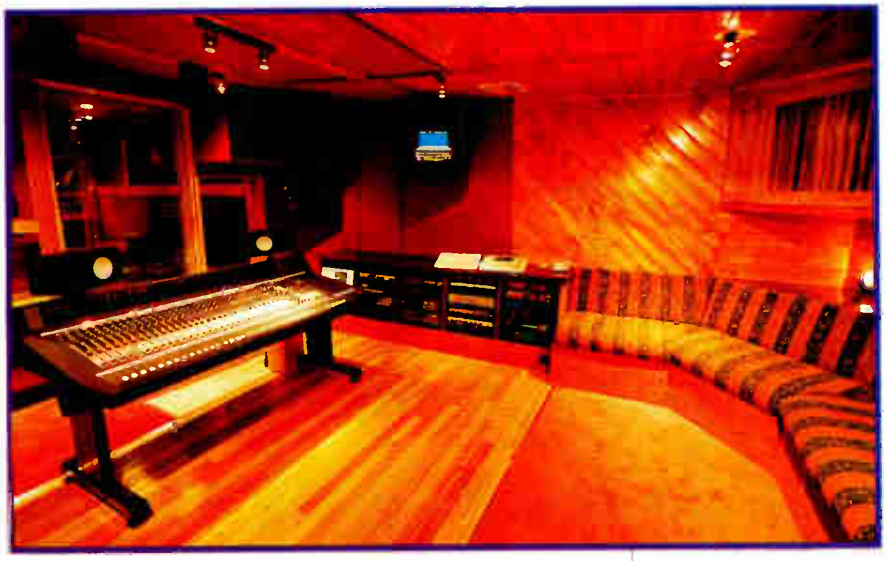
BY TIM MOSHANSKY

The band onstage in '96

PHOTO: BOB MUSSELL

STUDIO 52

Melbourne, Australia



Studio A

Artist development is not dead. It's alive and well in Melbourne, Australia, at a mid-level recording studio/label/graphic design firm called Studio 52. This facility is a versatile and affordable workshop for Australia's unsigned artists, and its owners have carved a place for their business that allows them to support themselves and their city's musical growth.

Studio 52 was started a dozen years ago by songwriting partners Trevor Carter and Paul Higgins. "Before we had the studio, we had a home studio together. Then we went to 8-track, then 16-track reel-to-reel, and had the great idea of hiring out occasionally to pay the bills, but basically concentrating on our songwriting. That lasted about a day."

One reason Studio 52 went commercial, Higgins says, was that he and Carter went "a bit berserk on the planning and building of the place." They'd gotten in deep financially, and playing catch-up started a spiral of booking time, buying better gear to suit specific sessions, booking another act to pay for the previous outlay, and so on. Fortunately, the partners had the vision, talent and business sense to make astute purchases, and the studio has done nothing but grow over the years. "We started off with just 1,000 square feet, and we're now up to 6,000 square feet. What originally started as a hobby-sized studio now has two professional studios, huge offices, a whole graphic arts department."

Higgins handles most of the business end of running the facility, overseeing booking and all studio operations. Carter and staff engineers Rowan Jail and Peter Frawley do the engineering in Studio A, the larger studio, which includes a spacious control room, main recording room and three iso booths. Equipment in Studio A includes an automated Soundtracs 3632 in-line console, a Tascam 2-inch ATR60S24 recorder, Roland DM80 hard disk recorder, JBL 15-inch two-way main monitors and Yamaha NS10 near-fields.

Studio B

Studio B is a low-cost demo studio that contains a Yamaha 2408 console, Fostex RD8 recorder, NS10s and new main monitors from French manufacturer Cabasse. "They're an 8-inch, three-way," explains Higgins, "and they're some of the best speakers we've ever heard."

BY BARBARA SCHULTZ

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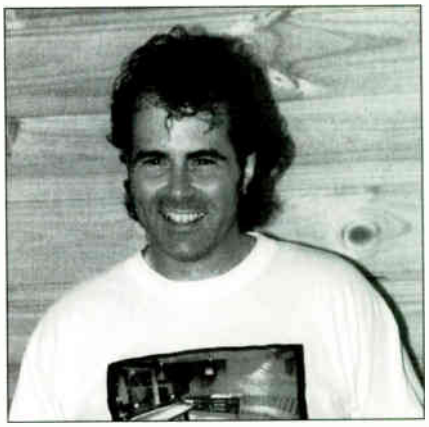
Carter and Higgins use their collection of high-quality, but relatively affordable, equipment to produce the unsigned bands that play Melbourne's club/pub circuit. Every year, since 1988, the facility's Studio 52 Records label has released a *Nu-Music Sampler*, an anthology of new bands, which they distribute to stores, radio stations and local venues. "We're probably more gung-ho than other studios in terms of actually creating work for ourselves and getting involved in promoting music, as opposed to just recording it," says Higgins. "Each album's got about 20 bands on it, so we've helped a lot of bands. And, if we get them their first bit of airplay or their first reviews in magazines and help them get some extra gigs, then it makes sense that they come back and follow that with an EP or album with us later."

Studio 52 also produces an annual compilation of *Real Australian Blues*, and this year they're embarking on a grass-roots project called Kool Skools, which will involve recording original music by high-school-age musicians. "It's giving kids ages 15 and 16 a chance to work in a studio," says Higgins. "If kids can overcome their inhibitions and get a solid knowledge of what they're doing in the studio early, they might have better experiences later on. We're gaining sponsors for the project, and if all goes well, we'll be able to do 20 schools this year." The facility's in-house graphic arts department designs all of the album art work for these col-



Paul Higgins, managing partner

AD VIELLE QUE POURRA'S "MENAGE A QUATRE"

by Barbara Schultz

How do you mike a hurdy gurdy? Probably not too many engineers have the answer, but you'd have to for working with Montreal-based four-man folk ensemble Ad Vielle Que Pourra. This group of multi-instrumentalists has been playing together and, at times, changing members for ten years. But the most consistent element has been the hurdy gurdy playing of founding member Daniel Thonon, who also serves as the band's producer. Thonon also builds his own instruments.

"I was trained as a classical musician," Thonon explains. "I'm a harpsichord player. But when I started studying harpsichord, I didn't have the money to buy one, so I learned how to make them. And from there, when I started doing other kinds of music, I started making the instruments I needed. First it was Renaissance music, then medieval music, then Arabic music, and so on. Now, I make hurdy gurdies."

Ad Vielle Que Pourra's most recent album, *Menage a Quatre,* features a reunion of the original ensemble Thonon put together when he moved to Montreal from Belgium in 1986. "The fiddler [Alain Leroux] comes from Brittany, and he has a background in classical violin, but he mostly plays Celtic Breton music," Thonon says. "The guitar player [Jean Louis Cros] is from Algeria, and he plays finger-picking guitar—what we sometimes call Baroque folk guitar. And we have Pierre Imbert, who is a hurdy gurdy player. Now there are two of us. He's French and lives in Vancouver; he has a background in traditional music, but he's inclined toward rock music."

This gives some clues as to what

unusual sounds this band can produce. The new album is a collection of all-original, traditional-style music from many countries, but with thrash electric guitar and hurdy gurdy mixed in. For example, in the liner notes, Thonon describes one of the tunes, "Bransle Bas le Con Bas," this way: "A Renaissance-style dance played with two 19th-century country clarinets, guitar, piano and hurdy gurdy! None of those instruments were meant to be played together: Down with musical Apartheid!"

This engaging and confounding work was recorded in Thonon's home studio in Montreal by engineer Frederic Salter, who has worked with the band off and on for years. Salter bypassed Thonon's Aries console during recording and used it only for monitoring. He recorded to two ADATs using a new acquisition of his own, an Aphex 107 mic preamp. "The Aries is not a bad board in its price category," explains Salter, "but I wanted to have the best quality possible, so we had the shortest cables, we found the best cables and the best preamp we could use in the budget, and I also brought along a TL Audio valve EQ, though we used very little EQ throughout the whole thing. I also used my two old trusty dbx 160 compressors a little bit on guitar, but especially on accordion, which can have quite a dynamic range. But generally, I tried to achieve the maximum quality by reducing anything that would dirty up the sound."

Because space was limited in Thonon's studio, the band could not record live, so they laid down rhythm tracks first and built on them, one or two musicians at a time. Salter miked each instrument using either a Schoeps CMC5 or a rented pair of Sennheiser MKH-40s. "The Schoeps ended up sounding good on everything," Salter says, "but the accordion and a few other things I felt needed the large-diaphragm microphones.

"On the accordion, for example, we used one for the left hand and one

—CONTINUED ON PAGE 144

lections, as well as studio brochures and literature, and a variety of outside projects.

Studio 52 seems to be doing all the right things for the Australian musical community at a time when, from a business standpoint, Higgins says, the music industry outlook on his side of the world is pretty grim. Many of the major studios are either closing their doors or converting to ad houses. And Higgins says that local radio does an abysmal job of supporting local artists. "The stations have become more and more owned by the same people," he says. "They play more of your music than ours. Maybe 20 percent of what they play is Australian. They take the easy method, looking to the American and English charts and picking the next hits. And most of what they play that's Australian is of the past. There's nothing wrong with Crowded House, but if that's all you play, then you're not de-

—FROM PAGE 143, AD VIELLE QUE POURRA

for the right hand. One consideration is that the mic has to be far enough from the accordion so that when he extends his hand, it wouldn't hit the mic; you have the problem that sometimes you hear the sound and it's not very even in the sense that proximity is only evident when he gets close to the mic, and when he gets away, it sounds different. But that was a compromise I made because the accordion never sounds as good with contact mics as with large-diaphragm mics.

"I also used the MKH-40s on the bagpipes," he continues. "I would have one five feet in front of the pipe and another on top of the bag pipe, near the drone pipe, the one that goes mmmmmm."

Engineer Fred Salter and bandmember/producer Daniel Thonon in Thonon's farmhouse studio

And the hurdy gurdies..."Oh, boy. The hurdy gurdy. That's the hardest instrument I've had to deal with. It's such a foreign sound, and when I first started to work with them, I had no idea what I was getting into. That instrument to me was something from hell. I'm just starting to like it now. But Daniel says I'm one of the engineers who understands it best. He has done live shows where the engineer would shut off the fader for the hurdy gurdy because 'it distorts.' But it sounds like that.

"I've tried different things, and I think finally I found a good sound with my Schoeps four feet above. The hurdy gurdy has three basic sounds [Thonon describes them as a drone sound, like a bagpipe, a rhythm and a melody], though, so depending on what we wanted to emphasize, I would adjust the mic placement accordingly."

The album was mixed on the 32-input Amek Mozart at Studio Multisons in Montreal. Salter chose the facility because he enjoys mixing on that board, especially because the studio has added Supertrue automation. "It's necessary in order to get a precision mix," Salter says. "There were a lot of subtleties and some extraneous noise I wanted to get rid of, such as the dog barking in the background. It was a farm after all." Multisons is also equipped with Tannoy mains, and Salter used the studio's processing gear: Lexicon 300 and PCM 70 for effects/chorusing and a little bit of Symetrix 425 compression.

"This was one of the most interesting projects I've ever done," says Salter. "These guys are so much fun, and it permits me to experiment. More mainstream music such as rock or jazz, which I do a lot of, doesn't allow me the same amount of latitude or experimentation, as the instruments are fairly standard. With Ad Vielle, it's a new bag of tricks with every album. I have the latitude and control to do anything I want, so it's play time." ■

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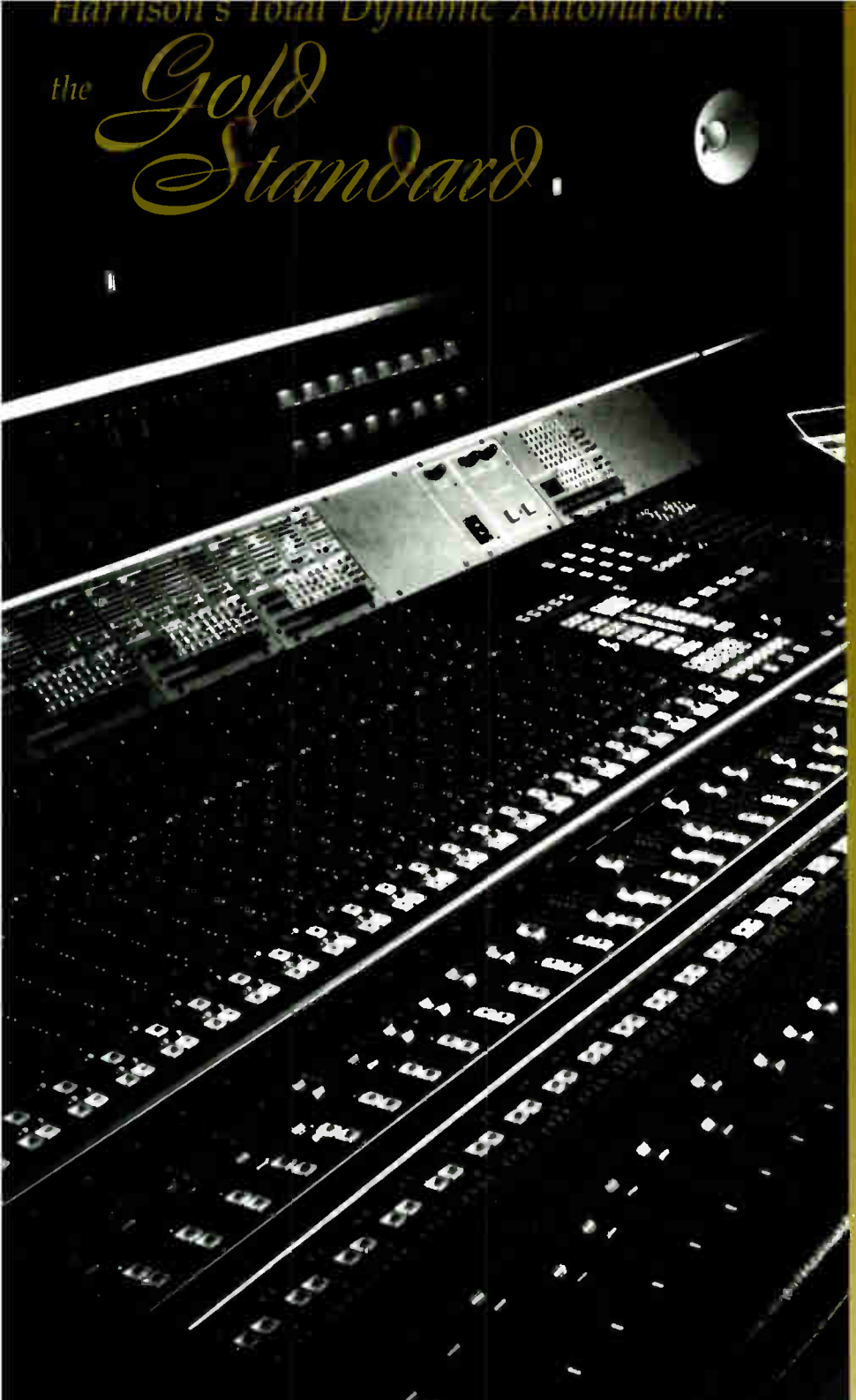

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—FROM PAGE 140, THE TRAGICALLY HIP

house nearby, and I was loading a truck and I heard their monitors feeding back," he recalls, "so I fixed them, and subsequently they hired me on to be their monitor engineer. When the front-of-house guy quit to get married and do more studio stuff, they gave me the opportunity to try mixing FOH, and they liked the job I did." Ironically, the day Vreeken got turned down by no less than three recording schools was the day the call came from the Hip to go on the road.

Knowing the music inside and out for almost eight years has made Vreeken indispensable and given him an uncanny ability to know when the band's on and when they're not. Many

BITS & PIECES

ASIA

Graham-Patten Systems (Grass Valley, Calif.) reports sales of its D/ESAM Series digital mixers to a number of broadcast and post facilities in Japan, including **Nagasaki Cable**; **Mothers**, a post facility in Tokyo; **Kansai TV** in Osaka; **Tokyo Sound Production**; and **Imagica**, one of the largest post facilities in the country, which installed the mixer for use with its all-Sony editing system...**Broadway Entertainment** in Petaling Jaya, Malaysia, purchased a 40-channel SSL 4000 G Plus console. Broadway opened in 1995 as a music-recording studio; clients include BMG, Warner Bros. and Ponycanyon Records...

EUROPE

Soundcraft's first Broadway console was shipped to **NRK Broadcasting** in Norway. The console will be installed in a broadcast vehicle used to cover live concerts all over the country... The **Rock Cafe** in Bodø, Norway, took delivery of an EAW loudspeaker system for its main dance floor, including four JF200 compact full-range systems, two SB528s and an SB180 subwoofer. On the second floor of the venue, two JF200s and two SB180s were installed. Each floor also includes a delay system with two EAW UB82s and several MS30 speakers. All of the loudspeakers are powered by C Audio amps, with EAW MX300 close-coupled electronic processors and a Peavey MediaMatrix DSP system for processing and control. The system was installed by **Lydteamet Bodø**, a local sound company that also recently installed EAW systems for two other Bodø venues, the **IV Gang** disco and the **Da Carlo Cafe/Pub**...**The Royal University of** Music in Stockholm installed two SSL 4000 G Plus consoles. SSL also reports the delivery of three 48-channel Axiom consoles to **Vonk Sound** in Amsterdam...In Spain, rental company **Twin Cam Audio** provided CyberLogic NC-800 Series multichannel amps for a number of Spanish touring acts in '96. The **National Theatre of Catalonia** also took delivery of three NC-812 systems...**Banda Sonara** (Lisbon) purchased a DAR Sabre Plus compact editing system...

UK

Scottish Television took delivery of a third DAR Sabre Plus workstation...**Strongroom Studios** (London) hired Rob Buckler as its managing director. Buckler was most recently technical services manager for HHB Communications, but before that he was technical manager at Strongroom for five years. Buckler was brought in to supervise the studio's ongoing expansion; the owners are currently adding a third recording and mix room, designed by Neil Grant, which will feature an SSL G Plus console and Otari RADAR 24-track hard disk system. The studio will also have a new digital editing

—CONTINUED ON PAGE 148

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of their songs evolve out of extended jams, either in rehearsals or, more frequently, onstage. "They're really not afraid to go out on a limb live," says Vreeken. "They go into uncharted territory all the time, and then I've got the recording and we have all kinds of ideas for different arrangements. There's a huge backlog of DATs from tours. Little parts come up, and it's handy for them to have me around in a way, because when they go into the studio and they're thinking about a 'B' section for a song or a potential bridge, we can find stuff from those tapes."

Because of his interest in recording as well as live mixing, Vreeken was always involved in the pre-production demos for the band's albums, which would then go on to be produced by the likes of Don Smith, Chris Tsangarides or Mark Howard. The band eventually found that the arrangements were staying true from the demos through to the albums, so when they started to record *Trouble at the Henhouse*, they knew the time was right to do it themselves.

—FROM PAGE 146, BITS & PIECES

suite and new personal amenities such as a "treatment room" for acupuncture and massage, and new kitchen and lounge facilities...**CTS Studios** and **Lansdowne Recording Studios**, two jointly owned music recording facilities, purchased two Studer A-827 24-track recorders...The music department at **Surrey University** purchased a DDA CS3 console...

AFRICA

The **Cairo Opera House** recently purchased an open-air sound reinforcement system to be used for various concerts, including a performance of Verdi's *Aida* that will be held at the Luxor Temple in late 1997. The system includes Electro-Voice MT-4 speakers powered by 20 QSC Powerlight Series amps. New purchases also include a Soundcraft 32-channel Vienna II VCA console, outboard gear from Aphex, Lexicon and Rane, and Sabine FBX-901s for feedback control. The equipment was provided by Cairo distributors **Alpha Audio**. ■

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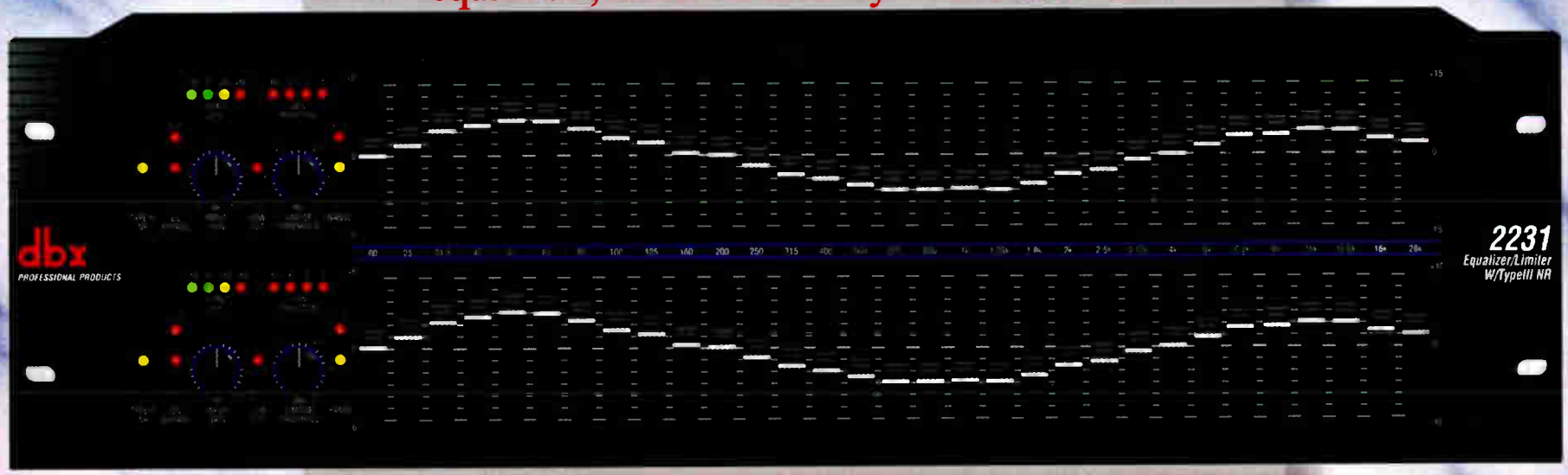

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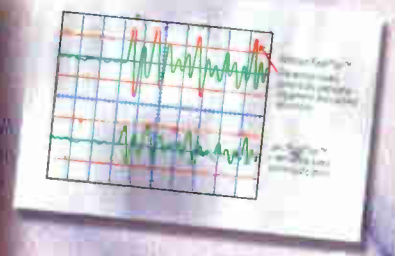

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JUST SAMPLE IT

The Hip had been lucky and successful enough to be able to afford their own studio, and in 1995 they bought an old limestone house in Bath, a small town on the north shore of Lake Ontario, and began filling it with gear. They gave Vreeken a budget and told him to go for it. "The band isn't really big in terms of numbers of inputs," explains Vreeken, "so I ended up picking up an old Neve console, which we used with a couple of DA-88s, and brought that on the road for a while. And the studio sort of evolved from there."

Recording for *Trouble at the Henhouse* began while on tour for *Day For Night*. The band would schedule four-day blocks of studio time while in Amsterdam, Los Angeles, New Orleans or San Francisco and lay down material they had built up on the road. The majority of the album, however, was recorded and mixed in Bath.

The studio features a vintage Neve '70s broadcast console, as well as an old API board that has been modified by Vreeken from a 16-input, 4-bus to a 52-input, 8-bus. "It's a cool studio," says Vreeken. "It's got all Class A discrete gear. We have an old A80 Mark IV 24-track, 2-inch with SR. It's pretty much all old gear.

"There's a lot of different kinds of rooms in this house," he continues. "The main tracking room is a pretty big-sized room with a hardwood floor, and then there's a couple of other more intimate-sounding rooms. I don't have all the Lexicon 480s and stuff like that, so there's a lot of neat sounds you can get from different ambiences. When you shoot different sounds into different spaces, you get some cool tonalities. Sometimes it works, and sometimes it doesn't."

As for microphones, Vreeken has many to choose from. "You can never have enough good mics," he laughs, "because there's so many different colors and textures. My favorite right now is the Coles 4038 ribbon mic. That is such an amazing microphone. I've blown them out a few times because they're really fragile, but it's an excellent microphone all around. I use it for drum overheads or even as a kick mic." Downie's vocal mic of choice is usually a Vintage Sony C37A or an AKG C12VR.

"The way I usually record is to run a DAT the whole time," he continues. "As soon as they walk in there, if anybody picks up an instrument, it's being recorded. I'll run the multi when

they're actually gonna do a count. Generally, what they like to do is track live, and then I'll run cabinets in other rooms so I can get a bit of an isolation thing happening. I'll usually mike up an amp for the guitar players in the room and outside the room. I've gotten into just a little bit of baffling because, of course, you get a lot of bleed. A lot of the time the tracking vocal is the keeper, so bleed is definitely a consideration. With these guys, it's more of a group sound that they're after, like a live, off-the-floor thing, which is great. There's a different dynamic when a drummer and bass player are staring at each other and playing. Since I haven't done thousands of records, like a Don Smith or a Chris Tsangarides, I'm very conscious of keeping the sound of the band. I think for the most part that's what their fans are after. It's the sound of the five guys playing together that's exciting."

Having said that, though, there are a few tunes where Vreeken tried some different approaches. For the song "Ahead by a Century," he recorded a couple of the guys playing acoustics to a time reference and laid drums on top of that. "When you use that kind of approach, then there's a lot of flexibility," he says. "You can try speeding the tape up to thrash-speed and laying down the drums, and when you slow the drums down again, you get these huge, fat sounds that have a certain characteristic."

Steven Drake from Vancouver band The Odds mixed the album, along with the band. "He's a really creative guy," says Vreeken of Drake. "He's a great musician himself, so he's got all kinds of wacky ideas and he's very experimental. I was walking through the studio with him, and he saw the garage, which was empty at the time, and he just went, 'Wow.'"

Vreeken has managed to bridge the gap in a career that is almost unheard of in today's increasingly specialized audio world. "I'm really, really fortunate because I don't think I'd get this opportunity with many other bands. These guys are really into trying something new, trying different things and breaking it up. They're not into being in a rut in any way. Any time it gets a little bit stale they just throw curve balls." ■

Tim Moshansky is a freelance writer based in Vancouver, B.C.

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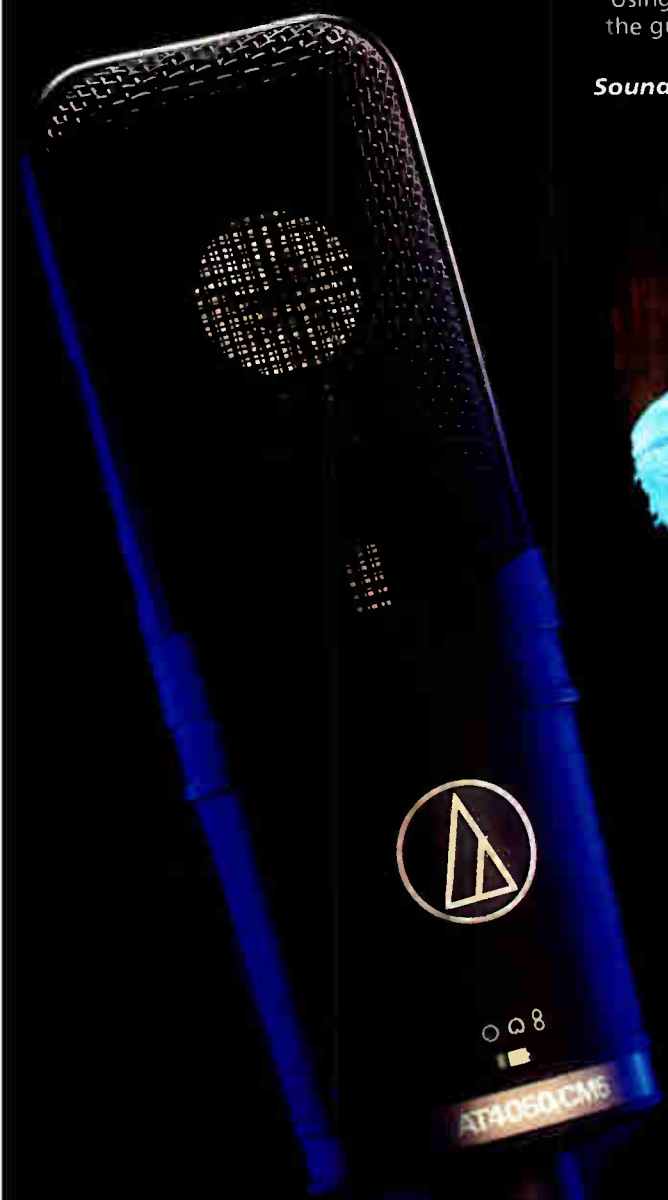

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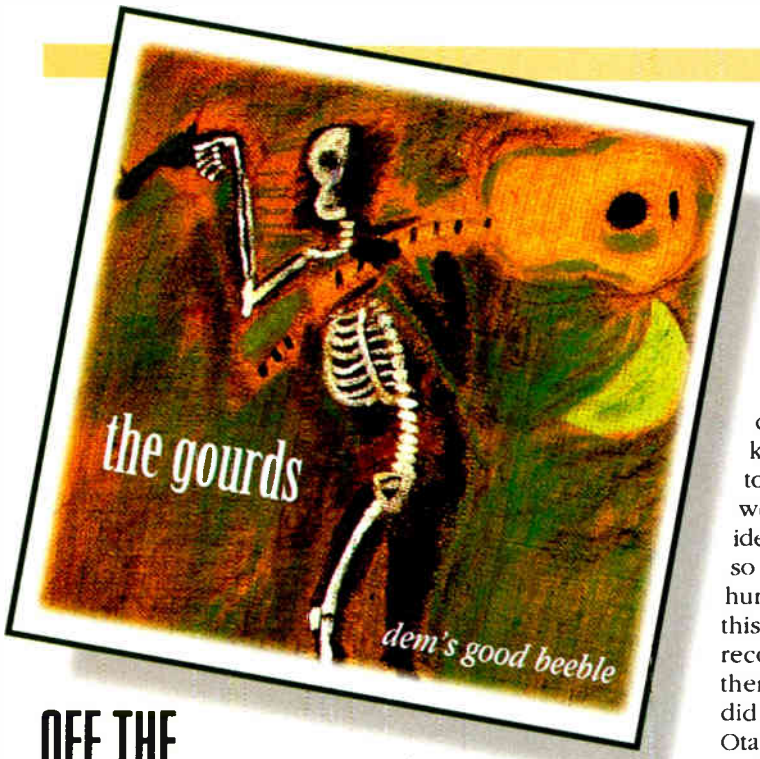


OFF THE BEATEN TRACK

SIX CDS IN SEARCH OF AN AUDIENCE

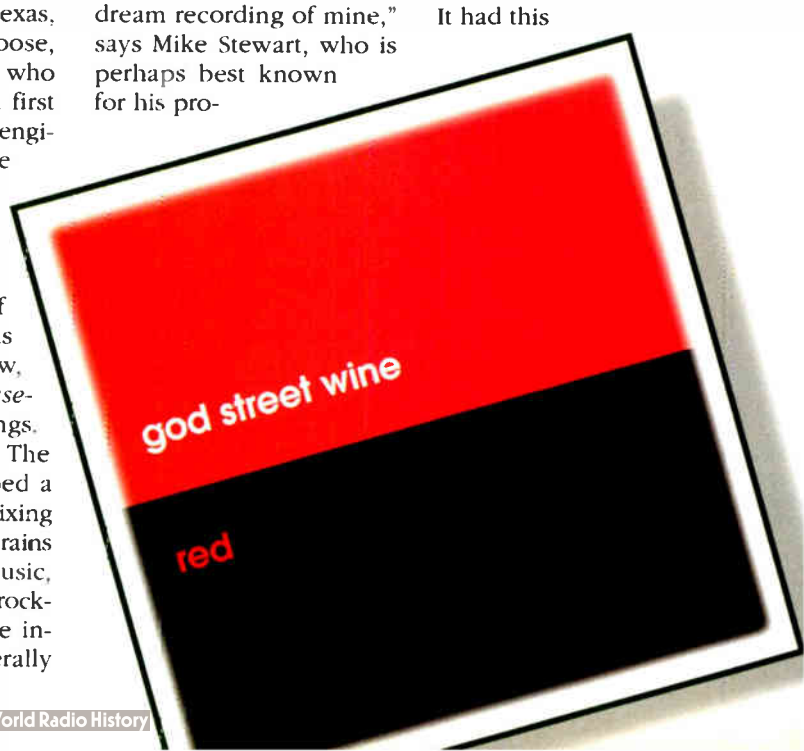
by Blair Jackson

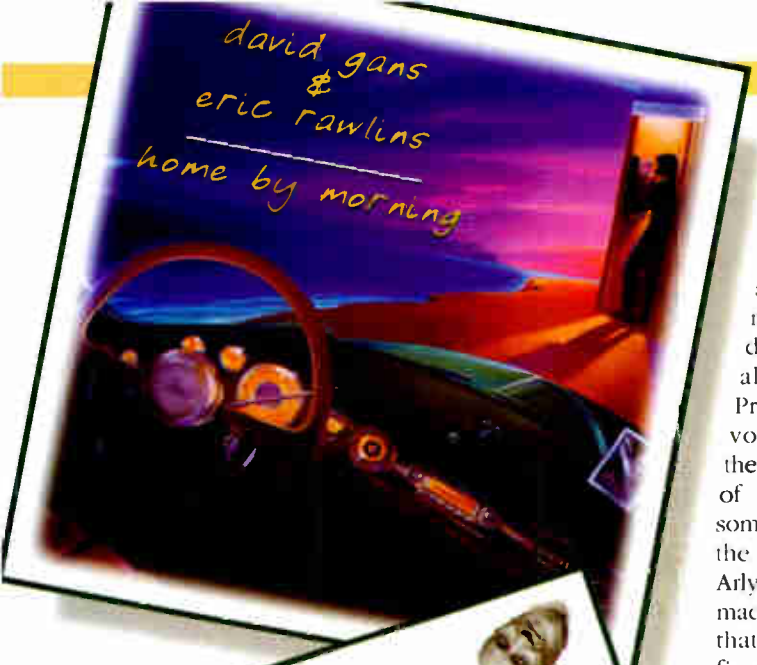
Screw the charts! Some of the most interesting music being made today will never make it to the Top 10. Herewith, a look at a few releases that caught my fancy for one reason or another.

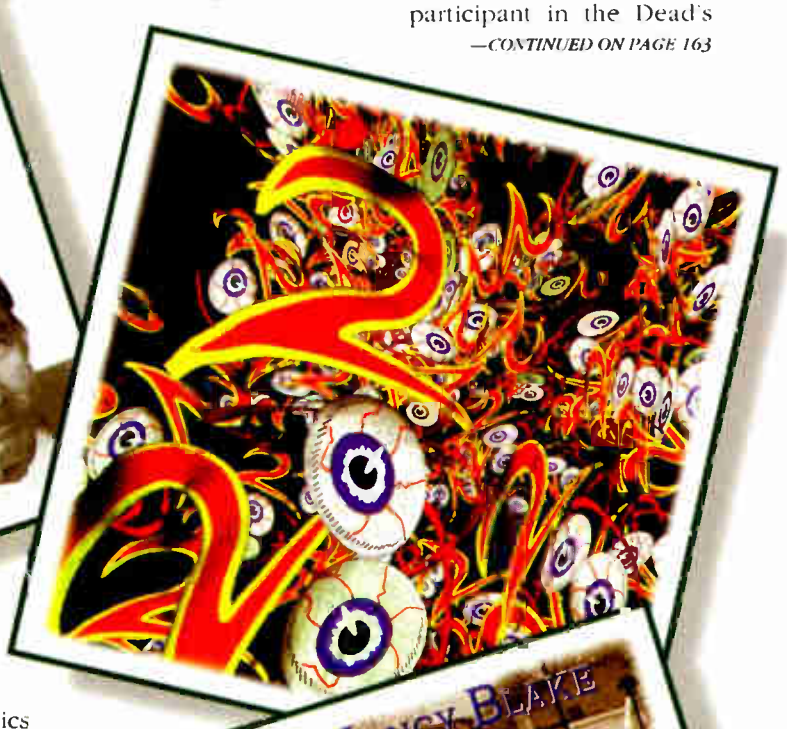
The Gourds: ***Dem's Good Beeble*** (Munich Records). Hailing from Austin, Texas, The Gourds are a loose, funky, eclectic quartet who have made a brilliant first album with producer/engineer Mike Stewart. The group has drawn numerous comparisons to The Band, and indeed, one of the first things I thought of when I listened to this disc was The Band's raw, anarchic-sounding *Basement Tapes* recordings. Like The Band, too, The Gourds have developed a distinctive sound by mixing elements of different strains of American roots music, mainly country, cajun, rockabilly and gospel. The instrumentation is generally quite sparse—acoustic and/or electric guitar, accordion and a spry rhythm section does the job on most tracks—but what carries the record are the excellent, slightly off-kilter harmonies and the strength of the melodies that principal writers Kevin Russell and Jimmy Smith have come up with. This is an album that just gets better and better the more time you spend with it, the more you succumb to its odd appeal and unusual lyric vision.

"This is sort of like a dream recording of mine," says Mike Stewart, who is perhaps best known for his production work on albums by Poi Dog Pondering and the Dead Milkmen. "When we first started talking about doing this record, we knew we weren't going to have a lot of money, so we started talking about ideal ways to do recording so we wouldn't be in a hurry. None of the guys in this band had ever made a recording before, so I got them into my house and did an 8-track demo on an Otari 5050.

"I thought they'd record a lot better if we didn't get them behind the glass with the big knobs and everything," Stewart continues, so a search began to find a house where the band could cut their album. Ultimately, the group settled on a 100-year-old stone house that was owned by the family of one of the bandmembers' wives: "It was this phenomenal place in the middle of the Texas hill country near Fredericksburg," Stewart says. "You could see for a few miles in three directions. It had this







great stone patio underneath a giant oak tree; just beautiful. We moved in for three weeks and did this recording. We just moved the furniture out of the way and set up the band. With this music, the drums needed to be minimized and we experimented in different rooms with the drums. There was a big stone room, a little stone room, a little wooden room, the bathroom. We recorded all over the house, but this is a band you could almost do with one mic in the right room."

Stewart brought in a Mackie 8-bus board, a pair of ADATs, and an impressive selection of fine mics and outboard tube gear, including Neumann, AKG and Schoeps mics, Summit EQs, Neve and API preamps. "I basically moved a really great valve studio over there and stuck it through the preamps and then monitored it through the Mackie board," Stewart says. "Then, it was sounding so good, I wished I was on regular tape instead of ADAT, but I'm still happy with the way it sounds."

The band and Stewart worked from one in the afternoon until one in the morning most days. "We used very configuration you can imagine for basics," Stewart notes. "It might be drums and mandolin and three singers; all sorts of variations. Probably 50 percent of the vocals are live, some of them with two guys in front of one mic." There was some overdubbing later, and the mix was done mainly at Arlyn Studios in Austin. "We made the conscious decision that we weren't going to fix everything and make a 'perfect' record," Stewart says. "We wanted to make 'em sound like they are live, and I think we succeeded at that."

Munich Records USA, P.O. Box 2242, Austin, TX 78768.

Second Sight: ***Second Sight*** (Shanachie). This band carries an interesting pedigree. Keyboardist/leader Bob Bralove was the Grateful Dead's MIDI guru and an active behind-the-scenes participant in the Dead's

—CONTINUED ON PAGE 163

CLASSIC TRACKS

SANTANA'S "BLACK MAGIC WOMAN"

by Blair Jackson

Few guitarists in rock have an immediately recognizable sound, a musical signature so unique that when you hear it, you know it must be them—or an imitator of them. Carlos Santana certainly fits in that category. For three decades now he's traveled the globe, playing every imaginable size of venue, thrilling literally millions of people with his distinctive and always expressive guitar work, which spans a range from ethereal ballads to the fiery Latin rock that is his most famous trademark. His idols, some of whom he honors by wearing beautiful hand-painted shirts bearing their images, are people like John Coltrane, Miles Davis and Bob Marley, musical searchers all. And that's what Carlos Santana has been since his days fronting the Santana Blues Band in San Francisco in the late '60s—a tireless explorer in search of the right note or combination of notes or riff that elevates both the music and those listening to it. "People everywhere are beautifully uncomplicated," he told me in an interview in January 1978. "They all want to be moved. All I can do is go deeper in my heart and simplify my life and simplify my music so that it makes more sense to me and others...America wants something more than Marilyn Monroe and red Cadillacs and Platinum albums. America is crying to reach something, become something, *offer* something. America wants the flame to grow, just as you and I want the flame to grow. The more the flame grows, the more your values grow and the more your music becomes haunting and, above all, *universal*."

The Mexican-born guitarist grew up in San Francisco's heavily Chicano Mission district, mainly playing blues because "they reflect sweet feelings of simplicity and honesty and pain and reality that always pervades in the streets," he said. "It's so simple. That's why I started with Jimmy Reed and B.B. King and Bobby Blue Band." Carlos was further influenced by the great Butterfield Blues Band axe slinger Michael Bloomfield; by the Hungarian jazz guitarist Gabor Szabo, who was already fusing rock and Latin music elements in his sound in the mid-'60s; and to a lesser degree, by the first generation of San Francisco's improvisational rock guitarists, like Jerry Garcia, Barry Melton, Gary Duncan, James Gurley, et al. But Carlos' basic style—the way he mixed rapid-fire guitar bursts with piercing notes that he'd sustain for long periods—was already fairly well in place by the time the group Santana cut their

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8-bus console, Altec 604 monitors and a 3M 16-track recorder. The studio had a couple of EMT plate reverbs, and Catero believes he also used some tape delay throughout the record.

Catero says he doesn't remember specific microphones he used on the Santana sessions, and notes, "I'm not a person who's big on equipment, even though I'm an engineer. It's not like I go into the studio and insist that I have every effect and every gate and every microphone, and if I don't have this mic I can't get this drum sound, and all that. I walk in and say 'What have you got?' I'm into bare bones, basic engineering." That said, he adds, "I probably used the standard Telefunkens—U47s and 251s—and things like [Shure] SM55s and 56s." Speaking generally about how he recorded the drums, Catero says he usually used four or five mics: "I like condensers for the cymbals, and dynamics for the skins. I don't mike the cymbals close, and if you put condensers that have a dynamic range of 110 or 120 dB right near a tom, you're going to overdrive the preamps in the board. So a dynamic can't take it; it saturates before it even gets to the board. Most of what I used for the drum sound came from two overheads—condensers. They'd pick up the whole kit, but were more for the highs. Then the dynamics were for touch-ups and I'd feature those when I wanted to get a spread for fills, when they go across the drum kit." Jose Chepito Areas' timbales and Mike Carabello's congas were miked with dynamics. Gregg Rolie's organ used three mics on the Leslie cabinet—two at the top for stereo, and one at the bottom to capture the low end. Carlos' Les Paul was probably miked at the amp with a 56, and Dave Brown's bass a mixture of direct and a single mic on his amp.

Though people commonly refer to this Santana Classic Track simply as "Black Magic Woman," it is actually two different songs by two different writers. "Black Magic Woman" was a mid-tempo blues written by Fleetwood Mac's late-'60s lead guitarist Peter Green, and recorded originally on the Mac's *English Rose* album, released in 1969. It was a minor hit in Britain but did not chart in America. What sounds like a long instrumental coda after Santana's "Black Magic Woman" is actually a fairly faithful version of Gabor Szabo's instrumental tune "Gypsy Queen," which appeared on the guitarist's Latin-flavored 1966 Impulse album called *Spellbinder*. Szabo, a Hungarian refugee who was educated in part at the Berklee School of Music, said he came up with the tune during the *Spellbinder* sessions in May of '66: "I used it [the song] to warm up before we started recording. That is, I showed [the group] a little rhythmic figure, and we went on from there. Fortunately, [producer] Bob Thiele had the tape machines on. The title came afterwards because [the song] reminded me of a girl dancing around a gypsy campfire." The Szabo version features Latin percussion by Willie Bobo and Victor Pantoja, and though Carlos' rendering of the tune has more distortion on the guitar, it's not that far removed from Szabo's original.

This was a period of relative stability in the Santana band, though Catero says, "They had the problems that everyone had with the drugs in that period. The bass player had problems in that area and problems with tuning and things like that. But the talent was there in that band, and the freedom was there, too, at that time: They weren't smothered by corporate rules. They were allowed to come and go as they wanted. They were allowed to smoke what they wanted, drink what they wanted; whatever it was. In some cases it was beneficial, in some cases it was detrimental, but the point is they felt free. And since Carlos is such a creative person, I think everyone really enjoyed playing with him so much."

"Black Magic Woman/Gypsy Queen" became the biggest hit of Santana's career when it came out in the fall of '70, reaching Number 4 on the pop charts. The song is still a staple of so-called "classic rock" radio formats, and a concert stand-out as well. (A live version appeared on the superb 1977 record, *Moonflower*.) The *Abraxis* album, with its stunning, sensual cover collage by an artist named MATI, was even more successful than the single, hitting Number One and staying there for six weeks. Asked how he feels about how the record sounds today, Fred Catero, who now works primarily on commercials, says, "It sounds like records of that day. Musically, it's still really strong, but I'm not that happy with how it sounds. Records of that period had a deadness to them that today I wouldn't allow. We were a little bit afraid of reverb, so the drums sound a little dead. Some of the drums back then sound like they were recorded in a clothes closet. Also, I was just a co-producer on that record, so not everything that's on there was my choice."

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Santana, the group, has been through a million incarnations since then—some jazzy, some even more overtly commercial—but at its core it remains a vehicle for the passions of its tireless leader, Carlos Santana. More than a rock survivor, he has become an institution, a musician who can always be counted on to give 100%, who has been extremely generous with his time in the aid of different causes, and whose spirit and optimism touches everyone who hears his music. ■

—FROM PAGE 155, OFF THE BEATEN TRACK

freeform "space" segments from 1987 until the group disbanded after Jerry Garcia's death in 1995. Henry Kaiser is known far and wide for his genre-bending gung-ho guitar explorations and his uncompromising dedication to the avant-garde and truly weird. Vince Welnick was a keyboard player for The Tubes and the Grateful Dead. Sax player Bobby Strickland, drummer Paul Van Wageningen and his bassist brother Marc are all skilled veterans of numerous pop and jazz outfits. So it's not too surprising that when you put all these guys together in an instrumental band you get a group that is equally comfortable playing ethereal space music, beat-heavy jazz-funk or *In a Silent Way*-era Miles Davis. All the songs on *Second Sight*, save for an incredible deconstruction of Sly Stone's "Dance to the Music," were composed by the entire group (although a few tracks predate Vince Welnick's joining the band), and as a result no single instrumental voice dominates. There's a tremendous variety of timbres and tempos, as the band moves assuredly through all sorts of intriguing landscapes, playing danceable grooves one second, drifting dreamily into the ether the next, then heading into territory that sounds like something Miles' *Bitches Brew* band might have played if they'd stuck around for a few years. Jerry Garcia, in some of his last studio appearances, adds his daring and inimitable distorto guitar to two of the album's wildest tracks, "Rosetta Rock" and the cinematic soundscape "Dangerous Dreams," and Garcia's bandmate Bob Weir helps out on another tune, a blues called "Sin City Circumstance." But this is a group that doesn't need heavy hitters to achieve liftoff; these players have plenty to offer by themselves.

The disc, which was recorded by the Dead's longtime studio ace John Cutler at that group's famous San Rafael, Calif., studio Club Front (since relocated to Novato), is a sonic marvel, filled with a head-spinning array of cool textures—great stereo effects, deep and spacious reverbs, bizarre, efflorescent electronica. Yet the music doesn't sound labored over; clearly these are true performances and not products of studio wizardry.

"We did most of the record in two major sessions," says Cutler, who continues to work for the Dead, tweaking archival material from the group's tape vault. "The basics were completely live—we had everyone set up in the room together—and not much got redone; it was more a matter of adding things onto the basics. There was a fair amount of overdubbing later. But actually, a lot of the electronics were live, too. For instance, the drummer played the electronic tablas during the basics and some of the sax effects were live, too. We'd put two mics on Bobby [Strickland]—an M49 for the sax itself, and a 421 feeding his effects."

Club Front is equipped with a Neve VR48 with Recall and Flying Faders automation, Studer 820 recorders with Dolby SR, Meyer HD-1 monitors, and a generous supply of signal processors

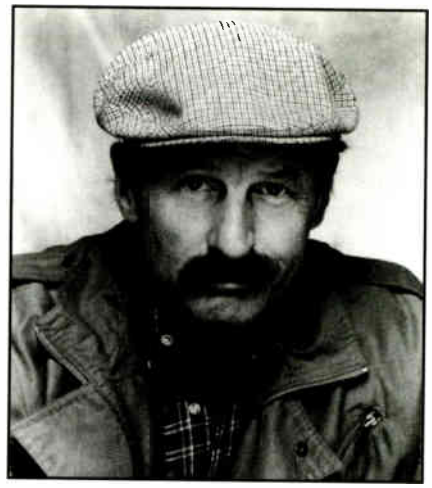
and effects boxes, some of which came into play on the mix. The mix was a team effort involving Bralove, Cutler, Kaiser and Jeffrey Norman, who also does engineering work for the Dead.

"We didn't get into anything too fancy," Cutler says. "We went for a simple, live drum sound, with some 'verb and all, but trying to use minimal mics. We had all the toms miked, and so on, but we didn't necessarily use much of that; we didn't need to. I was using a Neumann stereo shotgun mic that I'd used with the Grateful Dead as an overhead, and that was wonderful. It's very crisp, and it especially picks up the snare nicely."

Second Sight are a band who have sounded almost completely different each time I've heard them perform, so who knows how far they've already moved into their next evolution since the album was completed. But the CD is a fine sampler of a band that's not afraid to take chances, and in fact revels in the inherent danger of playing improvisational music.

Shanachie Records, 37 E. Clinton, Newton, NJ 07860. The Grateful Dead's Web site can be accessed at www.dead.net.

Joe Zawinul: *My People* (Escapade Music). In many people's minds, keyboardist Joe Zawinul will forever be associated with Weather Report, the ground-breaking fusion band he and saxophonist Wayne Shorter formed at the dawn of the '70s. An incredible group, to be sure, but Zawinul has had a fascinating solo career since that group's dissolution, and his most recent album is one of his best. *My People* continues Zawinul's latter-day fascination with vocal textures, which he first explored in Weather Report and then built upon in solo releases like *Dialects* and *Black Water*. Zawinul has a marvelously egalitarian view of vocals—he tends to handle them as if they are just another instrument, and in fact, he usually treats his own vocals with lots of processing to make them sound more like they're part of his keyboard rig. Zawinul's music has always had considerable worldwide appeal, and for *My People*, Zawinul has assembled an impressive international cast, including singers from Mali, Venezuela, Turkey, Anatolia, Siberia and Cameroon, and musicians from Peru, Venezuela, India, Cuba, Israel, Guinea, Ivory Coast, Austria (Zawinul's original homeland) and a few



Joe Zawinul

other lands. One track features throat singers, another a group of yodelers. It's a wild mix, but it works, and it's all pulled together by Zawinul's exquisite and distinctive keyboard work. Several of the tunes here have the kind of driving, rhythmic feel of Zawinul's best uptempo Weather Report compositions, but this is hardly an artist who is resting on his laurels. He is now drawing from a whole world of creative influences, which he has stirred into a new, exciting and always accessible musical polyglot.

My People was recorded over a four-year period, mostly in Zawinul's home studio in Manhattan—dubbed The Music Room—with Joe's 27-year-old son Ivan engineering and co-producing. Additionally, parts of a few tracks date back to Zawinul's previous home studio in Malibu, and some overdubs took place in France (Paris' Chauves-Souris Studio), Switzerland (Radio Zurich Studios) and Austria (Stereo West Studio). Ivan was practically raised in his father's studio—"As a kid I had drum machines and all the new keyboards," he says—and he supplemented what he learned from Joe by taking courses at the Recording Workshop in Chillicothe, Ohio, the Institute for Audio Research in New York and Full Sail in Winter Park, Florida. Ivan also honed his chops working on the road with Joe's band, the Zawinul Syndicate, first as a keyboard tech, then as FOH mixer, a job he still holds.

The way Zawinul generally works is he improvises on his keyboard rig at home. When a melody or pattern he likes emerges from his improvisations, he notates it and then uses that as a springboard to create a full composition, which he fleshes out with more keyboard parts, his band's contribu-

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tions and various outside musicians. It's often a long, complicated process that can stretch over many months, and in a few cases on *My People*, several studios. "'Bimoya' started in Malibu," Ivan says, "but we kept working on it. When we came to New York [in '94] we got an ADAT, Joe had to go to Paris for some business, and that's where Salif Keita [the great Malian singer] was going to be, so he brought a slave reel of 'Bimoya' with him that Salif could work with. 'Bimoya' was roughly 160 tracks. All the keyboards are tracked and mixed live through our MIDI, so we don't worry about inputs there. Joe has 64 channels on his computer, and we'll go through them—'This part is good; this one is no good.' He may ask me, 'Hey man, there was a great kora line I played in Malibu; I think it was in December. Can you find it?' So he may play with that for a day. It doesn't fit? Okay, take it out. The percussion guy comes in and lays something down. He's always trying new ideas, always experimenting with sounds."

Zawinul's keyboards and computers are the heart of his studio. He still uses many of the same warm-sounding analog instruments he mastered years ago—Prophets, Chromas, Korgs, Oberheims, ARPs—but his studio has become more sophisticated since the move to Manhattan, incorporating an 80-input Amek Einstein console, too. "It's still about the music," Ivan says. "If Joe only had a piano and nothin' else, he'd still come up with something great." True enough, as one listen to Zawinul's piano work in his pre-Miles Davis and pre-Weather Report days with Cannonball Adderly aptly shows. But today Joe *does* have lots of stuff, and what he comes up with using that stuff is more than just cool—it's inspired and often revelatory.

Incidentally, Weather Report fans will be interested to know that Joe and Ivan Zawinul have been digging through hundreds of hours of live and studio material for a long overdue WR box set, out sometime this year.

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David Gans and Eric Rawlins: *Home By Morning* (Perfectible Recordings). There are all sorts of reasons that albums get made. In the case of the debut CD by San Francisco Bay Area singer/songwriters David Gans and Eric Rawlins, serendipity played a big part. "We had been playing informally for several years, as pals," says Gans, a radio producer and one-time music editor of *Mix*. "But after this one show at the Sweetwater [a club in Marin County] a friend of ours named Nancy Duff made one of those offhand remarks that gets the ball rolling: 'You know, if you guys made a record, I'd kick in a few bucks.' Then some other people said the same thing, and the next thing we knew we were working out this plan where a bunch of people kicked in some money and we put in a bunch of our own."

Rather than going the cheapo DIY home studio route, the duo hired an experienced local producer, John Lumsdaine, who brought in professional musicians to augment Gans' and Rawlins' vocals and guitars, and booked time to record and mix the album at commercial studios in Oakland and Berkeley. In the end, the album cost about twice the original projection (so what else is new?), but the resulting disc is a warm and inviting showcase for two talented songwriters/musicians. Over the course of 12 evocative songs—seven by Gans, three by Rawlins and one each by Grateful Dead lyricist Robert Hunter ("Yellow Moon") and the late, great Bay Area folk singer Kate Wolf

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("Green Eyes")—the pair manage to cover a number of different strains of mainly country-oriented material, ranging from folksy acoustic guitar-driven numbers to rollicking western swing. Gans is an excellent guitarist, capable of speedy runs or subtle shadings, and the instrumental support for all these tunes is varied and imaginative, incorporating everything from concertinas to fiddles to pedal steel guitars to an oboe on one track. Augmenting an already fine lineup of players are such stalwarts of the Bay Area acoustic music world as mandolinist David Grisman, fiddlers Barbara Higbie and Darol Anger, singers Danny Carnahan and Robin Petrie, dobro player Sally Van Meter and bassist Todd Phillips.

"To me the mood of this record is somewhat inward-looking, reflective," Rawlins says, adding that his own work has been influenced by such artists as The Byrds, Buffalo Springfield and Emmylou Harris. "Our music is melodic. It's pretty stuff, and I like it that way; that's my taste. It's not angry. I don't think there's an angry song in there. There are some ironic ones, but no anger."

"We did it in an ADAT studio [Sharkbite, in Oakland] that John was very familiar with and that was definitely the way to go—we couldn't have paid for *the tape* if we'd done it on 2-inch," Gans notes. "We couldn't have done seven takes of a song if we were worrying about the cost of 2-inch tape. That technology is magnificent. The kind of editing you can do—it's almost as flexible as doing window edits with the Sonic Solutions system. We were able to punch in, do two or three passes on a solo and combine them onto another track. And John and Mark [Keaton, the engineer] really knew how to use it." The solo on Gans' "Hooker River," for example, was composited from six different performances.

Lumsdaine, Gans and Rawlins worked on the mix together at Bay Records in Berkeley, using that facility's Otari Series 54 console with Diskmix 3 moving fader automation. Then Gans mastered the CD on the same Sonic Solutions system he uses to edit his nationally syndicated radio program, *The Grateful Dead Hour*, and which he used to master an album made by Lumsdaine's spicy New Orleans band, Hot Links. "When you put your stuff in Sonic Solutions and bring it up in the window, you can control things in ways you can't even do with automated mixing, like being able to make instantaneous level changes," Gans notes. "For example, I used the manual de-clicking feature to adjust the attacks of certain drum beats. Occasionally a snare hit came out a little too loud, so I sent the de-clicker after it. It finds the spike on the audio program, and it reduces the level of that in a context-sensitive way."

Now that the record is complete, Gans and Rawlins face the daunting task of marketing their effort. They'll sell the CD at gigs, of course, they hope to land a deal with a distributor, and, since this is the '90s, it will also be sold through the Internet, where both maintain an active presence on The Well.

Truth & Fun Inc., 484 Lake Park Ave. #102, Oakland, CA, 94610; www.well.com/user/tnf/; AOL keyword: gdhour.

Norman and Nancy Blake: ***The Hobo's Last Ride*** (Shanachie). Norman and Nancy Blake are more than just versatile and talented stringed instrument virtuosos. They are national treasures who have dedicated their lives to unearthing America's folk music heritage. For their albums, they've pulled tunes off obscure 78s from the '20s, '30s and '40s, and mined the rich oral tradition dating back all the way to the Civil War in search of songs that tell us much about this country and its people in less complicated times. Listening to *The Hobo's Last Ride* (which was nominated for a Grammy in the "Traditional Folk Album" category) is like taking a step back in time, yet the concerns of the characters in all these songs are timeless ones—love, faith, devotion, sorrow, loneliness, hard times—and the emotion in all these tunes transcends the years. Really, a lot of these tunes are like musical short stories. And how wonderful it is that a song like the 19th-century Frankie & Johnny saga "Goin' Home," (cut in the '20s by Charlie Poole & the North Carolina Ramblers, and by the New Lost City Ramblers in the early '60s) will be heard by another generation of folk enthusiasts through Norman and Nancy's new version. The Blakes have an easy, pleasing vocal blend, and their instrumental chops are so fluid they make everything sound effortless. Though Norman has long been regarded as one of the finest guitarists working in old-timey music, there's more than just guitars here—between them, Norman and Nancy play duets using fiddles, viola, six-string guitar,

banjo, various mandolins and cello. If I have any gripe with this CD, it's that it provides no liner note information about where these songs came from—what a shame!

Both *The Hobo's Last Ride* and the Blakes' previous collection, the Grammy-nominated *While Passing Along This Way*, were recorded by Jim Emrich at the engineer/producer's Cedar House Studios in rural Arrington, Tenn. Emrich has worked with Doc Watson, Tony Rice, Dan Crary and other top acoustic players, so hooking up with the Blakes didn't present any surprises particularly. As the name implies, Cedar House is constructed mainly of wood, offering a fairly live environment for the kinds of music recorded by Emrich's production company, which spans a range from folk to alternative. The studio's console is a 36-input Trident 24, more than enough for the demands of the kind of intimate music Norman and Nancy Blake make.

Norman and Nancy Blake

"With them, everything is live, no punches," Emrich says. "The way we set it up, I use KM84s on the guitars, and I have some U67s I had modified by Stephen Paul that I use up toward the vocal area. And then I might use a 414 for the room. Even if they're playing fiddle and cello and some of their other instruments, and not necessarily singing, I still use the same setup, because I get a very natural live setting like that. I tend to use more of the 67 than the KM84; I use those mainly for the presence of the instruments, if I need it.

"I try to approach this kind of recording in a very non-technical way," he continues. "I don't try to put cheap makeup on a pretty girl. I like it to sound the way I would like to hear it and the way they would like to hear it—just nice and big and live. I take great pride in going in and really listening to instruments before I ever record them. A lot of times I listen to it from the artist's perspective: I like to put my head right next to the artist's head to sort of hear what they're hearing. I like a nice, full guitar sound with vocals because that's how the artist hears it, instead of separating them."

—CONTINUED ON PAGE 254

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HOUSE OF BLUES

CHICAGO

PHOTO: PAUL NATKIN/PHOTO RESERVE

by Gregory A. DeTogne

During the 1940s, the blues migrated up the Mississippi River to Chicago on a current guided by the 12-bar Delta strains of defining artists like Robert Johnson and Charlie Patton. Once in its new adoptive home, the music went electric and flourished. Before long, the Windy City gained a reputation as the blues capital of the world.

PHOTO: NEAL PRESTON

PHOTO: NEAL PRESTON

Dan Aykroyd and Jim Belushi (today's Blues Brothers) and James Brown performed at House of Blues Chicago's opening.

Today that legacy lives on in a number of blues venues around town: Buddy Guy's Legends, Rosa's, the Checkerboard Lounge, Kingston Mines, Blue Chicago and B.L.U.E.S. Etc., to name just a few. As of November 24, 1996, add a newcomer to this list—the House of Blues.

As the fourth House of Blues opened in the U.S. by House of Blues Entertainment Inc. since 1992, House of Blues Chicago joins other HOB facilities in Cambridge, Mass., New Orleans and Hollywood. Situated on the north bank of the Chicago River between State and Dearborn Streets, this newest (and largest) House of Blues is now part of Chicago's landmark Marina City complex. Marina City was designed by architect Bertrand Goldberg in the mid-'60s and is best known for its twin, corncob-shaped apartment towers. The House of Blues lies directly beneath the west tower in what was once a movie theater.

Depending upon who you talk to around town, bringing the House of Blues to Chicago was an act long overdue, a commercial sell-out, a boon for the entire blues community or a potentially death-dealing blow for the city's smaller blues clubs. But with a capacity of 1,500 in the HOB main music hall and a widely eclectic booking policy ranging from gospel to

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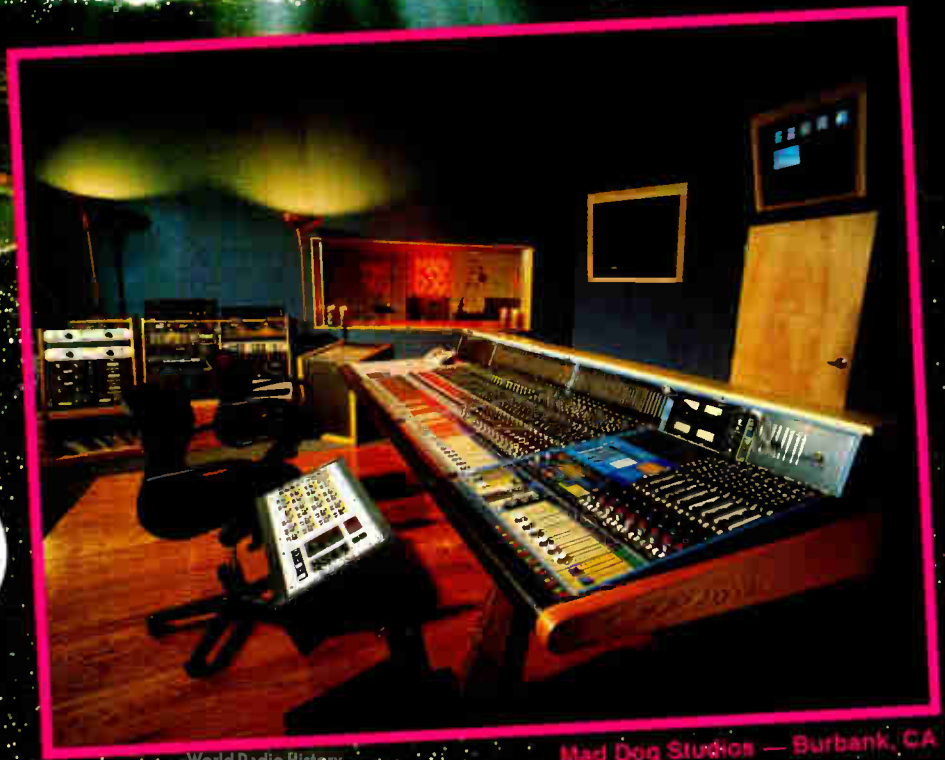

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hard rock, House of Blues Chicago probably won't threaten the smaller-clubs. HOB Chicago's real competition will probably be larger Chicago venues such as the Vic, Riviera, Park West and venerable Aragon Ballroom. Evidence of the House of Blues' community-minded ideals ("Help Ever-Hurt Never" is a slogan seen frequently on HOB Entertainment corporate stationery) is the fact that the club plans to promote blues junkets around town that will offer HOB guests an opportunity to see acts at the neighborhood clubs, as well.

And, controversy aside, many locals feel that the wide exposure afforded the blues via HOB Chicago's presence promises to shine a bright light upon what has traditionally been an almost cultish musical genre. A publicly avowed subscriber to just that notion, Buddy Guy magnanimously proclaimed at 1995's HOB Chicago groundbreaking ceremony, "Anything that's good for the blues, I'm all for it."

"Chicago is the most important opening we will ever do, simply because it is the living home of the blues," HOB Entertainment founder Isaac Tigrett, 48, told the Chicago Sun-Times last November. Tigrett's lofty plans include opening HOB facilities this year in Myrtle Beach, South Carolina; Orlando, Florida; and ultimately in New York City, London, Paris and Tokyo, and he has the skills and business savvy to pull off just such a venture. In 1971, he co-founded the Hard Rock Cafe chain along with Chicagoan Peter Morton. Tigrett sold his portion of the business in 1988 for $108 million. Joining him this time around are some 80 other investors including Dan Aykroyd, Jim Belushi, Aerosmith, Larry Levy and even Harvard University, which coughed up a cool $10 million.

In its entirety, HOB Chicago is a 55,000-square-foot nightclub and restaurant complex bearing a price tag of $70 million; $20 million of which was poured into the main music hall alone. The renovation of this once-mothballed movie theater relies upon a design that uses the HOB's curving, asymmetrical exterior shell as nothing more than a protective bubble against the elements. An all-steel, free-standing frame was constructed within this exterior bubble to support everything from interior walls to loudspeaker arrays and lighting trusses.

Divided into two separate rooms, the restaurant combines traditional Delta-style cuisine (jambalaya, etouffee and gumbo) with house specialties such as a 20-ounce aged porterhouse steak smothered in portobello mushroom sauce. Featuring its own stage ideally suited for smaller acts, the restaurant accommodates 300 guests and offers LAN/WAN access via analog phone or digital ISDN lines at a number of booths. Facilitating everything from simple Web-surfing and e-mail to video teleconferencing, these links can be used for corporate and personal activities, as well as for viewing Internet broadcasts from other HOB complexes around the country.

Walk into HOB Chicago and you're met with a culturally diverse ambience that combines an extensive collection of folk art with eastern carpeting, Grecian columns and neoclassical design. Virtually every square inch of the structure is decorated with some form of art. Hundreds of paintings from HOB's noted "outsider" collection of folk art are hung throughout the complex, while balustrades, balcony fronts, walls, structural beams and posts, and statuary have all been hand-adorned by artists. Ceiling panels in the restaurant's entryway feature original bas-relief portraits of blues legends.

The centerpiece of HOB Chicago is the main music hall. Described by Tigrett as a "juke joint opera house," the room is indeed a hybrid fusion of a Mis-

PHOTO: PAUL NATKIN/PHOTO RESERVE

House of Blues VP of corporate productions Don Sidney (right) and HOB Chicago production manager Chris Bailey at the 52-input Crest Century console

sissippi Delta juke joint and a classical opera house. According to Tigrett, the hall "was inspired by the famous estate theater 'Estavovske' in Prague, where Mozart's opera *Don Giovanni* premiered." The top two levels of the music hall consist entirely of 12 opera boxes, which rent for between $150,000 to $200,000 a year. Proceeds from the sales of these boxes benefit the International House of Blues Foundation, an organization that supports a number of educational outreach programs including the Blues Ambassador Scholarships and the Blues School House Program, which uses HOB Chicago's physical resources to introduce students to the music, art and history of the blues.

Musical acts appearing at HOB Chicago during its first weeks of operation ran the gamut from Son Seals, Steve Vai, Johnny Cash and Kool & The Gang to Dr. John, the Mighty Blue Kings, the Neville Brothers, Dokken and Ted Nugent. If that's not diverse enough for your tastes, there was an evening when Slash and Les Paul shared the stage. Entertainment kicked off at the club's public grand opening on November 24 with a performance by Magic Slim & The Teardrops. A current incarnation of the Blues Brothers (Dan Aykroyd and Jim Belushi) with the Blues Brothers Band (Duck Dunn, Steve Cropper, Danny Gottlieb, Matt "Guitar" Murphy, "Blue" Lou Marini, Alan "Mr. Fabulous" Rubin and Birch "Slide" Johnson) took the stage next, along with a galaxy of other performers including Joe Walsh, Lonnie Brooks, Charlie Musselwhite and Sam Moore.

After delivering a spirited two-hour, Vegas-style review that combined the power of electric Chicago blues with the emotive force of Memphis soul, the Blues Brothers and guests handed the stage over to headliner James Brown. Backed by his orchestra, the Soul Generals, plus five female background singers and four dancers, Brown clicked off classics like "Cold Sweat," "The Payback (Part 1)," "I Feel Good" and "Doin' It to Death."

Bringing audio to the main hall at HOB Chicago was a turnkey task managed entirely from within. As part of the feverish 24/7 tempo that marked every facet of construction during the weeks just prior to the club's grand opening, sound system assembly efforts were directed by HOB VP of corporate productions Don Sidney. Joining Sidney in this mass exercise in sleep deprivation were HOB Chicago production manager Chris Bailey, veteran FOH engineer John McLaughlin, engineering staffers Eric Hansen and Brian Shader, and solder jockey Jason Long, who sealed the deal on much of the wiring scheme. Aron Levine served as project coordinator for both lighting and audio.

Grace under pressure is a term that best describes the calm and collected demeanor Don Sidney maintains in the face of all manner of audio production mayhem. Taller than most, with a head full of dark curls and an amiable voice that deflects tension better than a whole bottle of Xanax, Sidney is the main advance man who gets things up and running at each new HOB endeavor

Following his stint in Chicago, during which time he'll deal with everything from console deliveries to deciding who will clean up after the live bison used in Ted Nugent's act, Sidney will be off to get the HOB Myrtle Beach venue ready for its public debut.

The goal was to make it a simple matter for any act to just plug in and get on with their show.
—Don Sidney

"On a technical level, what we're providing here at the Chicago House of Blues is extremely multifaceted," Sidney explains. "In addition to accommodating any touring act, we can effectively deal with TV, radio, Internet broadcasts and teleconferencing, one at a time or all at once. We can also facilitate recording and video trucks quite comfortably."

Design credits for the HOB audio system rightly belong to Sidney, who relied upon his sound reinforcement experiences at the other three HOB complexes to help bring this one to life. Sidney approached his design at the power distribution level and methodically worked his way through the rest of the chain from amplification and signal processing to establishing the components used within the loudspeaker arrays.

"The goal was to make it a simple matter for any act to just plug in and get on with their show," he says. "The last thing I wanted here was having to fight with a coffee machine just to grab another 40 amps of power, or be in a position where we had to offer performers a limited amount of gear."

A fairly comprehensive collection of onstage equipment is available (at no charge) to any act who wants to use it. At the backline, a pair of DW drum kits stand at the ready, along with Fender and Victoria guitar amps, Hartke bass rigs, and just about everything else an act may need.

"By making a serious selection of onstage gear available, we have the power to enable an artist to effectively shorten his or her load-in process considerably," HOB Chicago production manager Chris Bailey points out. "And that's the idea. The artist needs to concentrate on making art. The technology should be totally transparent. It's our job to make sure that happens."

Starting at the input end of the sound system equation, artists can choose from Beta 87, Beta 58 or SM58 capsules for lead vocal use with a Shure U24D dual-channel UHF wireless system. Hard-wired Beta 87s, Beta 58A and SM58 vocal mics also are stocked. For drums, backline input options include Beta 52s, Beta 56s and an SM98A along with an A98MK drum mount. There's also an SM81 for cymbals and a cache of SM57s for snare, amps and vocals.

McLaughlin's FOH console is a 52-

PHOTO: PAUL NATKIN/PHOTO RESERVE

The system installation in progress

input Crest Century. Stored to McLaughlin's right as he faces the stage are two racks of house effects. The first is outfitted with a Klark-Teknik DN3600 programmable EQ, Lexicon PCM 90 digital reverb, Yamaha SPX990 multi-effects processor and a Yamaha ProR3 digital reverb, all of which benefit from the presence of a Furman power conditioner. Effects rack number two contains a dbx 1066 compressor/limiter/gate, a pair of BSS DPR-404 4-channel compressor/de-essers, a pair of BSS DPR-404 4-channel noise gates and a second Furman power conditioner.

Backstage, the main sound system drive rack is equipped with a BSS OmniDrive FDS-388 loudspeaker management system, a JBL Model 24 system controller, four JBL SR6670A and six MPX1200 power amps. On each side of the floor, resting on top of a pair of JBL SR4719A subwoofers, is a horn-loaded trapezoidal JBL Array Series Model 4894 enclosure. Above the 4894s, the arrays are flown with four two-way Array Series 4892 enclosures on each side. For balcony fill, a pair of Array Series 4890 cabinets are positioned on top of the proscenium in a central cluster.

The BSS OmniDrive system provides crossover functions for all of the stage-level loudspeaker components. For the flown portion of the rig, JBL's Model 24 system controller divides the signals. Power in the three-way system for the midband and subwoofers is via the MPX1200 power amps, while the SR6670A amps drive the highs.

Hidden off to the side at stage left, a Crest Century LMx is the main console in monitor-land, along with a dozen Crest 7301 power amps. Monitor processing is kept simple with a dbx 166A compressor/limiter, a BSS DRR-504 4-channel noise gate, and a half-dozen BSS FCS-960 dual-mode graphic EQs.

"There's something about this room," Chris Bailey says, now that the installation is completed. "It has a live sound, but there aren't a lot of standing waves. Harsh reflective surfaces aren't a problem. In short, it just sounds good. We raced the clock to finish this project, and I'll have to admit we were all a bit apprehensive about how the system would sound. We wound it up for the first time on a Thursday morning at 7 a.m. When we heard it, all the pressures of just getting it up and running dissolved, and we knew things would finally settle into a comfortable groove." ■

Greg DeTogne is a freelance writer based in the Chicago area.

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Delayed loudspeaker systems are common among installed sound system designs and, since the availability of high-quality delay devices, have been widely used in touring and theatrical sound systems. Typical applications include theater under-balcony systems, which are generally designed to add intelligibility and SPL to the direct signal coming from the stage and/or main loudspeaker system, and delay towers at large concert and festival events. However, delay systems must be set up carefully if they are to be effective, and when misaligned they can cause problems at least as troublesome as those they are intended to solve. An incomplete understanding of the theory, and delay-time errors of only a few milliseconds can cause significant degradation of the overall system frequency response. I hope, in this short article, to review the scientific principles at the root of delayed system technique and to outline a method for creating proper sonic imaging while preserving system frequency response.

Dr. Helmut Haas' research into sound localization revealed that the position of a perceived sonic image created by two sound sources depends on both the arrival times and the relative levels. (In all the following examples we are examining an identical signal reproduced by multiple sources, as in a delay system.) It is generally observed that, if two sound sources arrive at the same time and at the same level, we will image toward the centerpoint between them. Hence the center "phantom" image created by a standard stereo sound system. Haas confirmed experimentally that if two sound sources arrive at our ears at the same time we will image toward the louder one, and further established that if two sound sources arrive at the same level we will image toward the signal that arrives first. Haas discovered that, if one source is louder, the image can be moved back to the center between the two sources by adding delay, provided that the delay time is less than 25 ms. Beyond 25-30 ms, the ear begins to hear the delayed sound as a discrete echo and the image shift effect no longer works.

This localization phenomenon is referred to as the Precedence Effect, though it often confused with the Haas Effect. In fact, the Haas Effect refers to the ear's ability to integrate early arrivals (echoes or other delayed signals) into a single sound. Those early arrivals (within the first 5 to 35 ms) that are not more than 10 dB louder than the direct sound will be combined and added to the first arrival, and localized to its source. If the delayed sound is more than 10 dB louder or the delay is more than 35 ms, the listener will perceive distinct arrivals, or echoes.

A successful delay system uses the Precedence Effect to cause the sonic image to appear at the desired position (usually the primary loudspeaker location) and the Haas Effect to provide additional SPL at the listening position without moving the image.

by Bob McCarthy

The SIM System II can be used to compare the effects of combining speakers with and without excess delay. This data was taken in a reverberant church where maintaining high intelligibility is critical. (A) No excess delay. Notice that the S/N ratio is near the top of the screen, indicating high clarity. Contrast this to (B) where 7 ms of excess delay was added. The S/N ratio has dropped severely and there is deep ripple in the frequency and phase responses. These effects are the same as you would get from adding excess reflections to the direct signal: loss of clarity and frequency response degradation.

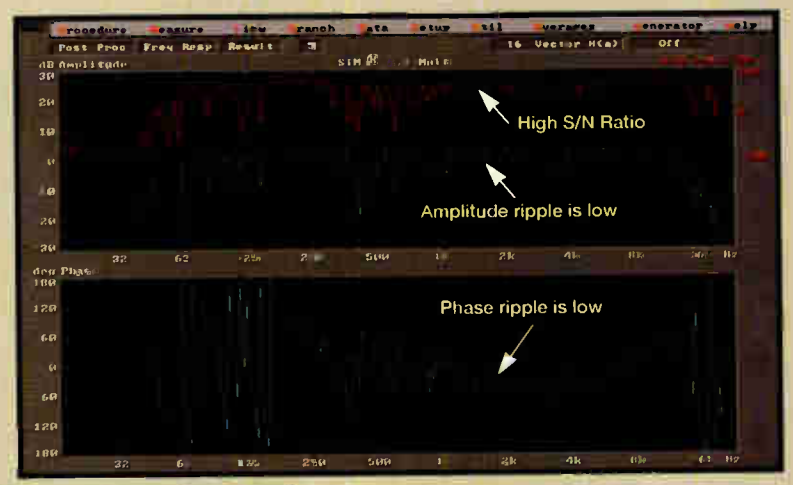
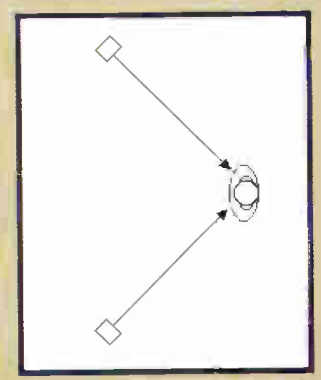


Figure A: Speakers combined without excess delay

Figure B: Speakers combined with excess delay



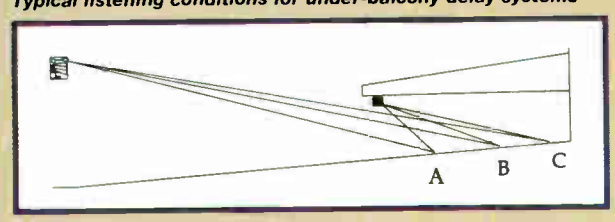
Experimental conditions for measuring Haas Effect

SIDE EFFECTS OF DELAY ON FREQUENCY RESPONSE

However, before we can apply the Haas research to a useful application, such as an under-balcony delay system, we also need to examine the effects of delay on frequency response. When two speakers are offset in time (such as a primary system and a delayed system) and their signals combine, the result is comb filtering, which causes huge peaks and dips in the response and wholesale degradation of the signal-to-noise ratio. (See the August '96 issue of *Mix* for more information on comb filtering.) The effect is easily demonstrated. Set up two speakers in mono and listen. As the delay is added the image will move—and your speakers will sound like they fell into a well.

Why doesn't Haas mention this? Because the Haas research was based on experiments that used two identical sound sources with the same frequency response, 3 meters distant, in an approximately anechoic environment. The two sources were in a horizontal (L/R) orientation and the listeners were centrally located between them. The effects of delay on frequency response and the S/N ratio of the system were not examined.

Typical listening conditions for under-balcony delay systems



In the real world, things are somewhat different. In a typical under-balcony delay application, the main and delay speakers are different models, are at different distances from the listener and may not be vertically aligned. The acoustical environments that each speaker operates in are usually totally different—and are not at all anechoic. Unless the primary and delayed systems are exactly synchronized at the listening position (possible for only a proportion of the audience), the combination of the two sources can create significant distortion of the frequency response. Many live sound mixing engineers are well aware of this phenomenon and often request that under-balcony delay systems directed toward them be turned off. They would rather mix deep in the reverberant field than rely on misaligned delay speakers that are mangling the frequency response.

This is the situation that I commonly find when I am asked to measure and correct the sound system response in a theater installation. There are in fact three simple ways to minimize comb filtering and resulting frequency response damage when there is an offset between the primary and delayed system arrival times:

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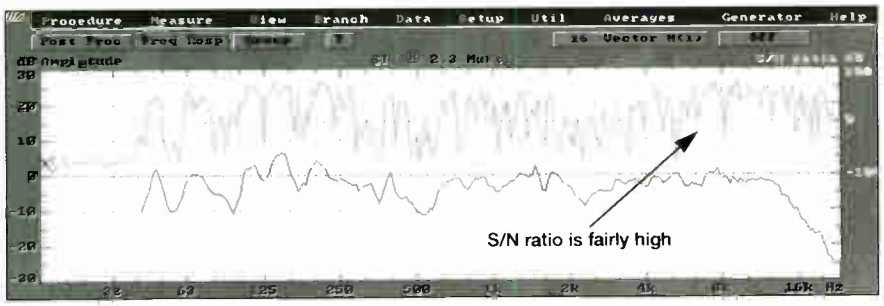

Figure 1: Take a reference of the main system's response in the main seating area

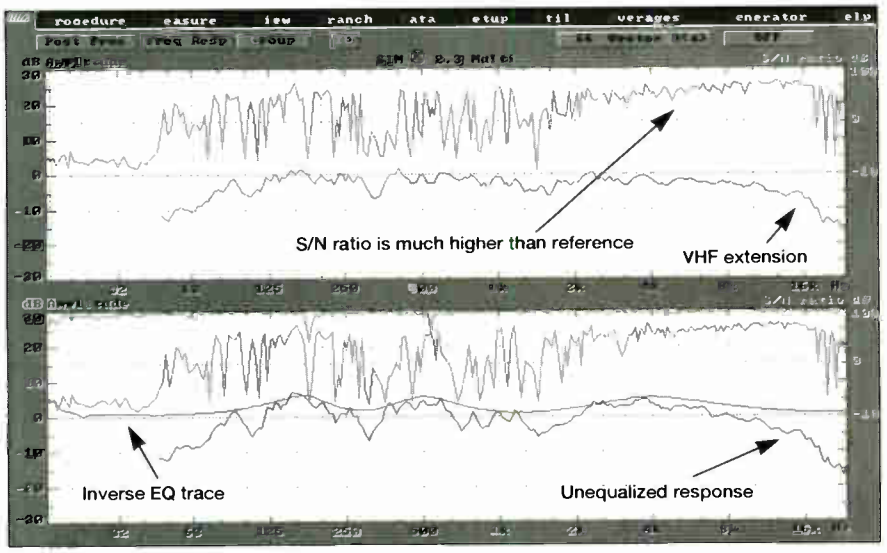

Figure 2: Measure and EQ the delay speakers alone

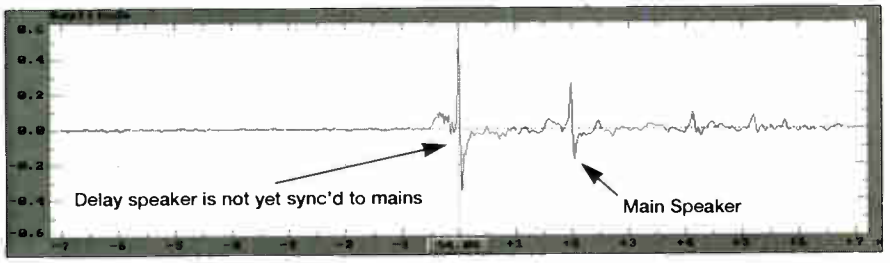

Figure 3: Set the delay time to sync the systems

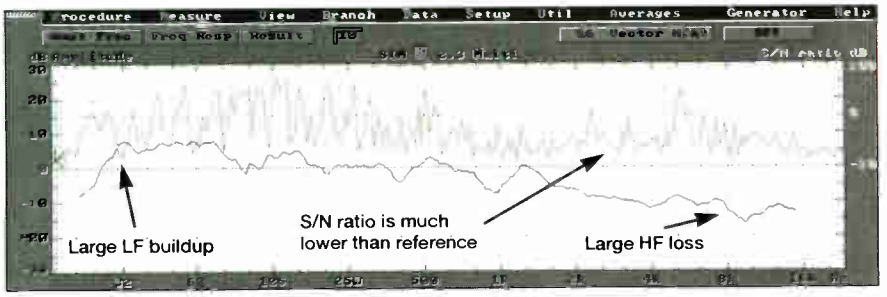

Figure 4: Measure the main system response under the balcony

1) Increase the level of the delay speaker. Unfortunately, this moves the sonic image toward the delay speaker.

2) Decrease the level of the delay speaker. This moves the image away from the delay speaker, but may render it useless.

3) Remove the time offset by synchronizing the delayed signal arrival time to match the primary signal.

The third solution is obviously the preferred one, but I typically find that, whatever setting was originally specified, someone has added excess delay for one of the following reasons:

1) Delay lines are cheap and plentiful, whereas devices capable of accurately measuring time delay are not. For lack of accurate instrumentation, the delay time was roughed in and excess delay was then added as "image insurance."

2) The delay system level had initially been set at too high an SPL rela-

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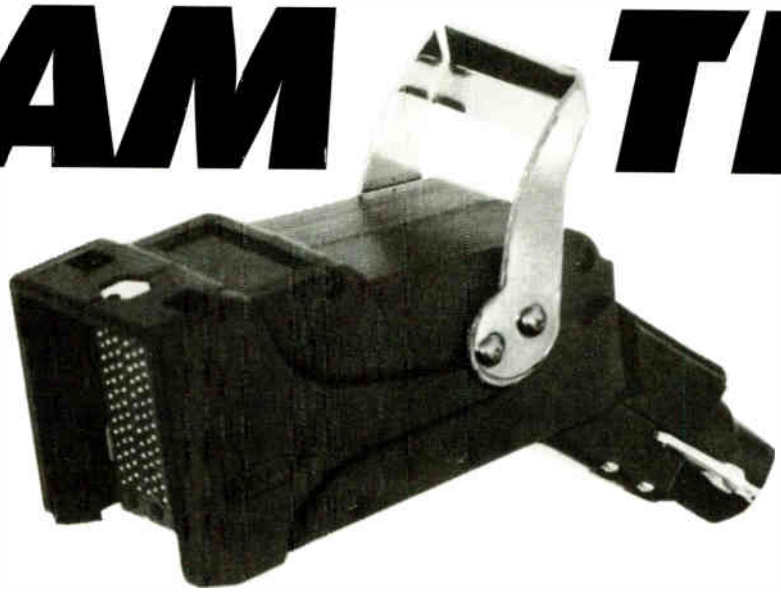

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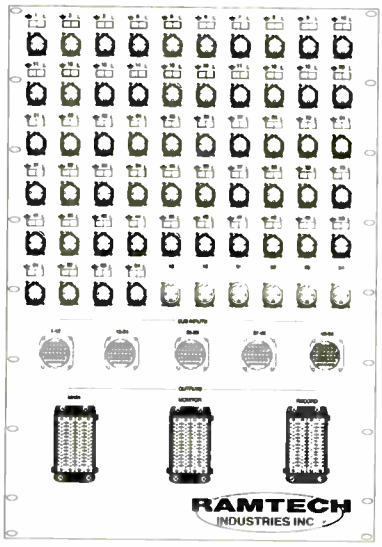

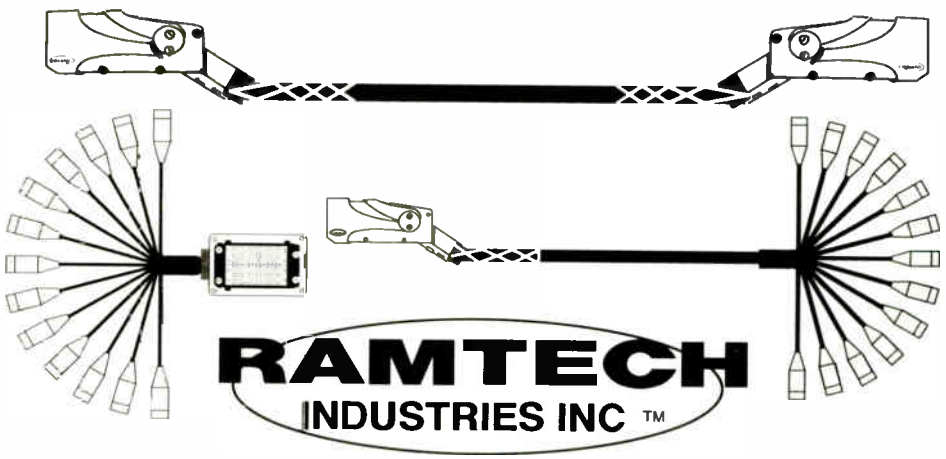

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tive to the primary source. Therefore, even when the delay had been set accurately, the image was pulled toward the delay speaker. Since the concept of turning speakers down rarely seems to occur to audio engineers, they instead added excess delay in order to move the image back toward the primary speaker system.

3) The technique is so well-accepted that many users added excess delay before even listening to the system with the arrival times synchronized.

I have often been asked by clients to add excess delay before they even listen to the speaker system. I always request that we first listen to the system with primary and delay systems synchronized; in the twelve years I have been aligning delay systems, I have not yet had a client who has gone back to adding excess delay after hearing the results of precise synchronization.

ALIGNING THE SYSTEM

In order to synchronize a delay system accurately with the main speakers we must be able to measure several different but interdependent sets of data. We need to be able to measure and display the time offset between any two signals in order to set delay time. We need to be able to measure and display frequency and phase response so that we can equalize and set levels for delay systems. (High resolution is preferable—⅓-octave measurement and display is not high enough resolution for this kind of work.) And we need to be able to display the S/N ratio of the system at all relevant frequencies.

Why is signal-to-noise ratio important? The job of the delay speaker is to increase direct/reverberant ratio, which can be translated in this application to the S/N ratio. Contrary to popular myth, most under-balcony areas are not low in audio levels. In fact they are full of excess lows and mids due to the early reflections of the wall and ceiling. In the under-balcony area, the direct and reflected path lengths for sound coming from the primary sound system are nearly equal, which causes deep combing. For the delay speaker, the path lengths of the reflections are much longer than the direct path, creating a high direct-to-reverberant, or S/N ratio. When the mains and delay are synchronized and combined, the S/N ratio will rise even if the delay speaker is lower in level than the mains. And when the level of the delayed signal is lower than or equal to the main signal, the image will remain in the desired location, at the main speakers.

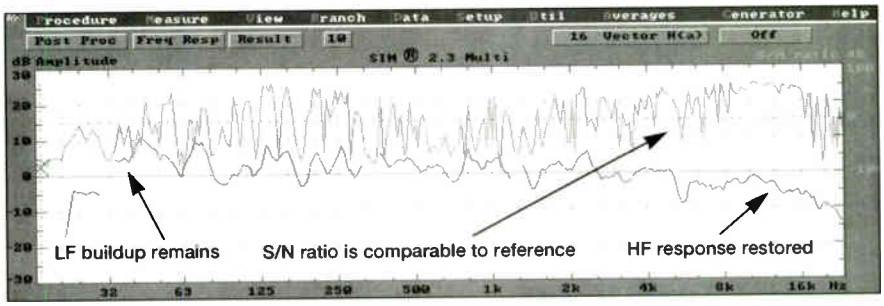

Figure 5: Combine the systems

Using Meyer Sound's SIM System II analyzer, I tackle the problem in five steps:

1) I measure the response of the main speaker in its primary area of focus (Fig. 1). The S/N ratio here becomes the reference and my goal is to make the under-balcony area match this prime seating area.

2) I measure the response of the

delay speaker on-axis at a position halfway into the full depth of the intended coverage area, and equalize the system to match the primary system (Fig.2). I pay particular attention to the VHF range of the delay speaker, since many delay speaker models have dome or piezo-electric tweeters with a VHF range that far exceeds that of the HF horns in the main system. If necessary, I roll off the highs to prevent localization to the delays. The S/N ratio of the delays alone should be significantly higher than the mains, since it is a short throw from the delay speakers to the measurement position.

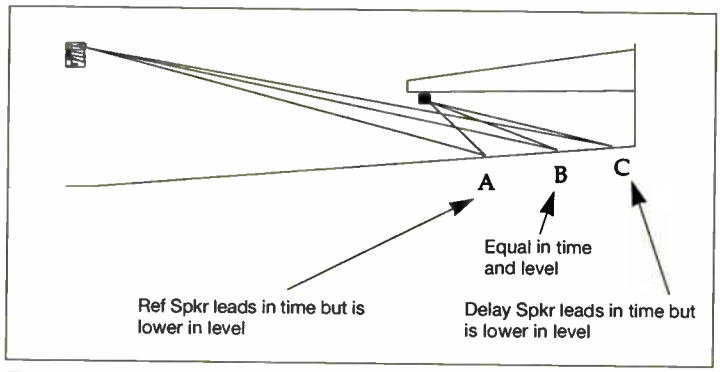

Figure 6: Relative level and time arrival of reference vs. delay speaker at selected measurement positions

3) I set the delay time to synchronize arrival of the main and delayed signals (Fig. 3).

4) I then measure the response of the main system under the balcony (Fig.4). The frequency response will have a large LF buildup and lots of peaks and dips. The S/N ratio of the signal from the mains should be lower than that of the previously measured delays. If this is not the case, then the delay system may not be necessary.

5) Finally, I raise the level of the delay speaker until the S/N ratio rises to an amount comparable to that in the main seating area. The high-frequency response will usually rise slightly but I don't expect to see much happen in the lows and mids. This last step will add just enough delayed signal "fill" to bring the under-balcony seating up to the same direct to reverberant ratio as the main seating area—without attracting attention to the delays.

Since it is impossible for the delays to be synchronized at all points, at what point should the delay system be aligned with the main system? As indicated in Fig. 6, I choose the midway point in the delayed system coverage depth. Due to the inverse square law, toward the rear, the delayed signal falls off in level at a greater rate than the main signal. This occurs at the same time as the delayed signal begins to lead the mains in time. Image moves toward delay speaker.

At the front, the main speaker leads in time. Directional control reduces the delay system level. The image goes to the mains.

At the midpoint, the image will be at the vertical midpoint (or lower) and the frequency response will be smooth.

At the rear, the delay speaker will lead in time but will be lower in level. The image still tends to the mains. ■

Bob McCarthy is director of SIM engineering at Meyer Sound Labs Inc. He can be reached at 510/486-1166 or by e-mail at bob@meyersound.com.

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COMPRESSORS

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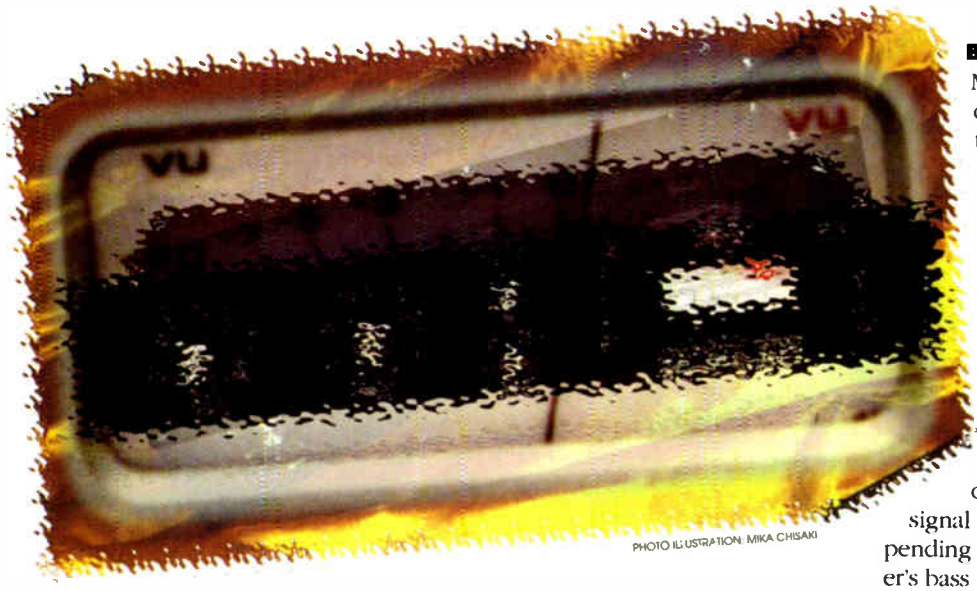


PHOTO ILLUSTRATION: MIKA CHISAKI

The use of dynamic processors as creative tools has grown along with their complexity. A dozen or so years ago at the Beacon, I set up the P.A. as FOH tech for a loud New Jersey metal band with laminates in the shape of upside-down crosses. The band's engineer asked me to patch a single compressor from an aux bus and returned to a channel, like an effect. He enjoyed remarkable success mixing varying amounts of several inputs into this compression bus. Though I can't recommend this approach for all types of music, in this case it provided an over-the-top edge to his mix that the support acts' engineers didn't get by merely routing their mix into the P.A.'s system compressor.

In the early days of sound reinforcement, compression compensated for the limited headroom of simple systems. What often passed for a P.A. would be considered underpowered sidefills by today's standards. Unpredictable inputs like vocals and DIs required compression just to keep the system from clipping. Originally stemming from simple preservation of headroom, compression on the bass guitar remains an automatic response, riding reign on an instrument otherwise directly tied in to the system's full power. By reducing a signal at higher levels, it raises it at lower volumes. Why does this sometimes sound better to us?

For sound to remain tonally balanced, more lows are required at quieter levels. Over millions of years, human hearing evolved in an unplugged world, so it's no surprise that our ears are nonlinear acoustical receptors: quieter sound levels require additional lows and highs to sound full. We're all familiar with "equal loudness contours" covered in audio tomes. Fletcher-Munson effect is readily confirmed with the Loudness buttons on home stereos, and the "smile" EQ curve on DJ mixers. In the past, equalization provided the common remedy for this preference for thump and click. The use of dynamics to contour response is becoming a more popular technique in live sound.

Due to tonal differences, post-EQ compression behaves differently than pre-EQ compression. Here again, a few quick patch cord moves will tell what works best for different sound sources.

BY MARK FRINK

BASS

Many engineers routinely combine two bass signals, the DI and a miked speaker cab. For example, mixing an uncompressed bass mic with a compressed DI allows the engineer separate treatment of the instrument's fundamental and percussive elements, inviting different adjustments of attack or ratio. Some bass amps even have built-in crossovers, often unused, to split the signal into lows and highs. Depending on the setup of the player's bass rig and playing style, there may be an advantage to splitting the signal and treating it separately.

DRUMS

Kick and snare, instruments now commonly double-miked, are often treated with compression. Treating two inputs of the same instrument with nonsymmetrical compression schemes can vary the response of their envelope and timbre in ways that are more subtle and powerful than equalization alone can achieve. Creative use of the attack control allows varying amounts of a signal's transient to come through, with the compressor waiting to engage gain reduction a certain amount of time after the leading edge of the sound passes.

Automatic compressors may be easier to use, yet some models offer a choice of "fast" or "slow" response. The ability to adjust the attack affects how much "snap" is preserved. Slower attack times let more transients through while faster attacks grab the transient quicker, preserving the balance of the sound.

VOCALS

Much is made of a vocalist's mic technique—the ability to control

—CONTINUED ON PAGE 200

SMASHING PUMPKINS

Making up for Lost Time

PHOTOS: STEVE JENNINGS

Smashing Pumpkins mix and sound crew (L to R): Stewart Bennett, system crew chief; Rik McSorley, monitor system engineer; Bruce Knight, FOH engineer; John Shearman, monitor engineer; Travis "T-Bone" Coleman, sound technician

After a year that saw personal tragedy mixed with commercial success, Smashing Pumpkins began 1997 making up shows that were canceled due to the death of touring keyboardist Jonathan Melvoin and the firing of drummer Jimmy Chamberlain. As the band began the last leg of their tour on the West coast, I caught the show at—where else—Portland's Rose Garden Arena, just across the river from my downtown office. I walked in to find FOH engineer Bruce Knight firing up the P.A. provided by Showco.

BY MARK FRINK

Knight's engineering credits include REO Speedwagon, Richard Marx, Prince, Aerosmith and, more recently, Faith No More and Garbage. After working with dB Sound for ten years, Knight spent the past three as an independent mix engineer, and he has been mixing the Pumpkins for more than a year. "Bill Ramey was also the tour manager for Garbage and he brought me on for this tour," Knight explains.

Knight mixes 36 inputs from the stage on a Gamble EX, which he names as his favorite desk for six years running. "It's a straight-forward desk in that it doesn't have VCAs, and the way I structure my mix I've got my hands right where I want them," he comments. Knight mixes to groups and returns dedicated effects to corresponding subgroups to preserve their balance. "I like the Gamble's sweet, musical sonic tonality," he adds with a grin, "plus the metering on the ins and outs is very beneficial."

Effects include a Yamaha SPX-1000 used on snare and a REV-5 on toms. A Lexicon 480 has one machine assigned to snare and the other for sweetening keys and background vocals. Also used on backgrounds are an AMS 1580S and a TC Electronic 2290 that is also used for various echo effects, plus an Eventide H3000SE used on Billy Corgan's lead vocal. An SPX-90 provides

—CONTINUED ON PAGE 204

SOUNDCHECK

NEW SOUND REINFORCEMENT PRODUCTS FROM WINTER NAMM

It's that time of year again, so here is my firsthand report from Orange County on new sound reinforcement products for 1997, as seen at the Winter NAMM show, held January 16-19 at the Anaheim Convention Center. Next year's Winter NAMM will be held in the Los Angeles Convention Center, site of at last fall's AES, and it's hard to imagine how the ambience created by NAMM's perennial home in Anaheim will be reproduced a few miles north. How to re-create the unique flavor of Hall E, NAMM's own marketing Siberia, or the festive, frat party atmosphere in the Hilton Towers next door, not to mention the casual, easy way in which attendees can run into acquaintances merely by running a half-hour late on all appointments?

My pick for best lil' gadget at the NAMM show is **Gold Line**'s (West Redding, Conn.) GL1K ($39.95 list), a combination phantom power tester and 1kHz tone generator. It is simply a Neutrik male XLR connector with a red LED where the wire would come out. It lights up with any phantom power voltage from 12V DC on up to 48 and produces a sine wave back down the mic line to the console. Great for single-handed trouble-shooting in the field.

At **Harman International** the biggest news was people, with David Scheirman, newly appointed as Tour Sound marketing czar for JBL, joining the recently drafted Michael McDonald, and Allan Nichols moving to Nashville as vice president of sales and marketing for Soundcraft consoles. Both brands have come out swinging recently, and all eyes are on these players.

Crown K2 amps

AB International (Roseville, Calif.) introduced the model 6600, a 6-channel 4-space amplifier ($2,659 list). This 62-pound amp is rated at 300 watts per channel into 4 ohms, 500 into 4, and 700 at 2-ohm loads, with all six channels driven.

Chevin Research (distributed by QMI, Holliston, Mass.) introduced the first in a new line of affordable amps, the ProControl 1200 ($1,300 list). This two-space switching supply amp weighs 16 pounds and is rated at 350 watts into 8-ohm loads and 600 watts into 4. The ProControl 1200 has the same specs as Chevin's A1000, but shaves a few pounds and hundreds of dollars in the weight and price departments. Chevin amps have gotten recognition for outstanding sound quality, but have suffered in the North American market due to pricing. This model brings Chevin quality to a wider market, and other ProControl models will follow soon.

Carver (Portland, Ore.) displayed its PX1450 amp ($1,245 list), rated at 1,000 watts per channel into 2-ohm loads and 725 at 4 ohms, bringing price/performance to the masses in a traditional amplifier design. Its rear panel has Neutrik combi-connector inputs, a switch for 0.775V or 1.5V sensitivity or fixed +28dB gain, and the threshold adjustment for the Signal Smart Standby circuit, which powers down the amp when no signal is present.

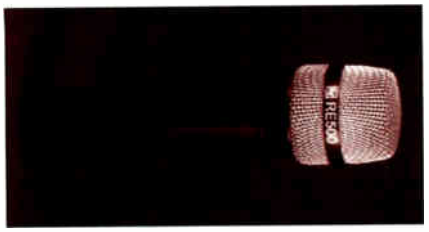
Following on the heels of last year's TEC Award for its Studio Reference amp, **Crown** (Elkhart, Ind.) started its second half-century by rocking the NAMM show with its new K2 (not to be confused with the new Soundcraft console or my favorite skis), a 38-pound, two-space amp rated at 1,250 watts into 2-ohm loads and listing for $1,795. Crown invited attendees to choose a favorite from the twelve colors at their booth and enter a drawing for a free amp the last day of the show. Due to its increased efficiency, the K2 amplifier needs no fans or vents, and instead relies on convection cooling; several can be run on a single 20-amp circuit. Look for a smaller sibling, the K1, to be introduced soon.

Tentatively renamed **EV International** (Buchanan, Mich.), the old Mark IV group put on a strong show in its booth with many new

EV 2.0 kW power amplifier

BY MARK FRINK

offerings. Electro-Voice introduced the kW series of lightweight amplifiers, the 1.0, the 1.5 and the 2.0 (listing for $1,470, $1,750 and $2,050 respectively). These two-space amps weigh 16 or 23 pounds and are rated for 450, 750 and 900 watts into 4-ohm loads. They use a Class H design and EV's patented Dynamic Signal processing circuitry for matching the amp to specific transducers. EV also introduced two new mics for sound reinforcement. The RE500 true-condenser handheld vocal mic ($450 list) uses transducer technology originally developed for the RE2000, and its gold-sputtered low mass diaphragm gives it a dynamic range of 130 dB. Its response has been tailored for vocal applications and its grip is made of a warm, comfortable material.



Electro-Voice RE500 handheld condenser vocal microphone

In wireless news **Telex** (Minneapolis, Minn.) is now offering Audix capsules on three HT Series handheld transmitters. The HT-200 is a single-channel VHF transmitter and is available with the Audix OM-3xb for about $475 list, while the OM-5 version will list for under $600. The Audix capsules will also be available for the HT-150, which is a VHF system with three selectable frequencies, and for the HT-450, a single-channel UHF transmitter.

Shure PSM 600 Series personal stereo monitor systems

The hot NAMM topic was **Shure Brothers'** (Evanston, Ill.) new PSM600™ Personal Stereo Monitor system, available in UHF wireless and hard-wired versions. The hard-wired P6HW ($650 user net) also comes with generic E1 earpieces for $190 more that can be

NEWSFLASHES

The sound system at Johnny Depp's infamous **Viper Room** (Hollywood) was upgraded last winter. The new system, designed by Hollywood's **A-1 Audio**, includes a Midas XL200 console with Klark-Teknik DN3600 EQs and an Electro-Voice MT-1 loudspeaker system... **The MGM Grand** in Las Vegas has a new 32-channel Spirit 8 console...**Taste of Chicago**, the annual food and music festival held in Grant Park, will take place June 28 through July 7 this year. For the event, the City of Chicago purchased 30 Celestion KR8 loudspeakers. A Celestion speaker system was also purchased by **Loyola University** (also in Chicago) to be installed in Finnegan Hall...**Lincoln Center** in Manhattan purchased an Allen & Heath GL2 mixer from **Sam Ash Sound** (Manhattan). The console will be used in the Stanley Kaplan Penthouse, which is used for small- or medium-scale musical performances, lectures and awards ceremonies...Meyer Sound's MSL-4 self-powered loudspeakers and 650-P self-powered subwoofers were used for the half-time show at last December's **Orange Bowl** in Miami. The speakers were supplied by **RTA Sound** of Tampa...Sabine reports that the **Honduran Assembly of Congress'** new sound system, designed by Rich LaVoir of **Ultra-Live Sound & Video**, includes the Sabine FBX-1802 Dual Feedback Exterminator...The sound system at the **House of Blues** in Los Angeles was upgraded. New equipment includes six JBL 4892-90 Array Series speaker cabinets and four JBL SR4719A subwoofers; power is supplied by 14 JBL 6670A amps...Crest amplifiers were installed in numerous locations, including **Shock** (a club in Toronto); Bill Wyman's restaurant, **Sticky Fingers** (Manchester, UK); the Norris rehearsal studio in West London; the **New England Conservatory of Music** in Boston; and New York's **Times Square Church**. In addition, **SSE Hire** (London) purchased more than 40 Crest Professional Series amps for Metallica's world tour...Touring acts using Shure wireless microphone systems include No Doubt and The Fugees. ■

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THE PROBLEM...

Analog system cabling is a nightmare—expensive, prone to errors, subject to interference and noise. It's also time-consuming to design and install as well as difficult to reroute or reconfigure. Cable, conduit, termination and labor costs can be the single largest expense category. The problem is only getting worse, with required channel counts climbing and more digital and analog signals being interfaced.

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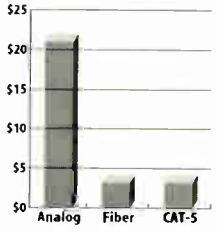
RAVE uses CobraNet™ technology and standard, *off-the-shelf* Fast Ethernet hardware to create dedicated audio networks. Combine multiple RAVE networks to create transport systems with hundreds of channels spanning miles of distance. Get capabilities that are simply unattainable with older methods, and save money in the process.

Huge reductions in cabling costs



RAVE uses standard 100Mb Fast Ethernet hubs, routers & switches

Models

RAVE160	*16 analog output channels*
RAVE161	*16 analog input channels*
RAVE188	*8 output/8 input analog channels*
RAVE80	*16 digital audio output channels—AES/EBU format*
RAVE81	*16 digital audio input channels—AES/EBU format*
RAVE88	*8 output/8 input digital audio channels—AES/EBU format*

USE RAVE TO:

- Transport signals long distances
- Route audio signals
- Easily interface digital and analog equipment
- Provide multiple drops and locations
- Save money on cabling costs
- Change channel routing
- Simplify retro-fits

SIMPLE TO DESIGN, INSTALL and USE

RAVE products have 16 digital or analog audio channels. Up to 64 audio signals are transported between units using standard, off-the-shelf Fast Ethernet hardware, cabling (Category 5 cable and/or fiber) and network topologies. All signals are present everywhere on the network—just plug in the RAVE units and select the input or output routing signal blocks you want to send or receive. No computers are needed to set-up or operate the system. Want to change routing? Just change the switch settings. Need more drops? Just add more RAVE units. It couldn't be simpler.

No computers for configuration or operation. Change routing at a turn of a switch.

KEY FEATURES:

Audio performance is superb with 64 uncompressed 20-bit digital audio channels and either AES/EBU format or 20-bit/48kHz analog converters.

- Fixed 7.6ms total delay, input-to-output
- Distributed audio clock
- ± 1/4 sample, <40ns jitter
- Hot plug onto the network without disruption
- Built-in slave capability for redundant, mission critical systems
- Use Category 5 cable for distances up to 100 meters and/or fiber for 2 kilometers

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RAVE offers tremendous economies. Savings of 15% to 75% are possible through reductions in cabling, termination, conduit and installation labor costs. With both analog and digital models available, it is easy to interconnect a wide variety of analog and digital equipment without additional converters. Furthermore, RAVE easily supports system reconfiguration and expansion.

RAVE is new, but not unproven. RAVE has been used to improve audio systems for such critical jobs as SuperBowl XXXI (Best Audio), and the National Symphony Orchestra with Tony Bennett at Constitution Hall (ProMix). What's more, RAVE is sparking the imagination of top designers and leading professionals everywhere. Why? Because as Shipley Landiss, of Gaylord Entertainment, states it best, "...it's really cool technology. I am just beginning to think of the possibilities!" Shouldn't you start thinking of the possibilities?

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used with either replaceable foam or triple-flanged silicon ear fittings and can be upgraded to custom ear molds. It is also furnished with dual XLR female to LEMO cable, a likely standard for future hard-wired systems. Shure's P6TR wireless system is expected to be available about the time you read this (under $1,600 list) and operates on one of ten channels in the low UHF range of 626 to 662 MHz (U.S. television channels 40-45) not used by Shure wireless mic products. The antenna combiner allows up to four transmitters to use a single directional antenna (no pricing available just yet). Both wired and radio body packs have four switches for a 15dB pad, defeatable fixed-threshold peak limiter, a high-frequency boost switch of 6 dB above 5 kHz, and operation in either stereo or MixMode," which allows the performer to combine two mono signals, giving "me-vs.-them" control via the balance knob.

Garwood System 2

Also introduced at the show was Garwood's (Newtown, Penn.) new System 2 personal monitoring system ($1,295 list). Based on the earlier PRS II, it brings a new price point to Garwood's product line. Along with a full line of MI and installation speakers in its demo room, Italian manufacturer RCF had its TX 500 wireless in-ear monitor system ($1,200 list). The rack-mount transmitter works on one of two VHF frequencies, with seven pairs available in the U.S. It comes with Sony dynamic ear buds fitted with generic silicone earpieces. Rumors of one or more other European-manufactured personal monitoring systems couldn't be confirmed or discounted, but where there's smoke...

Sennheiser (Old Lyme, Conn.) held off unveiling three models of in-ear headphone "buds" that come in a familiar wind-up storage case and are geared towards both Walkman/consumer applications and music professionals. In other news, Sennheiser has taken over distribution of Spanish speaker manufacturer DAS in the U.S., while DAS Audio of America concentrates on South and Central American sales from Miami. A full line of DAS components and products, from the Factor Series installation speakers to the Sound Touring two-box four-way system, was squeezed in between Sennheiser and Neumann's displays.

Community (Chester, Pa.) introduced its XLT line of trap speakers for "working musicians" with 1-inch titanium compression drivers (list price ranges from $779 to $999). This line has been designed with internal passive crossovers that can be used to bi-amp them without an external active crossover, making them simple to set up and operate. All models have Ferrofluid-cooled 15-inch woofers and all except the floor wedge have the same footprint and stacking corners. There's both single- and dual-15 two-way models, a three-way with a 6.5-inch mid, and a dual-15 sub. In other news, Community has begun to take the wraps off its new high-output large-format two-box touring system. The horn-loaded three-way mid-high box is designed around a new carbon fiber version of the M-4 driver, plus the 2.8-inch exit EM282 carbon fiber mid-high, and the VHF100 high-frequency compression driver. The low box houses three triple-spider 15s loaded into 40Hz flare rate horns. A unique feature is the audio controlled forced-air cooling of the drivers. A beta test rig is being evaluated by the Mitchell Group of Nashville.

BSS AR-133 direct box

BSS (Nashville) introduced the AR-133 active direct box and line balancer ($175 list), which uses the same audio path as the AR-116 but can run on either phantom power or a 9-volt battery. An LED indicates when phantom power is active or flashes when running on the battery. The chassis is a rugged aluminum extrusion with polyurethane end-cheeks that give it a distinctive look. There are both


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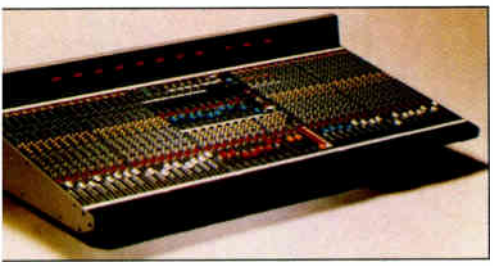
¼-inch and XLR inputs plus a switch for -20 or -40dB attenuation.

Middle Atlantic Products (Riverdale, N.J.) was showing its MPS (Modular Panel System), a wide range of pre-punched modular panels that accommodate virtually any connector, allowing rapid fabrication of custom rack panels with any combination of connectors. The frame and sub-panels are constructed of 16-gauge steel with a black powder-coat finish. The frame holds five sub-panels, and complete systems start at $38.50.

PreSonus (Baton Rouge, La.) introduced the ACP-2+ stereo gate and compressor ($350 list), following on the success of its 8-channel ACP-8 gate and compressor. The gate has a fast/slow switch for the attack, an adjustable release and a highcut filter on the gate key. The compressor section features 8-segment LED metering, switchable knee-slope and either automatic or manual control of parameters. Also introduced was the "Blue Max" ½-rack stereo compressor/limiter ($250 list), which has 15 presets for various applications plus a manual operation mode.

Symetrix (Lynwood, Wash.) unveiled the latest addition to its signal processing line with the 606 Delay Fx Machine ($599 list), a dual-input, two-delay machine that can be used in stereo or series that offers up to 2.6 seconds of delay on each channel. Symetrix has jumped into a market gap, producing what live engineers have longed for—a delay with knobs. Gone are arcane menu structures of digital reverbs that provide every effect in a single model. In addition to its large 3-digit LED readout, the Symetrix 606 has four front-panel knobs for each of the two delay lines—one each for Mix, Time, Feedback and Modulation, plus a ninth Output knob. Other features include EQ filtering, room simulation, diffusion and a variety of modulation sources and destinations that includes auto-panning. Control of these other parameters is available by shift-selecting the nine soft

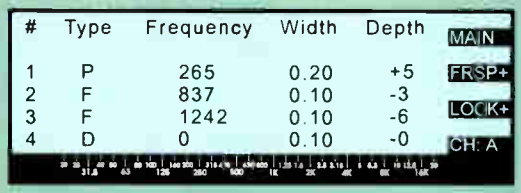


Allen & Heath GL4000

POWER-Q™ ADF-4000 • 24-BIT, 2-CHANNEL

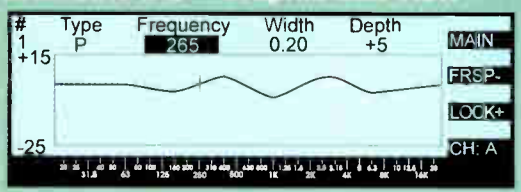
Buy one, get six free!

1. FBX/Parametric EQ — List View



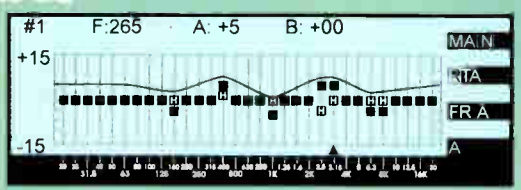
Tabular editing of 12 digital filters, switchable to parametric, fixed FBX, or dynamic FBX. Patented, adaptive FBX filters find & eliminate feedback, providing more gain, improved clarity, and more wireless mic mobility. Adjustable FBX sensitivity and tracking.

2. FBX/Parametric EQ — Graphic Edit View



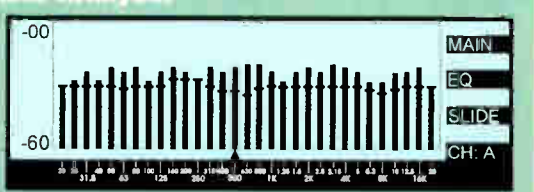
Click & Drag graphic editing of parametric filters; grab-a-filter or select any point on curve to edit using cursor keys & datawheel. Shows response curve as you sweep filter center frequency, width, or depth. Filter ranges: 20 to 20kHz, +12 to -80 dB, 1/100 to one octave.

3. Graphic EQ



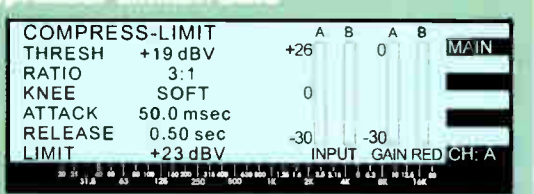
Edit 31 bands per channel simultaneously on same screen. View actual frequency response curve as you adjust filters. Edit channels individually or LINK them together. Edit one channel and COPY it to the other. View POWER-Q curves or room curves.

4. Real-Time Analyzer



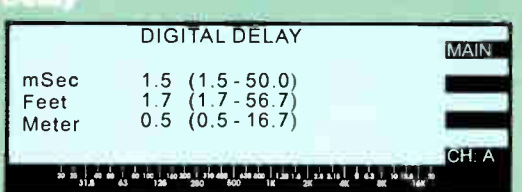
31-band, digital, filter-based, 1/3 octave ISO. Choose A, B, or C weighting, absolute/normalized display, slow/fast response, pink or white noise generator. Superimpose graphic EQ on RTA display** for precise viewing and editing of frequency response.

5/6. Compressor-Limiter/Gate



Control compressor threshold, limiter threshold, compression ratio, attack & release time, gain and peak limit for each channel. View input and output levels, and gain reduction. Adjust gate threshold, attack, release.

7. Digital Delay



Two 1x1 digital delays with 20 microsecond resolution. Input in feet, meters or seconds.

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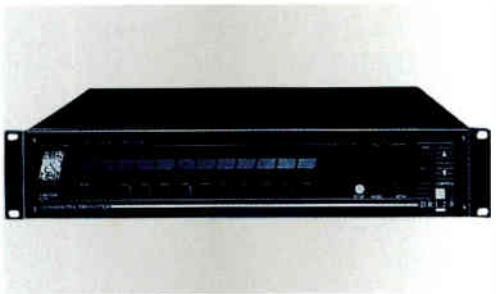
knobs to these alternate functions. Delay can be synched to MIDI or tapped in with a footswitch. Sounds like a winner.

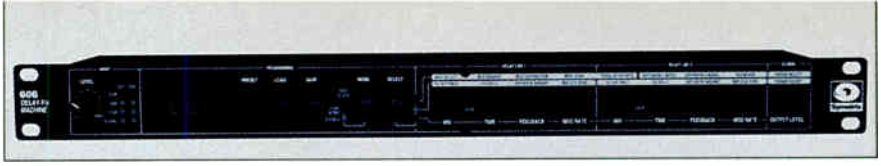


Allen & Heath DR128

Allen & Heath (Sandy, Utah) launched its GL4000 8-bus, 10-auxiliary top-of-the-line console (40-channel model lists for $13,995), replacing the GL4 with a lower noise floor. The GL4000 is a 32-channel frame that's expandable with 8-channel modules to 48. This multi-mode console can be used for FOH, stage monitors, multitracking and combinations thereof. An extra fader swap option moves the insert points and balanced XLR connectors from the aux buses to the matrix outputs.

Allen & Heath also introduced the DR128, a two-rackspace 12x8 digital mixer (around $2,995 list) sampling 24 bits at 48 kHz and running on two Motorola 56002 chips. The DR128 mixer has eight XLR mic inputs, four stereo line-level inputs on RCAs and eight XLR outputs. Twelve definable front panel soft keys can be programmed for a range of functions from a simple volume control to a complete system configuration change. The mixer can be programmed from a PC running Windows. It has a variety of signal processing that can be run on channels or outputs, including gates, compressors, ducking, graphic and parametric EQ. Additional DSP can be added to the base model to increase the processing power and add delays.

TDM Design of Hillsboro, Ore., is perhaps one of our industry's best kept secrets, with dozens of speaker manufacturers silk-screening their names on Tim Miller's low-cost, high-performance 24CX crossovers. Using THAT Corp.'s 2181 VCA, TDM introduced the 32CL, 2- and 4-channel soft knee compressors with independent limiters, listing for $550 and $660, respectively. Also shown was the "Solder Buddy," a machined aluminum block with a handy alligator clip for holding connectors while soldering.



Symetrix delay Fx machine

Though live entertainment at NAMM has typically been marred by embarrassing sound reinforcement, this year's offerings stood out. Live shows by Michael McDonald, Herbie Hancock and Steppenwolf were more than enjoyable, while **Yorkville** (Pickering, Ontario) provided an outstanding speaker system for a *Guitar Player* event that included Larry Coryell, Alan Holdsworth and Andy Summers. If manufacturers have learned one thing in the '90s, perhaps it's to trust operation of live events to professionals. By the time you read this I'll be packing for the NSCA show in Charlottesville to check out the latest speakers and other new products that weren't ready at the beginning of the year. Sound reinforcement press releases and other unsolicited comments or information can be forwarded to Mark Frink via e-mail at mfrink@teleport.com, Oregon's largest and oldest Internet provider. ■

—FROM PAGE 188, COMPRESSORS

the orientation and distance of the mic from his or her mouth. Performers themselves remind us that it's harder to listen while you're singing. Any singer will tell you that compression is bad. It affects how they sing, forcing them to strain to hear themselves. Singers do not listen to themselves the same way the audience listens to a singer.

In reality, the rest of the mix and the room itself create most intelligibility problems. If there were nothing but vocals, the dynamic range of the voice would translate nicely in all its subtleties. Unfortunately, high levels of production, reflections and reverberation compete with the vocal for the ear's attention. By reducing their dynamic range, a little compression places vocals more "up-front" than uncompressed signals. While competing instrumental sounds have nuances of timbre and harmonics, the intelligibility of the human voice has a higher standard of measure—understanding the words.

A second "loudness" observation is that the ear becomes more sensitive to increases in high-mids at higher volumes. Engineers are quick to cite hot spots in singers' upper registers that seem to stick out when they sing louder. However, the right amount of compression to correct this problem often provides too much gain reduction at other frequencies. This can be cured via frequency-variable compression, something mastering engineers are familiar with.

For years, creative live sound engineers have patched an equalizer into the vocal compressor's sidechain, emphasizing the compression of certain frequencies. Adding extra mids to the sidechain makes the compressor more sensitive there, cutting shrill frequencies earlier. Extra high-frequency boost can smooth excessive sibilance, making the compressor act as a de-esser. By the way, as sidechain EQ is not in the audio path to mix, the quality of its filters is not critical. Finally, here's a way to use any budget single-rackspace graphic EQs, and as a plus, visualizing the sidechain curve can be helpful.

Some engineers treat the lead vocal with a 2-channel in-series approach. The first channel has a compressor inserted with a low ratio to gently smooth the voice, while the second channel is patched from the first and has a high-ratio limiter to stop peaks. The dual-slope approach puts the vocal in a

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—Mix Magazine, August, 1996

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dynamic pocket that can sit at the top of the mix. The two faders are on each side of the limiter and can be used to move that dynamics pocket up or down, open or tighter. The effects also benefit from protection that allows higher signal-to-noise without crashing the digital inputs on peaks.

GENERAL ADVICE

As with any effect, overuse can overpower rather than enhance. Live-sound mix operators suffer from having to set compressors at soundcheck levels, only to have the musicians lean in harder when the adrenaline kicks in. It's common knowledge that sound check levels are only initial settings, and there always comes a point in the show where players turn up, shifting their balance with the rest of the group. Suddenly inputs start to hit their compressors a little hard. Engineers find themselves rapidly tweaking input gains at the top of the set, and inserts need to be checked as well. Many compressors start to sound strident after several dB of reduction. Personally, I'm annoyed by units that lack separate LEDs for the first 3 dB of reduction, as these are the only ones that should be lit in most cases.

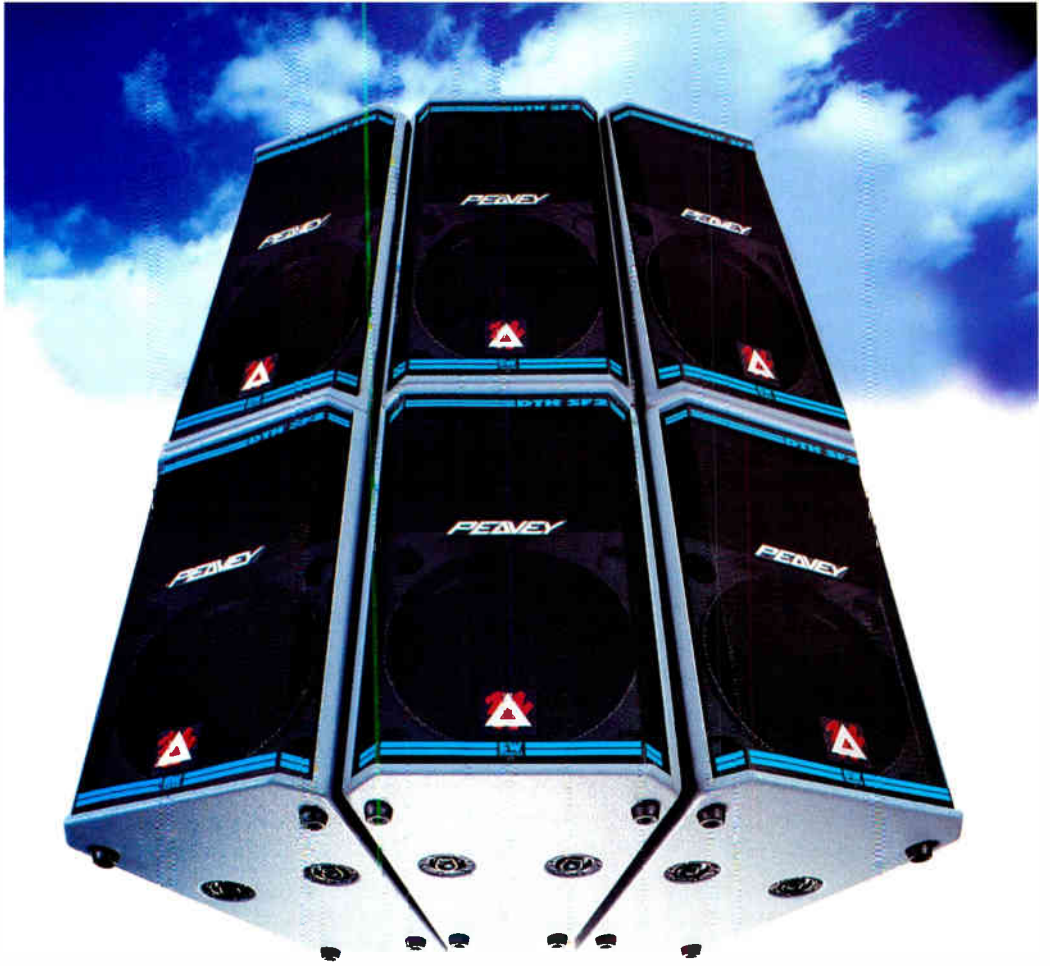
Bored one afternoon? Have yourself a system compressor shoot-out. Many do little to protect the system anyway, reducing transients at the expense of higher long-term power levels. The best protection is having a robust system with accurately set safety limiters on the crossover outputs. Near clipping, hot voice coils provide "easy-over" power compression, anyway. This does not deny the use of a system compressor as, ahem, a creative tool and that's a matter of taste, though not often practiced consciously.

Although there are times when any compressor is better than none, quality is critical with any signal playing an important part in the mix. The insert on the lead vocal is usually more important then the patch for the bongos or the banjo. Many systems have a compressor patched across the entire mix for "protection," and the quality of this device affects everything. Many systems can benefit from upgrading and bumping the old compressor down to other chores.

Systems short on compressors can be frustrating. Sub-grouping allows economizing, but the loudest signal in a sub pulls the others down in compression. This has both benefits and drawbacks. Musicians working dynamically mix themselves better, but individuals with poor control jump in and out. Horn sections or background singers sharing a monitor mix can work well sub-grouped with a single compressor inserted. Assigning bass guitar and kick drum to share a compressor can help them work together.

Even simple stereo consoles with a mono output can be used to break the mix into vocal and instrument sub-masters. Linking inserted compressors provides group compression and can even duck the music under the words. As light compression tightens the vocals in one sub, it also ducks the instruments, restoring them when the singing stops.

Engineers satisfied with automatic compressors give up control for speed, convenience and predictability. Today's touring productions require adjustment and monitoring of dozens of inserts, often located out of primary visual range, over a shoulder or at knee-level. The best use of a competent FOH tech, when not walking the room, is extra attention to the insert rack that is not af-



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forded by the mix engineer's focus on the console. A few operators enjoy the rare convenience of desks with onboard dynamics. Logical association of control and metering on each channel's strip make checking all parameters of each input at a glance a natural part of mixing.

Many newer products offer types of compression control not easily furnished with classic models. With dynamic equalizers that provide frequency-tunable bands of dynamics, engineers are learning new ways of thinking about compression. You may also find there are interesting routing and control options available with inventory already on hand. Remember when we didn't have tunable gates?

Further exploration of dynamics devices may convince you to try a few new twists. Once again my admonishment is to put a couple of "spare" inputs into your list strictly for purposes of experimentation. Unexamined habits and beliefs easily lull us into a false understanding of our craft. A small investment in time can yield some interesting and unique approaches. ■

Mark Frink is Mix's sound reinforcement editor.

—FROM PAGE 189, SMASHING PUMPKINS

fattening on James Iha's electric guitar. Other effects include a Behringer EX-1000 "Ultrabass" sub-harmonic synthesizer run off of an auxiliary and a Behringer "Edison" stereo image enhancer inserted on the vocal subgroup.

Behringer processing dominates the effects rack, with a dozen channels each of Composers and Intelligates, as well as two Ultrafex II stereo multiband enhancers, doubled up on the bass and key channels after their compression. The kick and snare channels are also double inserted with gates and comps. Indeed, dynamics control seems to be part of Knight's secret for mixing success. "I like to use subtle compression," he says, "never more than a few dB." There is also a rack of dbx 903 compressors, with the first patched to the hi-hat and the rest to stereo subgroups, set very lightly. There is also a Summit DCL-200 that's patched to the bass subgroup. A UREI 1178 is patched to the recording feed to imitate some of the natural system compression, before it goes to a pair of KT DN-716 delays on the way to being mixed with a Shure VP-88 located at the mix position. In addition to the DAT, the band archives their shows onto a pair of Fostex ADATs, bringing it down to sixteen tracks with a combination of direct outs and sub-groups, where the extra compression comes in handy. Knight uses a Summit TLA-100 on Corgan's six- and twelve-string acoustics, and another TLA-100 double-patched with a BSS DPR-901 is used on his vocal mic. "If you have to hit them hard, they still sound very transparent," Knight points out.

Knight uses an Orban 674A parametric graphic, tucked into the corner of one of Showco's auspicious drive racks, to aid in EQ'ing the P.A. Processing is provided by the PRISM digital controller, with separate control frames for main, front-fill and center-fill systems. In typical Showco fashion, the main equalizers are two custom Industrial Research Products DG-4023 Transverse EQs. Starting with the Klark-Teknik RTA and pink noise, Knight looks for a particular slope, adjusting the alignment of the subs by a few milliseconds from the previous show's setting. He uses the Orban like a mastering EQ to gently contour narrow bands, while Showco's IRP EQs are used to nip a couple of frequencies at show time. Starting with a snappy Go West tune, Knight next runs a variety of program material from a DAT compiled for tuning the system and then checks it with a vocal mic. "I

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The TRAP Series 40/6.

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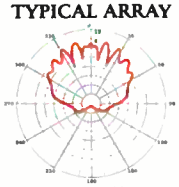
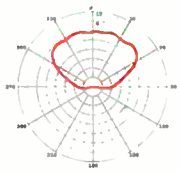
TYPICAL ARRAY

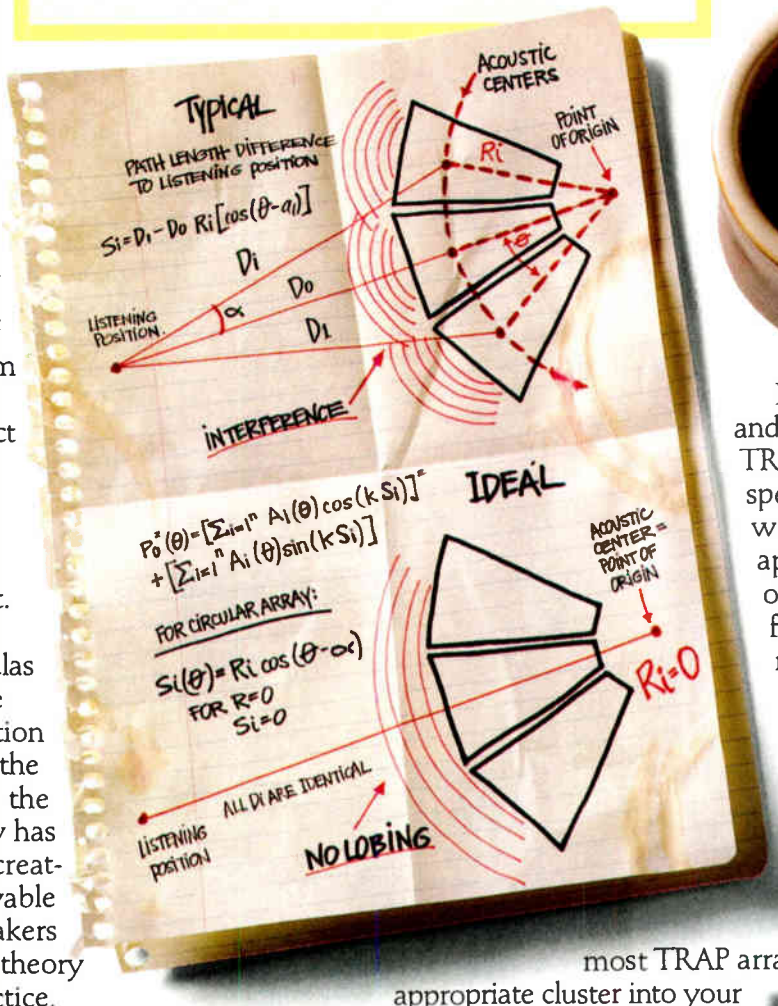


Problem: Three typical 60°H cabinets in tight-packed array. Severe lobing problems.

TRAP ARRAY



Solution: Three TRAP 40/6 cabinets in tight-packed array. Minimum lobing.



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use a range of material and my voice to confirm the response, and if every song sounds good, I know I'm in good shape," Knight says. "A few engineers rely too much on Donald Fagen, which sounds pretty good with just about any reasonable system EQ."

Showco's PRISM system flies four rows deep on an eight-column grid. Eight Showco subs are in front of the downstage corners, with six cabinets arrayed on top of them, and several of Showco's two-way 450 cabinets are used on the deck for down-center coverage. Trimmed at 34 feet, the system is flown higher than other PRISM rigs, but there are six boxes stacked on the subs, and the system fills the hall uniformly. Crew chief and system engineer Stewart Bennett is assisted onstage and in flying the P.A. by Showco's Travis Coleman. Knight has spent his share of time baby-sitting artists' engineers in years gone by, and he and Bennett have a good relationship that enables each to focus on his responsibilities with a minimum of verbal communication.

Knight is a Shure-endorsing engineer who also hails from Evanston, Ill., and his input list has few surprises. The kick drum is double-miked with a Beta 52 and an SM91. The snare top mic is a Beta 57A, while the bottom is a Beta 87. The toms are all SM98, and the cymbals are miked with SM81 condensers, with the exception of the ride, which is miked from underneath the bell with a 57 to give it cut. Knight uses an ADL tube DI on D'Arcy's bass post preamp and processing, and an Audio-Technica 4050 is used on an SVT bottom in an isolation case. Corgan plays his Fender Strat into a pair of Mesa heads with Marshall bottoms miked with Beta 57s. He also kicks in an Orange/Marshall stack occasionally for solos, which is miked with an AKG D-12. On Iha's electric, Knight uses Beta 57As for a little less proximity and smoother highs. Iha and D'Arcy sing backing vocals into Crown CM-310 "differoid" mics for high rejection, while Corgan sings into a Beta 58A.

Up at the stage, John Shearman mixes monitors on a Midas XL-3 and a dozen channels of Klark-Teknik graphics and is assisted by Showco's Rik McSorley. Effect include a Yamaha SPX-990, a Lexicon PCM-42 and a dbx subharmonic synth. For inserts there are Drawmer DS-201 gates and K-T DN-504 quad compressors, and on Corgan's vocal there is a BSS VariCurve and a DPR-901 dynamic equalizer. Sidefills are a pair of PRISM boxes flown over each downstage corner, and wedges are Showco's stylish SRM (Stage Reference Monitor), loaded with a 12 and a 2-inch and powered by Crown amps, as is the entire system.

Once again I found myself at a concert attended mostly by teenagers and a few parents my age. Always ready with an open mind and a pair of earplugs, I was surprised by a lively show. Not only was this the best-sounding PRISM rig I've heard in a while, but the light show was a complete video game on acid, with a stage set resembling a spaceship to Mars. The Pumpkins kept a sold-out crowd of enthusiastic adolescents completely absorbed and singing along with the hits, cheering at 110 dB and competing with the P.A. all night. My fault was not buying the album and memorizing the lyrics, as the only way I could make out any words was to read them off the set list. If not for the foam in my ears I would have been deaf the next day. If this represents the future of arena rock, there is little hope for American youth until they're old enough to go to a bar. ■

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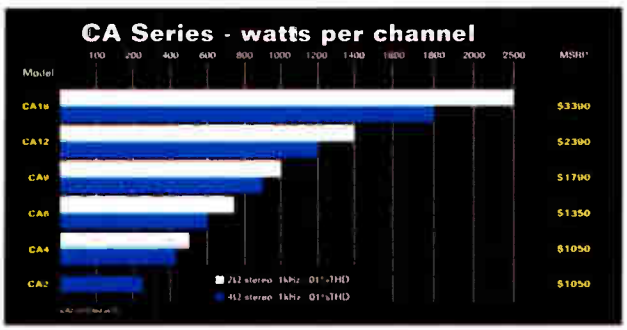

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New Sound Reinforcement Products

TELEX/AUDIX WIRELESS

Telex (Minneapolis, MN) now offers Audix mic capsules for its HT Series wireless systems. Telex HT-150/200/450 wireless mics can be fitted with Audix OM-3XB and OM-5 hypercardioid dynamic capsules. Frequency response is 38 to 21k Hz (OM-3XB) and 40 to 20k Hz (OM-5). The HT-450 is a single-channel UHF transmitter; the HT-200 is a single-channel VHF transmitter; and the HT-150 has a selectable three-crystal VHF transmitter.

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RENKUS-HEINZ TRAP 20

TRAP 20 is the latest in the TRAP True Array Principle Series™ from Renkus-Heinz (Irvine, CA). Built for high-power arrays in larger venues, the Trap 20 full-range cabinet combines a Co-Entrant™ driver with a unique 20x20° ArrayGuide™ that places the apparent apex, or acoustic center, behind the source. In TRAP20 arrays, the apparent apex of each cabinet is coincident with the radial origin of the cluster, resulting in near-theoretical array performance. The asymmetrical horn (20° below-axis, 0° over-axis) makes the cabinets equally arrayable in the vertical plane, for seamless 40° vertical coverage.

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MARTINSOUND ASSIGNABLE MIXER

Martinsound's (Alhambra, CA) RIF Series Assignable Mixing Control Surface, is an expandable array of motorized faders and system control switches that provides a familiar interface for Level Control Systems' LD-88 digital mixers. The RIF Series offer a user-selectable number of servo-faders arranged in

single or double banks of eight. Each channel has four parameter switches to control input levels, mutes, PFL, groups and matrix assignments. LED meters monitor up to 80 I/O signals.

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PEAVEY SP G SERIES

Peavey (Meridian, MS) announces three new SP™ G series trapezoidal sound reinforcement speaker cabinets. The SP 3G is a three-way, bi-ampable system that may also be driven full-range. It features a 15-inch Black Widow woofer, a 6.5-inch midrange driver and a 22XT HF driver on a CH 3 horn. The SP 1G two-way, bi-ampable/full-range system has a Black Widow woofer and a 44T 4-inch HF driver on a CH 5 horn. The SP 6G is a two-way/full-range system with 12-inch woofer and the same HF unit as the SP 3G. Both SP 3G and SP 6G models feature SoundGuard™ HF driver protection; all have integral stand-mount adapters.

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RANE RPM 26 DSP MULTIPROCESSOR

Rane's (Mukilteo, WA) RPM 26 DSP Multiprocessor is a 1U, blank-face unit offering a range of pre-programmable signal multiprocessing functions. The RPM 26 has two analog inputs, six analog outputs and contains 16 internal,

non-volatile memories for storing EQ, delay, compression, level, crossover and tone generator parameters. Eight of the RPM 26's internal memories are contact closure accessible from a rear panel port; all 16 memories are accessible from RaneWare's Suite Control Panel. The RPM 26 is also compatible with AMX and Creston controllers and and up to 250 units to be serially linked to a single computer. Retail: $2,295.

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SABINE ADF-4000

Sabine (Aluchea, FL) introduces the ADF-4000 Adaptive Digital Filter Workstation, a two-channel filtering and equalization device that includes automatic feedback control. The 20-bit ADF-4000 incorporates 24 digital, programmable parametric filters, switchable to operate in Sabine's FBX Feedback Exterminator mode. Functions include dual 31-band graphic equalizers, a full-featured RTA, ClipGuard™ adaptive level control and automatic room EQ. Controls include a data wheel and hot keys, easing on-screen filter editing and automatic filter tracking. Remote control is possible via MIDI or RS-232.

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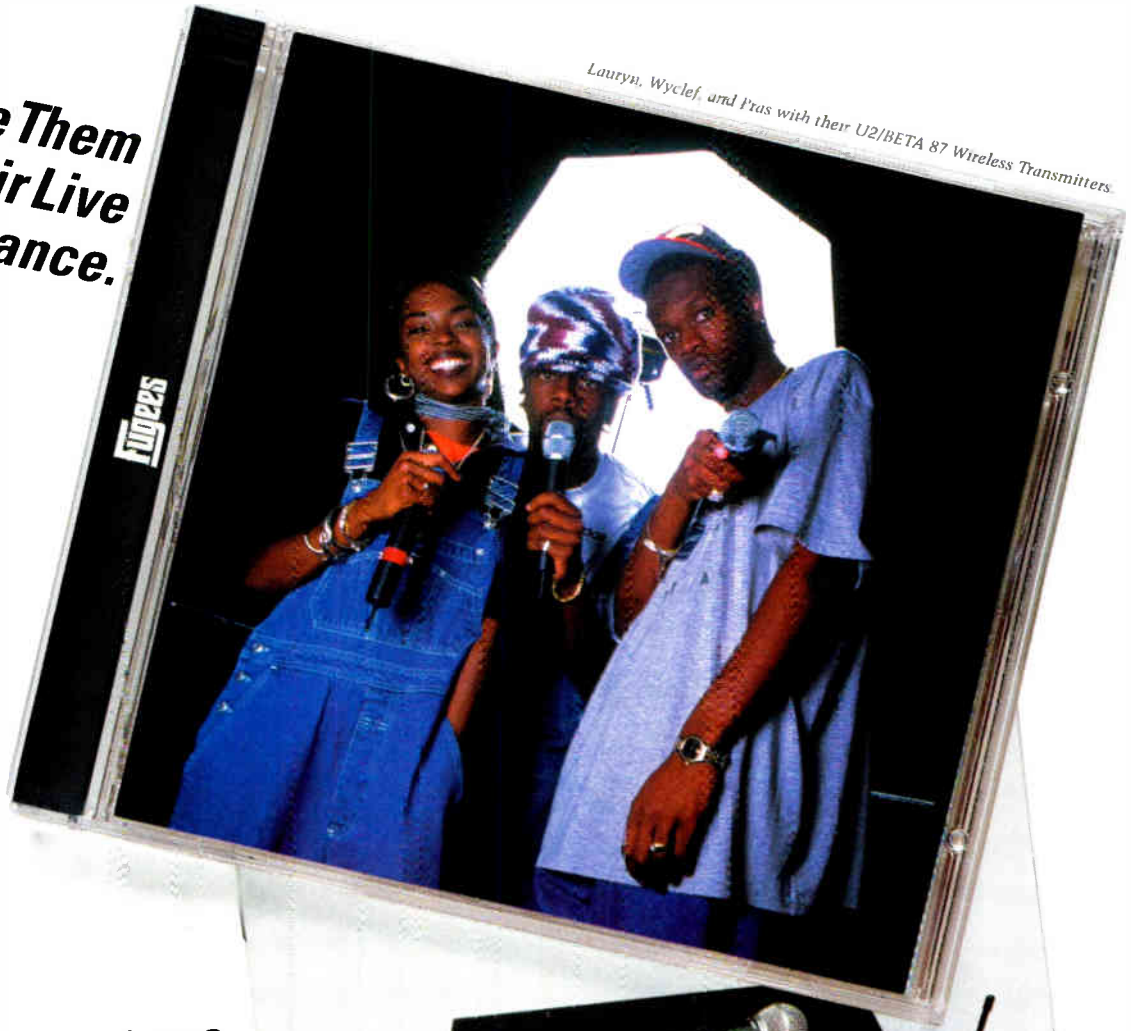
You Love Them For Their Live Performance.



Lauryn, Wyclef, and Pras with their U2/BETA 87 Wireless Transmitters

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Premastering For Enhanced CD

BY TOBY MOUNTAIN

ENHANCED CD REMAINS A MYSTERY TO MOST CONSUMERS, MUSICIANS AND AUDIO PROFESSIONALS. ITS UNCOORDINATED LAUNCH, LACK OF FORMAT DEFINITION AND CONTINUAL COMPATIBILITY PROBLEMS HAVE HAMPERED THE FORMAT FROM THE BEGINNING.

Despite the poor start, Enhanced CD is actually a significant milestone on the tortured ten-year record industry quest to fuse music with multimedia. More than 200 Enhanced CD titles have been released so far, and the number is steadily increasing. Though the press pronounced the format "DOA," a small but growing cult of artists, multimedia developers and record companies seem determined to blaze new trails with this format.

The purpose of this article is to familiarize audio professionals with the Enhanced CD format and demonstrate various strategies to premaster Enhanced CDs. Before launching into a "hands-on" discussion, I'd like to review some compact disc history to illustrate the bizarre journey that Enhanced CD has taken.

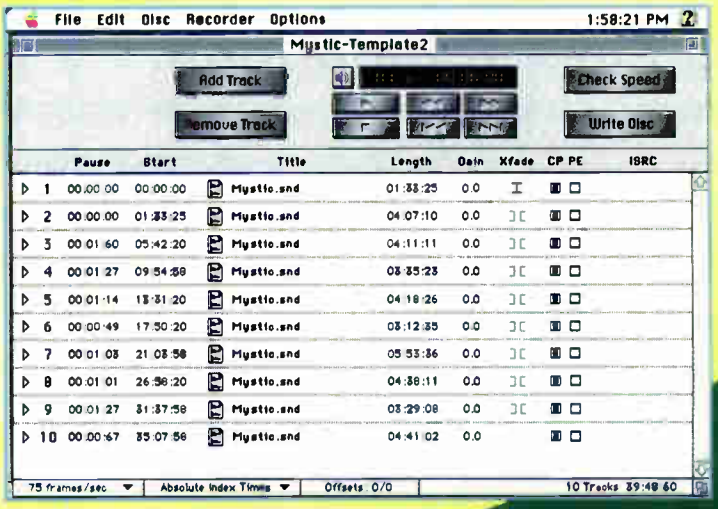
MUSIC PLUS "SOMETHING ELSE"

When Sony and Philips created the Red Book compact disc standard almost 15 years ago, they hardly envisioned the plethora of CD "offspring" that would emerge. In 1985 a consortium of computer companies called the High Sierra group laid the groundwork for the Yellow Book CD-ROM standard for storing computer data on a CD. Within a few years, publishers were not only putting text on CD-ROM, but also color graphics, animation and even video.

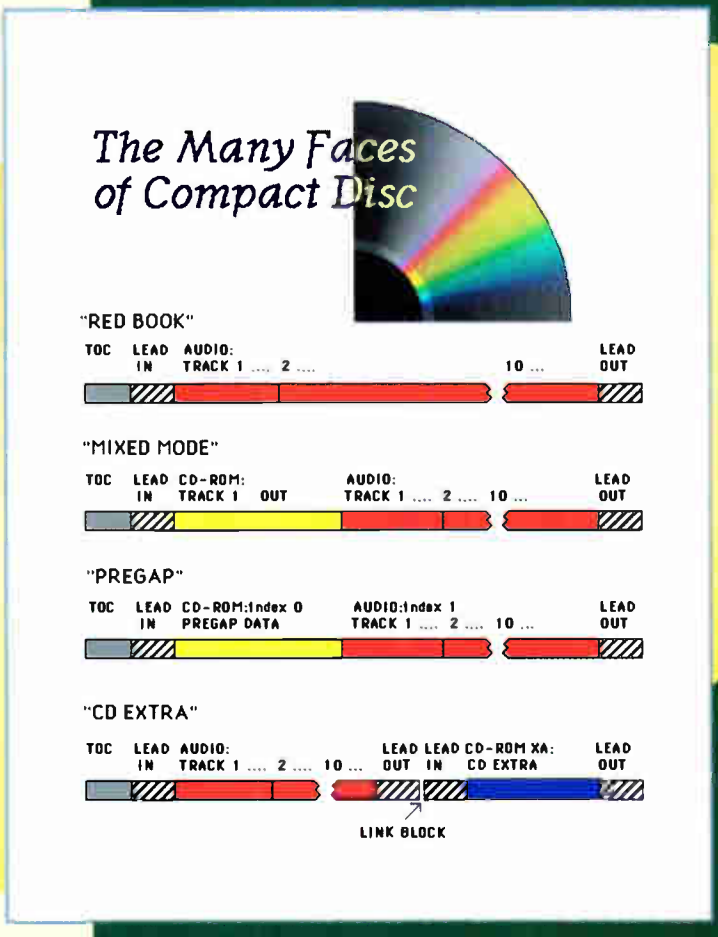
Having witnessed the huge success of MTV, record executives couldn't help but notice the impending explosion of multimedia. They were eager to come up with a way to add extra information to their CD releases. Early experiments in stuffing lyrics and low-resolution graphics into the unused R-W subchannels of the Audio CD resulted in CD+ and CD+G. More elaborate formats like Commodore's CDTV and Philips' CD-Interactive interleaved music with video and graphics. All were flops with consumers.

Early failures of such proprietary formats forced record companies to refocus their efforts on the personal computer to deliver multimedia with music. The obvious solution was to fuse two standards, Red Book and Yellow Book. The first incarnation was Mixed Mode CD-ROM, which consists of a ROM track followed by any number of Red Book audio tracks. But Mixed Mode has two problems. First, the CD-ROM track can be accidentally accessed by some audio players, causing an ugly static-like sound and potential speaker damage. Second, retailers don't know whether to sell the discs as audio or CD-ROM discs. Despite several impressive music titles, like Sarah McLachlan's *The Freedom Sessions*, Mixed Mode has had a limited appeal.

The inadequacies of Mixed Mode led to some clever solutions. One of these, known as Pregap, actually "hides" the computer data at the front



A screen displaying an assembled track list



of the audio CD between index 0 and index 1 of track one. A CD player still thinks it's an audio CD, while a computer is fooled into thinking that it's a CD-ROM. Pregap improves upon Mixed Mode by not allowing the audio user to access the Enhanced CD track directly, but other problems exist. Intense controversy has erupted over who owns the patent and receives royalties for Pregap, so developers are staying away from it. Worse still, a 1996 revision to Windows 95 mysteriously made the Pregap track inaccessible to PC users (*Billboard* 8/17/96).

The best solution to date, CD Extra (formerly CD Plus) inverts the track structure of Mixed Mode by creating two separate sessions: first audio, then data. Major players in the computer and record industry have already endorsed CD Extra under a new compact disc standard called Blue Book. Blue Book is fully compatible with Red Book in that it works safely on all CD-Audio players. It also establishes a minimal file structure within the data track that will be used by smart CD-Audio players and future DVD Players. CD Extra's one drawback is that its dual session format makes it inaccessible to first-generation CD-ROM drives and out-of-date software drivers. Within the context of this article, I have chosen to focus on the CD Extra/Blue Book standard because it appears to be the most viable solution for Enhanced CD.

MASTERING CD EXTRA

CD Extra uses a "multisession" format, with the following disc geography and formatting. Session 1: Red Book Audio. Session 2: Yellow Book CD-ROM-XA, Mode 2. CD Extra/Blue Book imposes a minimum file structure requirement within Session 2 in addition to any stand-alone multimedia applications. We'll discuss the specific requirements of Blue Book later.

It is possible to send the music and data separately off to the CD plant and assign them the task of putting it together. Several plants are capable of doing this, but I don't recommend this route. It is very important for the artist, producer and label to receive and approve both programs on one disc before replication. The CD Extra Master should be done in premastering to either CD-R or Exabyte (DDP), to avoid expensive extra steps at the plant.

SESSION 1: AUDIO

When the audio tracks of a CD Extra are written to a CD-R, the session must be "unfixed" or "unfinalized" to allow the second data session to be written. Incredibly, none of the major audio premastering workstations allows the creation of an unfinished audio CD-R that can be used for CD Extra. Sonic Solutions has long promised but never delivered on Enhanced CD audio capability. Ron Franklin, director of marketing, explains, "We have no current plans to support CD Extra directly within SonicStudio. We do not currently support Session-at-Once in our current Version 5.1 software. We plan to provide support for other CD-R devices [that can create Session-at-Once] by having the SonicStudio system write an image file which can then be used by Astarte's Toast software to write to most every CD-R machine in existence."

Digidesign also has no immediate plans to update its MasterList CD software to write multisession CD-Rs.

I asked Ted Hayton of Studio Audio if his company had plans to implement Enhanced CD features for the SADiE3 System: "No, not at present," he says, "although this may change. As the SADiE3 can write to a variety of formats which include .WAV, there are no specific problems that would make Enhanced CD difficult to implement." He also pointed out that SADiE3 will soon support CD Text, a new extension to Red Book (see below).

This lack of support forces the mastering engineer to turn to one of the popular CD-DA computer software packages like Toast or Gear (see below). Such packages can create an unfinished audio session in Disc-at-Once mode with a SCSI-compatible CD Recorder, a fast SCSI HD and a reasonably fast CPU. Disc-at-Once or Session-at-Once means that during the write session, the laser never turns off or leaves a gap—an important prerequisite for most CD plants. All CD-DA software requires that digital audio tracks must first be converted to computer files, like .WAV or AIFF files. There are three different ways to do this conversion, each with relative merits and risks.

DAT OR CD TO SOUND CARD

The most common way to convert audio to a computer file is to pipe it directly into a sound card from a DAT or CD player. The hardware and software for this can differ greatly in quality, so test your system thoroughly first. Use the digital transfer mode via the S/PDIF interface, make sure that

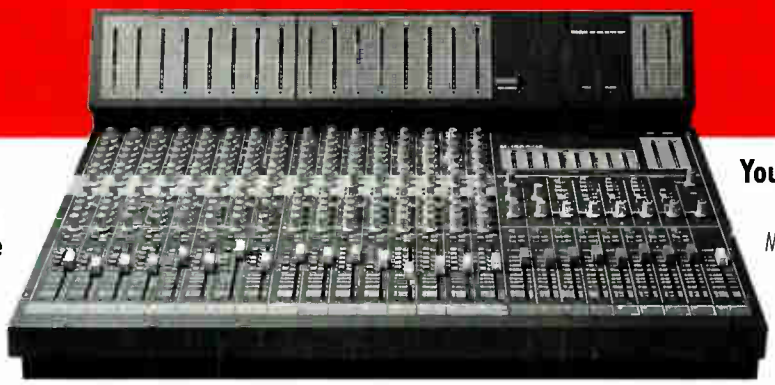
"Check's in the mail."

"My dog ate it."

"Use a live board for recording..."

"No such thing as a quality recording console for $1699."

WE WON'T INSULT YOUR INTELLIGENCE.



Breakthrough: You Can Buy an 8-Bus Recording Console for $1699

It's funny that some companies will try to fool you into believing that their 4-bus mixer designed for live gigs and sound reinforcement will be a great console for your personal or project studio. We know you're much smarter than that. Fact is, you can buy a quality 8-bus recording console for a lot less — from TASCAM.

Live Boards Waste Inputs When Used for Recording

Don't depend on your salesperson to know, but for every track of your recorder, a live board wastes 1 input (8 tracks = 8 wasted inputs). Not very efficient. A true recording console, like the M1600, has dedicated ins/outs specifically for your multitrack, so all input channels remain available for necessities like guitars, keyboards, mics — whatever you need.

No Patching and Repatching

Another thing a recording console will save you is hassling with cables. That live board has only 4 sub-masters. So, if you want to send multiple signals to any of the 8-tracks, you'll need to patch and repatch. And forget about soling that submaster. Can't do it! With the M1600 just push buttons. It's that easy.

Killer Mic Preamps and the Sweetest EQ

The M1600 has the EQ you need. Three bands including a semi-parametric mid sweep with more range than anything in its price class. Plus, the M1600's next-generation mic preamps are optimized for digital recording. Much cleaner and quieter than those on a live board. Check out the specs.

Serious Monitoring. Inputs a Plenty

You'd be hard pressed to find the M1600's monitoring capability on another mixer — let alone a live board. With 6 AUX sends you can create stereo cue mixes and still have plenty of AUX power to spare. Plus, you get 4 fully assignable effects returns. Thanks to its inline design the M1600/16 gives you 32 inputs at mixdown.

You Can Expand It, Too!

Best part is you can buy the M1600 and its optional meter bridge for about the price of a basic live board. How can TASCAM do it? By not making you pay for stuff you'd never use — like mic inputs. When was the last time you used more than 8 microphones simultaneously for recording? Chances are never. But if you ever do, you can easily expand your M1600 with the optional TASCAM MA8 eight channel mic preamp — giving you 8 more killer mic preamps.

You're smart. So buy the right tool for the job. For gigs and sound reinforcement, get the live board. But for recording on a tight budget, get the TASCAM M1600. At only $1699* for 16-inputs; or for more bang get 24-inputs — only $2199. You won't find a better value. Want to know more? Read the M1600 story. Call TASCAM FaxBack today. Document #6610.

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*16 input model gives you 32 mix positions; 24 input model gives you 48 mix positions. Estimated list prices $1699 for 16 inputs and $2,199 for 24 inputs

your computer is locked to the incoming signal and disable any signal processing on the way in. Remember to save your file to a format your CD-DA software can handle. There are a plethora of formats: Sound Designer II, AIFF, .WAV and .snd to name a few. During the transfer, monitor with headphones. When you finish recording, edit off the silence at both the beginning and end of the file, leaving, of course, the appropriate offsets.

DIGITAL AUDIO EXTRACTION (DAE)

The process of capturing CD-Audio tracks digitally over the SCSI bus (not possible over IDE or EIDE drives) from a CD-ROM drive to a hard drive is called Digital Audio Extraction. It can be conveniently done with a computer software package like Astarte's CD Copy™ or OMI's Disc to Disc™ (see below).

Your finished audio CD-R should be placed in the CD-ROM drive. Make sure that you've disabled any extensions or other applications that might interfere with the track copying process. Any interruptions to the CPU can jeopardize the flow of data from the CD-ROM drive.

Depending upon the application you are using, carefully select the correct parameters or preferences. Again, make sure that you are saving to a computer audio file format that is compatible with your CD-DA application. Other parameters will determine how accurately you can re-create the PQ subcode of your source disc. For Astarte CD-Copy users I recommend selecting the following Audio track options: 1) Delete Silence at End √; 2) Read Q-Codes √; 3) Read in Single Speed √; 4) Create CD-DA File √; 5) Format: Sound Designer II/44k/16 bit/Stereo √; 6) Save tracks as Multiple Files √. For OMI Disc-to-Disk users, I strongly recommend selecting the Overlap Reads option. The reason will become apparent from the following.

Since you can't monitor the copying process, it's more or less an act of faith. If all goes well, your software should successfully reconstruct an accurate linear sequence of 16-bit audio samples from the interleaved EFM (Eight to Fourteen Modulation) data of the audio CD. Let me now explain the intricacies of this process.

Copying computer files from a CD-ROM to a hard disk seems like a rather straight-forward thing. The laser starts reading the sectors 1-n of a file, buffers the data into RAM and then writes it into appropriate sectors of the

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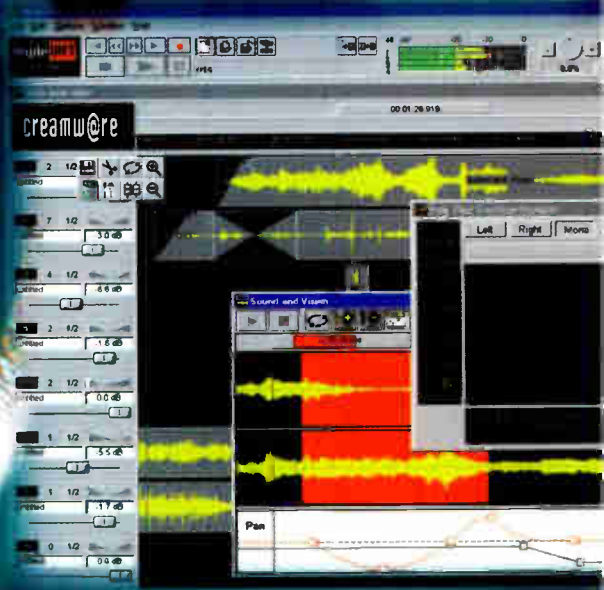

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hard drive. The data is checked and verified before the laser returns to the next sector where it had left off.

Unfortunately, an audio CD has a larger sector size (2,352 bytes) than CD-ROM (2,048 bytes), which means the CPU has to work about 15% faster while decoding the audio data. Unlike CD-ROM sectors, CD-Audio sectors have no headers, just Q subcode information. When the laser searches the Q subcode to start reading its previous location, there can be an error of ±5 CD frames! This must be compensated for by smart copying software which performs 'overlap reads' by collecting redundant audio samples and deleting the ones that have already been written to the hard drive. As you can see, Digital Audio Extraction is not a simple linear process.

SONIC TO AIFF

If you're a hard-core Sonic user and the DAE process seems a bit unsettling, there's another way. A future version of SonicStudio presumably will enable you to write a CD-R image file (with TOC) to an HFS hard disk that Toast or some other software can write directly to CD-R. In the mean time, I can only suggest a lengthy but useful workaround.

Open up your final EDL and recapture your entire audio program with or without Desk Automation to a new soundfile. Be sure to enable output dither or SBM, if appropriate. Place your IN and OUT points about 5 to 10 SMPTE frames before and after your first and final fades to create appropriate offsets. When the recording is done, follow these recommended Sonic steps: 1) Open the Sonic Manager. 2) In the Sonic Manager, click on the Sounds library button. 3) Click to select the Sonic sound file you want to export. Shift-click or command-click to select multiple files. 4) Click on the Utility button. 5) Click on the Export button. 6) In the resulting dialog, choose an HFS volume (hard drive or Jaz drive) on which to save the exported sound file.

Since SonicStudio to AIFF can take up to four times real time, I recommend leaving this process for overnight. When you return in the morning, you should have a single interleaved stereo AIFF file on your HFS volume compatible with several CD-R applications.

Some Sonic engineers prefer to capture each audio track individually and then use Toast CD-DA to create various gap lengths (CD pause) be-

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tween the tracks. This can be done but will make seamless transitions between tracks rather difficult.

PREPARING THE AUDIO TRACKS

The above transfer scenarios should yield a bit-accurate computer audio file of your program but may leave you with no timings for PQ subcode. If you have one big AIFF or .WAV file, you can resave it as a Sound Designer II file with Sound Tools and then define Audio Regions to re-create separate tracks. This process requires special care, especially if you have any seamless transitions between tracks!

You will write the unfinished audio session using an audio CD-R software package such as Elekroson Gear (V.3.3 or >), Toast CD-DA (V.2.0), CeQuardrat WinOnCD (V.3.0) or JVC Personal ROM Maker depending on the platform you're using. When you assemble a track list, you are also re-creating the Table of Contents and PQ codes of your original program. Use a cue sheet from your original CD-R to adjust timings and the correct pause lengths between tracks. Toast CD-DA 2.0 will allow you to designate sections of one large audio file as tracks, so you can pretty much plug in the times from your cue sheet. Once you make all of these fine adjustments, you should have a virtual disc that is the same length as your original, give or take a few CD frames. Most CD-DA software will allow you the luxury of full auditioning before writing.

Computer audio packages for writing CD-Audio are abundant, but be aware that some software programs and CD recorders cannot write an unfinished session in Disc-at-Once mode without an obligatory 2-second pause between tracks. Before you invest in a package, also make sure that the software works with the specified recorder.

Some CD recorders with session-at-once and zero pause capability include Yamaha CDR-100 (V.1.1 or >), Philips CDD 2000 (V.1.25 or >), JVC XRW 2001 (V.2), Philips CD 522 and the Kodak PCD 600.

DATA VERIFICATION

Regardless of the transfer method you use, you need to have peace of mind that the copying process did not compromise the audio. When comparing the source and copy programs aurally, be sure to audition them through the *same* CD player or D/A. This will minimize the varying jitter characteristics of different digital audio media (CD, DAT,

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HD) and transfer protocols (AES, S/PDIF, optical). Without fueling the already contentious Digital Clone debate, let me just say this: To me, a digital audio copy pretends to be nothing more than a list of numbers with a generic sampling rate but with no explicit control over how evenly the numbers are played back. Perhaps future "jitter-free" playback devices will correct this. Until then, my first priority is making sure the data is identical. There is a quick-and-dirty method for doing this.

Load both "before" and "after" programs into your digital audio workstation at 16 bits with all input DSP disabled. In your Edit window synchronize the two programs to the audio sample. Play the four channels through a stereo output mixer but put one of the stereo programs out of phase. If the files are identical, they will cancel each other out. If you're blessed with an output to 1630 and a video screen, look for pure black.

CD EXTRA TRACK

If you've survived the first round of audio premastering for CD Extra, then you're ready for round two: adding the CD Extra track. Although you may be spared the agonies of creating the multimedia, somewhere along the way, the artist or developer will ask you one essential question: After the audio, how much room is left for the CD Extra track? Here's a simple formula: 650 MB - total audio minutes x 10 MB = MB available for Session 2.

The developer can provide you with the CD Extra data on any of several storage formats. Using an Enhanced CD-compatible CD-R package (see below), your job is to format and write this data on a CD-R. Usually, you'll be given data for both Mac and PC and asked to create a Shared Hybrid session, which will consist of an HFS directory and an ISO 9660 directory with common files.

Don't expect the developer to fully understand cross-platform issues. Mac developers are often ignorant about the file naming restraints of DOS or ISO 9660. It's important that any shared files employ the ISO 9660 naming restraints: 8 characters with a 3-character extension, same case, no symbols, to run on a Windows 3.1 system.

Also, Mac and Windows systems have different properties in terms of displaying files and icons. If you understand these, you can configure each directory so that the CD Extra track will mount properly and have a

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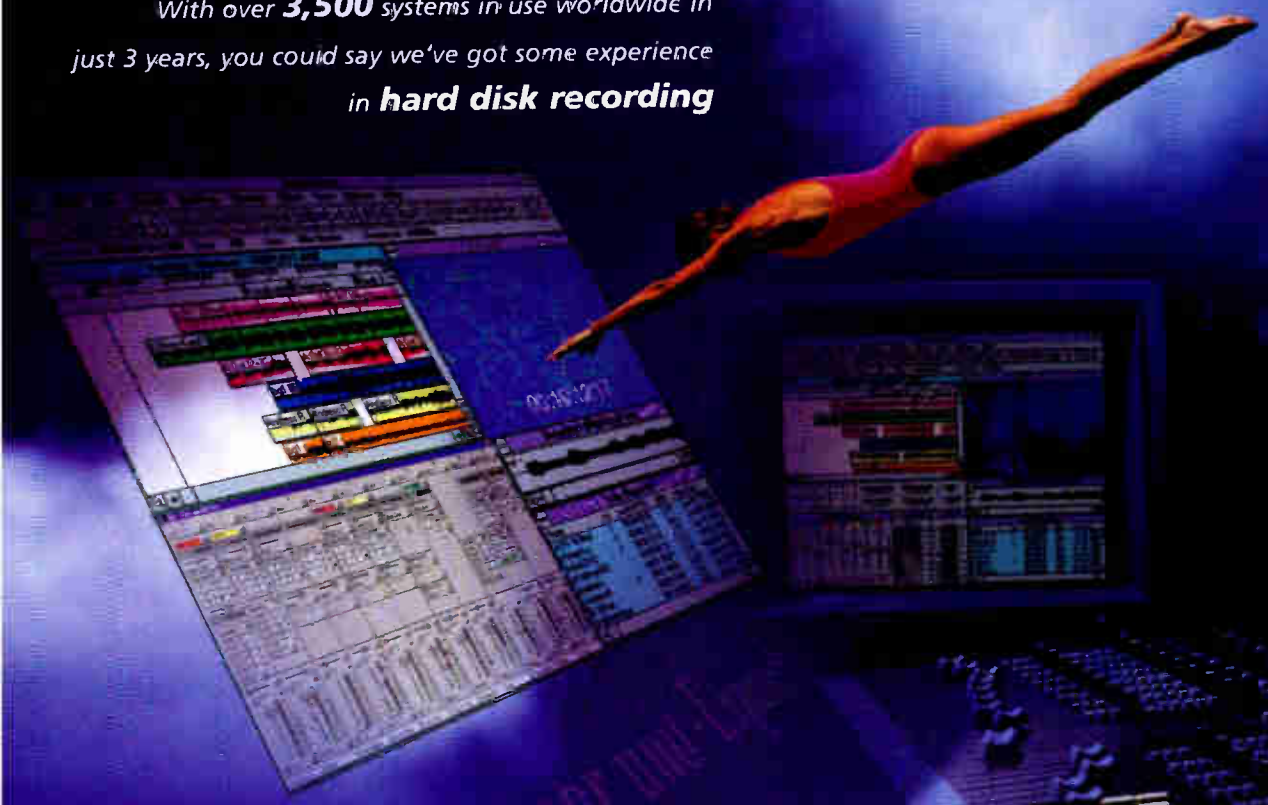

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After dealing with these issues, your Shared Hybrid CD-R software should guide you the rest of the way. I recommend writing the CD Extra track first to a blank CD-R so you don't ruin one of your precious unfinished audio CD-Rs. You can test it out in a limited way, but, more importantly, you should provide a copy for the developer first, so they can test more thoroughly for bugs. This is an important step, since the majority of multimedia projects get revised after the first write to CD-R.

Session 2 should actually be written as CD-ROM-XA or more specifically, CD-ROM Mode 2, Form 1 format. XA stands for Extended Architecture. This technical variant on Yellow Book CD-ROM includes subheader information, allowing interleaving and decoding of different forms of media (audio, video) within the same sector. You can check to see if your software properly wrote the CD Extra track in this format by analyzing it with a utility like Astarte's CD Copy.

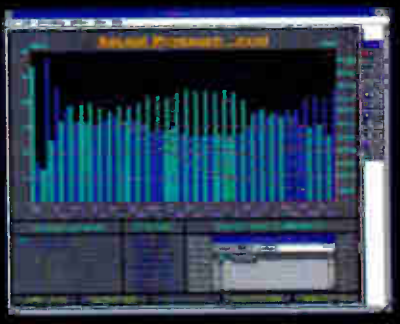
BLUE BOOK

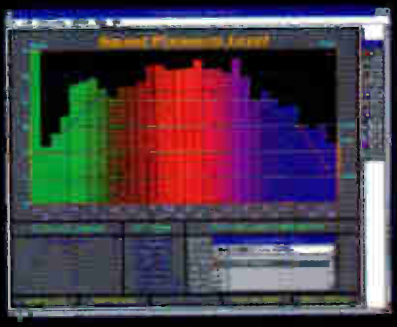
Blue book specifies a clearly defined file structure that must exist within the CD Extra track in addition to any multimedia applications. One root-level file is mandatory: AUTORUN.INF, which jump-starts the multimedia application. Two root level folders or file directories are mandatory: CDPLUS and PICTURES.

CDPLUS contains three mandatory files. INFO.CDP includes album title, artist, record company and catalog number. SUB_INFO.lc contains track titles with pointers to lyrics and MIDI files and optional files for each track, including LYRICSnn.lc with lyrics and sync information of each track (nn). TRACKnn.MID contains MIDI data of each track (nn). PICTURES contains a mandatory JPEG file of the album cover: JACKET01.00J, and other optional files for the back cover and each track: TRACK2.02N.

Developers are finally getting some help in the creation of Blue Book files. Apple recently released the Apple Interactive Music Toolkit 1.0 which can be downloaded for free from http://foothold.com/~premise. With this Hypercard-based application, developers can assemble a database of text fields and graphics and save it as an Apple QuAC (QuickTime Album Container) file. Toast CD-ROM Pro 3.0 can then convert the QuAC file into the Blue Book structure described above.

R T A





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As part of the Toolkit, Apple is also beta testing a cross platform AppleCD Player software controller that can read and play back Blue Book graphics and text, including scrolling lyrics. Seeing this reaffirms the belief that a smart CD or DVD player connected to a TV or computer monitor is not far off.

CD TEXT

Although CD Text is not officially Enhanced CD but an extension to the Red Book Audio CD, it seems appropriate to mention it here. A new generation of CD-Audio players has been introduced by Sony and Philips to display alphanumeric information on an LCD of the player. Sound familiar?

The CD Text specification is rather flexible. In its most sophisticated application, it supports a color display of 21 lines of 40 characters each and the possibility of displaying simple bitmaps or encoded JPEG pictures. Several levels of menus can be selected all the way down to scrolling lyrics for each song. Initially, the format will be used in its most basic form: displaying album name, artist and titles to help people in cars or radio stations sort through the multitude of discs in their CD changers.

Studio Audio has already announced a CD Text Editor and PQ Encoder for SADiE3. Will Sonic and Digidesign follow suit? My guess is that Astarte will beat them all to the punch and release CD Text capabilities in its next big Toast CD-DA update.

CD EXTRA REPLICATION

The CD Extra format has presented a real challenge to the mastering facilities at CD plants. Standard software/hardware for the LBR (Laser Beam Recorder) has been traditionally set up to do strict single-session mastering. Because the two sessions of a CD Extra CD-R are written at different times, there is a critical "link block" area of bad data where the second session overlaps with the end of the Lead Out of the first. An ordinary CD-ROM drive might skip over such errors, but a fussy LBR reader at the plant will abort the whole mastering process unless preprogrammed to ignore such errors. Add in all the odd CD-Rs created with different non-Red Book software and hardware and you've got a recipe for a mastering engineer's nightmare. Sound familiar? In the mid-'80s, plants used to complain all the time about non-spec 1630 tapes. The Doug Carson Associates software that most facilities employ for disc cut-

—CONTINUED ON PAGE 255

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COAST TO

L.A. GRAPEVINE

by Maureen Droney

This month L.A. Grape takes a trip up to Northern Southern California—namely, Santa Barbara County. With studio designer and SB resident Chris Pelonis as guide, we spent a day checking out the burgeoning recording scene in that beautiful coastal region. The area is similar in feel to Norcal's Marin County, and creative types have been making their way up the coast from L.A. to Santa Barbara for a long time, with Jackson Browne, Kenny Loggins and Jim Messina as longtime residents. Lately, others have continued the migration, leading to a music business boomlet. Projects recently completed or in the works include a screening room for actor Jeff Bridges, and studios for producer David Kershenbaum, Mariah Carey's songwriting part-

-CONTINUED ON PAGE 231

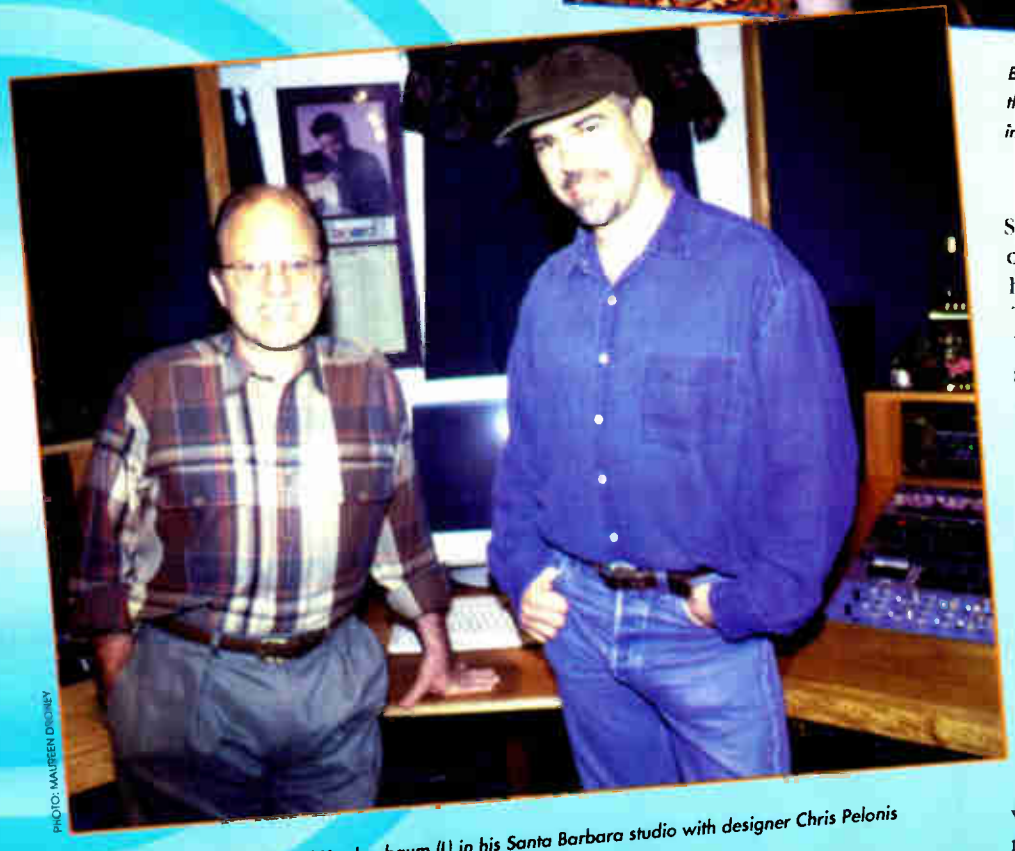

PHOTO: MAUREEN DRONEY

Producer David Kershenbaum (L) in his Santa Barbara studio with designer Chris Pelonis

NY METRO REPORT

by Dan Daley

Bon Jovi keyboardist David Bryan at the new Yamaha 02R digital console in his home studio in New Jersey.

Sony/ATV Music Publishing opened a new studio in Sony's headquarters at 550 Madison. The studio, equipped with a Yamaha 02R digital console and Sony PCM-800 8-track digital recorders, is intended for use by in-house clients, although considering Sony's girth, that includes a lot of people: writers and producers signed to the publishing company, producers and artists at any of Sony Records' labels like Columbia and Epic, and any of the myriad custom labels that the parent label has signed.

"The interesting part was building and outfitting a recording studio in a corpo-

—CONTINUED ON PAGE 236

COAST

SESSIONS & STUDIO NEWS

NORTHWEST

San Francisco's Coast Recorders had Geffen artists **Big Blue Hearts** in for five weeks recording their debut with producer **T-Bone Burnett** and engineer **Susan Rogers**. The studio recently extended its vintage Neve to 72 inputs. The board features 3-band selectable EQ on all channels and 56 GML-automated faders...Producer **Bill Stevenson** (of Black Flag and The Descendants) tracked a new album with **The Lemons** at **Soundhouse Recording** in Seattle. **Greg** "Greedy" **Williamson** and **John Nevins** engineered. Revolution Records artists The Cunninghams were also in the studio tracking a new project with producer

PHOTO: CHARLIE/SHOT IN THE DARK

Producer/composer Wayne Horvitz and his Four Plus One Ensemble recorded for the German Intuition label at Bear Creek Studio in Woodinville, Wash., with engineer Joe Hadlock. Horvitz is represented by Bear Creek Management, the studio's newest venture.

Newcomers Black Lab worked on their Geffen debut at San Francisco studio Toast. Smiling are bandleader Paul Durham (L) and producer/engineer David Bianco. Standing are studio assistant Jacquire King, bandmember Michael Urbano, studio co-owner Craig Silvey (who produced one track) and bandmember Geoff Stanfield.

L.A. band Freight Train spent a week at Carmel Digital in Carmel, Calif., tracking for an upcoming project. At the studio's Yamaha 02R are (L to R) guitarist Mark Roth, producer and studio owner Roger Masson and vocalist Blake Cusack.

Don Gilmore...At San Francisco's Toast, Philip Steir produced the first single from chanteuse Lori Carson's Restless Records release and remixed the Moby single "Revolver" for Elektra. Chris Haynes engineered on both sessions. Also, producer Rob Siefert mixed tracks for Tanya Donelly's new Reprise release with assistant Jason Carmer...

SOUTHERN CALIFORNIA

At Canyon Studios in Laguna Beach the Mike Reilly Band worked on a new project with engineer Allan Blazek and second Billy Pierce. The all-star sessions included contributions from Elvin Bishop, Taj Mahal, Garth Hudson and Joe Walsh...Rumbo Recorders in Canoga Park had Warner/Reprise artists Kara's Flowers in with producer Rob Cavallo, engineer Jerry Finn and assistant Tony Flores. Brett Michaels of Poison fame recorded for the Poorboy label in a session that reunited him with original Poison guitarist C.C. Deville. Jim Farachi produced and engineered, assisted by Mark Agostino... Producer Derrick Garrett and engineer Rob Chiarelli mixed Bobby Brown's "Ghetto Jam" for an MCA release at Larrabee Studios in West Hollywood. Steve B. assisted...Former Police guitarist Andy Summers was at Ocean Studios in Burbank recording a project with drummer Greg Bissenette and bassist Tony Levin. Eddie King produced with assistant Ken Van Druten...Producer Randy Nicklaus and engineer Jimbo Barton mixed a new release for the inimitable Meatloaf at The Enterprise in Burbank. Dave Hancock assisted...At Grandmaster Recorders in Hollywood, The Gain tracked and mixed their new Mighty Records release with producer/engineer Bradley Cook, co-producer Blag Dahlia, and assistant Todd Burke...The Mechanical Bride recorded and mixed a song for the *Pop This* compilation with producer/engineer John Bird at Parking Lot Studios (Studio City)...

NORTHEAST

Junior Brown was in working at Pilot Recording Studios (New York City) with Will Schillinger and Jerome Fox engineering. Yoko Ono and Sean Lennon were also in compiling live tapes of shows with their band Ima. Jerome Fox engineered...At Coyote Studios in Brooklyn, NY, Andy Shernoff produced Peruvian punks Metsadona for Roto Records with engineer Albert Caiati and Grace Falconer...Dutch melodic rockers Bettie Serveert overdubbed for their next Matador release at River Sound in New York City with producer/engineer Bryce Goggin and assistant Anthony Gillis...Acoustic Johnson wrapped up their next Capricorn release with producer/engineer Danny Bernini at Sound Techniques in Boston. Ted Paduck and Tom Richards assisted...Ian McGaughey recorded a self-produced independent release with engineer Robert Turchick at Cotton Hill Studios in Albany, NY...The Robert Charels Blues Band tracked their debut release, *Deception In Your Eyes*, at Electric Samland Studios in Queens, N.Y. Charels co-produced with Rhett Tyler, and the album is due in June...Maggie Estep tracked and mixed for an upcoming Mouth Almighty/Poly-Gram release at Bass Hit Recording in New York City with producer Knox Chandler, engineer Steve Lyon and assistant Dan Yashiv...The Loft Studios (Bronxville, NY) had Perfect Thyroid in working on a Shanachie release with producer Joe Ferry and engineers Matt Baxter and Roy Matthews...Bluesman Bobby Kyle mixed his new album at Philadelphia landmark Sigma Sound with producer Cesar Diaz, engineers Michael Tarsia and Arthur Stoppe, and assistants Gordon Rice and Rick Ridpath...Mary J. Blige worked on an MCA release in Studio C at New York's Giant Recording with Georgie Grimstead at the controls of the Neve BCM 10...Boston studio Zippah Recording had the Gigolo Aunts in recording a single with producer/engineer Brian Charles. Also, producer/engineer Pete Weiss and assistant Peter Linnane worked on Charlie Chesterman's new solo album on Slow River/Ryko. The studio recently added a Studer A80 MkIV 2-inch 24-track...

During the past two years, composer and conductor Anthony Marinelli has created music for numerous film and TV projects at his Los Angeles home studio, including music for the feature Two Days in the Valley. *The studio, dubbed Music Forever, is equipped with a Euphonix CS2000.*

NORTH CENTRAL

At Performance Recording in Orland Hills, IL, Dustin Parker mixed his latest album, titled *Centerville*, for M.A.D. Records. The studio was scheduled to break ground this month on its new facility in Lemont, IL, designed by studio bau:ton...H.O.D. recorded their J-Bird Records debut at Too-Relaxed Studios in St. Louis, MO...Blue Moon Ghetto mixed their new CD at Chapman Studios in Kansas City, MO, and The Digital Living Room in Omaha, NE, with producer/engineer Eric Medley...Producer Bobby Z and engineer Todd Fitzgerald tracked Anna for her upcoming Radioactive/MCA release in Studio B at Oarfin Studios in Minneapolis. In Studio A, Z brother David Z tracked bluesman Jonny Lang for A&M with engineer Tom Tucker and assistant Dave Streeby...

—CONTINUED ON PAGE 238

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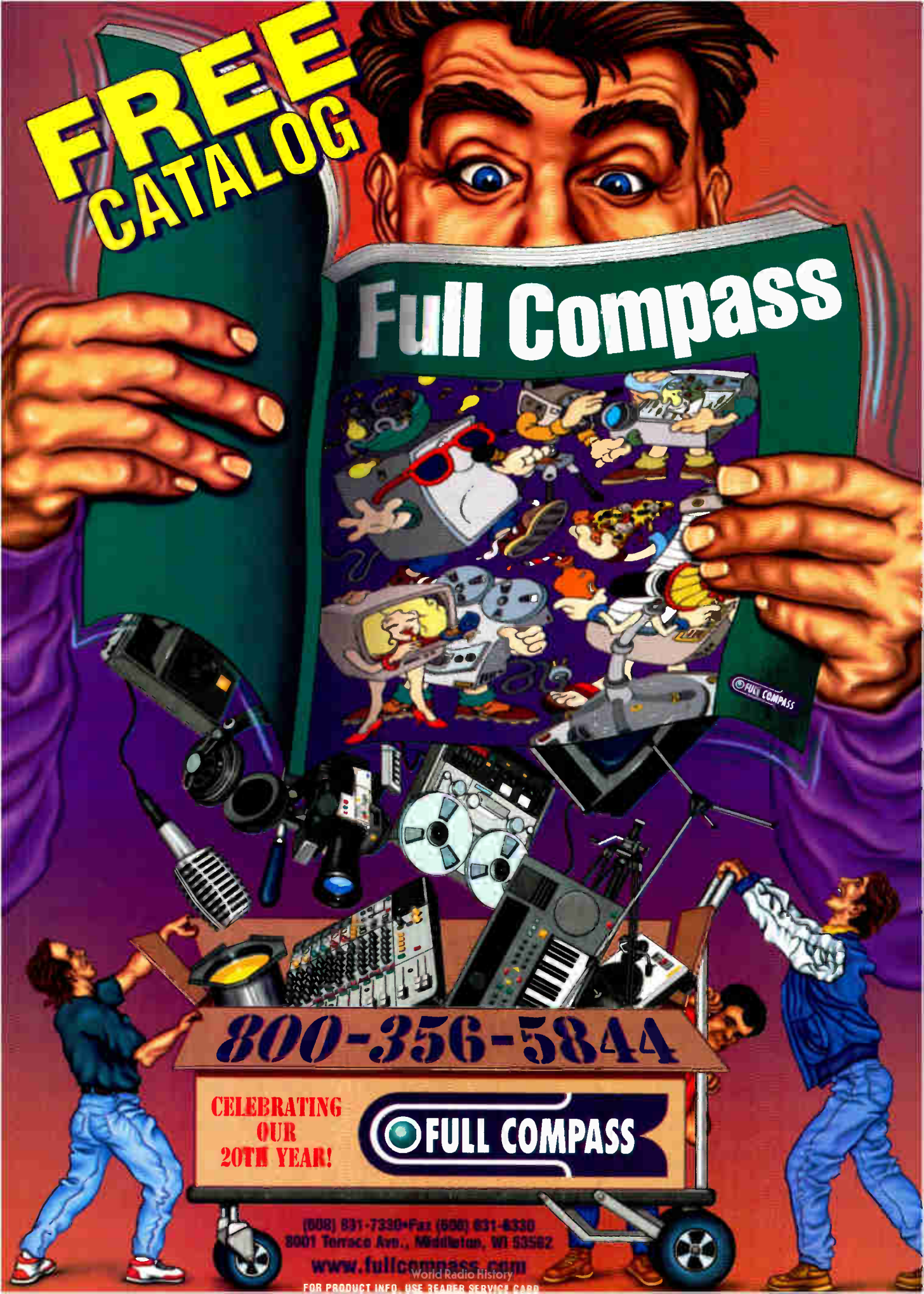

—FROM PAGE 226, L.A. GRAPEVINE

ner Ben Margulies, singer/songwriter Christopher Cross, *Terminator 2* music composer Brad Fiedel, and Toad the Wet Sprocket's Glen Phillips. The common thread running through all these studios is Pelonis, who likes to describe what he does as "complete studio design for the whole person. Besides designing the physical aspects of studios," he comments, "I'm also very involved in the choice of equipment and monitoring systems. Because of my background as an engineer, a producer, and a songwriter, I've got thousands of hours of experience. I consult with people on the type of music they want to record—I look at my clients' recording style and their concepts, and we develop a plan together."

This style of working has made Pelonis much in demand locally, while also keeping the projects coming in Los Angeles and beyond. On the sunny weekday that I made the 70-minute drive up, he took time out from construction and phones and we dropped in on two of his clients.

Our first stop was producer David Kershenbaum's new home studio, set high on a green hill with a 360-degree view of the countryside. Kershenbaum, known for his production work with Joe Jackson, Tracy Chapman, Duran Duran and Kenny Loggins, as well as on film soundtracks such as *Robin Hood, Prince of Thieves* and *Last of the Mohicans*, has recently relocated to a bucolic ranch where he's constructed his pristine little jewel of a workspace. Although it's as high-tech as can be, with 48 tracks of hard disk recording and a sharp equipment setup, a cozy atmosphere prevails, with signal processing housed in custom wood consoles, comfy chairs upholstered in deep colors, and lots of candlelight. The room evokes the image of a European bed and breakfast hotel that somehow also boasts computers and Manley logos.

"How it came about," explains Kershenbaum, "was I took a little break from producing and did Morgan Creek with two partners for a few years, working on film music and signing talent. But in my heart I missed producing records and I wanted to do it full time again, but I wanted to do it differently. I'd owned studios in Los Angeles, but the pressures of operating a studio, and having that kind of commitment, vs. having something that's all yours where you can do just what you really want to do, led me to look for something that was individual. And at this point in my life my wife and I were really into getting something that was beautiful and peaceful. So we thought, 'Why not put it all together in one place?' I had worked at Montserrat, and at Caribou Ranch, and some of the other famous out-of-the-way studios. So when I decided to do this, I knew what I was looking for. I wanted it to feel homey, like recording in a house, but to have the technology so that it didn't sound that way. We found this ranch, built in the '40s, and we started moving things in last May. Then we met Chris, who's become our technical sound guru and audio advisor, and put it all together. I reunited with Sandy Roberton, who is handling management for me again, and since we've started up here it's just been project after project. Now we are already thinking of some major expansion, possibly adding another location with a large tracking room.

"Artists can stay here, and we have the horse ranch a few miles down, so they can go riding. We serve lunch and dinner for them, and there's a Jacuzzi. We really set out to make it as much like a retreat as possible. It's worked out great—everybody likes to be up here; they seem to feel at home. So far Peabo Bryson and Color Me Badd have been up, also Kim Hill who is on EMI, and right now we're working with pianist/singer Josh Kadison."

Kadison was set up in the booth with a nine-foot grand piano fitted with Disklavier. "The booth sounds like a room much bigger than it actually is—it has some serious bottom end," says Pelonis. "We set it up using a loft that goes over the next room with a multi-chambered bass trap. The low end escapes into there because of the chambers and the cavity, and therefore sees the room as larger than it is. In addition to that, the RPG Quadratic diffusers on the wall help create apparent sonic size and space." A demonstration of the piano's lower octaves proved the point, and then there's that view from the piano bench looking out over the valley—well, it's easy to imagine feeling creative at the keyboard.

PHOTO: MAUREEN DROONEY

Christopher Cross at work in his home studio

Much thought went into the ergonomic arrangement of gear in the control room, which is wired throughout with Mogami cable and includes Manley Pultec EQs, preamps, and the variable MU compressor; GML compressors, a TC M5000 and the John Oram Hi-Definition EQ (which both Kershenbaum and Pelonis call "remarkable." Says Pelonis, "I can get them if anybody wants one. It is *the* most happening—it's got size and character.) Mics include a pair of matched Manley Gold Reference and a Sony 800G.

On the day I was there, the two were finishing extensive A-to-D filter auditions, planning to make the choice for that final piece in the puzzle. "We'll use the highest-end filters we can find," Kershenbaum says, " both for recording, going A-to-D, and for what we are giv-

ing to the mastering engineer. Out of the hard drive, into the D-to-A, that's what we listen to, and that's real important. Most of the hard disks' filters are very average, common filters where you end up losing a lot of the dynamic range, so we are putting the highest-rate filter that we can find at the end of the chain, before it gets to analog, listening to it, processing it, then we go back to digital.

"In a sonic environment like this, you can really hear a two-percent difference," he continues, "and we've done a number of tests on filters and heard radical differences between them. It's really key to the process, because the biggest drag is going through all this and hearing something wonderful and then transferring it to something that loses it—that just makes it sound all packed in. What we are striving for is that when you flip between the mix and what you are hearing in the speakers from our analog chain, you will hear no difference at all.

"We want to be way out on the edge in the direction that things are going," Kershenbaum concludes. "By the end of the year, High Definition CD and higher than 44.1 resolution will be the norm, and the records we are making here will be ready for that."

Onward, next, to the home studio of singer/songwriter Christopher Cross. Cross started the building process with his recording room, originally the garage, now filled with guitars and amps, and tuned by the way, as he actually sat inside playing and listening. "If you feel the walls," says Pelonis, "you'll notice there are all sorts of different surfaces behind them from the different materials that we used to make it right."

The rest of the studio has been growing in stages, filling the garage and another building that once held a sauna and now houses 32 tracks of ADAT, a Pro Tools system and two Yamaha 02R consoles. "For the way I work, this studio makes a lot of sense," Cross says. "Everything is electric guitar, acoustic guitar or vocal, which this room can do just fine. Of course, I think there are down sides to working at home, but you compensate if you cut right. I think that I make quality records in terms of sound; I've always been conscious of that, and the two keys to making a quality record in this sort of environment are getting the room treated right and getting the right outboard gear to cut with. So you've got a good mic, say a B&K, to a 1073 and Neve compressor onto tape, then you know you've got something great. Also, I use Tannoy AMS 10 monitors, which are key for me. Then as long as you are using a fairly decent tape source like an ADAT, which is pretty affordable, and the room is treated right so you know what you are hearing, I don't know that there is that much difference between that and recording at a major studio—at least when you are recording like I am, which is one thing at a time, at most in stereo. My last album I did half on ADAT and half on analog 24-track, and you'd be hard pressed to tell the difference—and that was on the old ADATs. The new ones sound a whole lot better. I tend to do a lot of things stereo or doubled, so I end up with a lot of things in the same harmonic register, and in a way I think the digital actually gives it a little more separation."

Cross had accumulated a lot of recording equipment over the years, including an API console, (now for sale, if anyone's interested) which he had been keeping in a studio in Los Angeles. "I'm at a place right now," he says, "where it really doesn't make any sense to be in there, so I brought all the gear up here except for the console. It's probably the nicest API in the world, and some people don't believe I'm really selling it. Emotionally, it is hard to sell it, but it's like owning a

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thoroughbred and then riding around your yard. The API needs to be in a big tracking room where it can do its thing. It's all ebb and flow, and my career has settled into a place where this is right for me at this time. I guess you could call it a state-of-the-art singer/songwriter project/house studio. I have the 1073s and the Avalon EQ, what else do I need?" (Not much, I think, looking out the window of his control room onto two kittens happily playing in the vegetable garden. This is a pretty nice place to work.)

"I remember when I went to Joni Mitchell's," Cross continues, "and she had natural lighting in her home studio. I questioned her about it...because people have always told us you can't have glass in a studio, and, so, when I saw her place, I thought, 'I can make this work for me.' All the rules are changing. I think Chris (Pelonis) is of the new guard; he's a progressive kind of designer. His magic is that he takes the space you give him and makes something that's affordable that works, without having to tear your whole place apart. A lot of designers just want to rip everything out from the get-go, but this is my home, and I wasn't willing to start blowing out walls and completely making over my domicile. The aesthetics of my house are more important to me than having a giant studio—it needs to work dynamically with the way I live. So if Chris had come to me and said, 'This just flat won't work the way it is,' I wouldn't have done it at home, I would have gone to Plan B, and put a studio in another facility. But I didn't have to."

Cross is, not surprisingly if you're familiar with his music, a thoughtful and candid person, who sees many sides of an issue, and he realizes he's part of a trend that has major repercussions for the recording business. "I hate to work against the studio business because it's part of our livelihood," he says, "and the reality is a lot of them are dying on the vine because of cottage studios like this. But we are being forced to [do this] because record budgets have shrunk, and rates are prohibitive. I don't think people should be running commercial studios out of their homes and putting commercial studios out of business; that's wrong. But on an artist basis like I'm doing it for myself, I think that is different. I'll spend some money on this next album recording drums elsewhere, but the money I spent mixing (at a commercial studio) on my last record, I'm afraid I've got to put it in my pocket this time. I just can't justify it. Especially when I can get just as good a product at home.

"And it is nice working at home. I can take songs right after they are written and turn them into tracks. I've started getting some film projects...and being able to package things, I can do them here and make a decent amount of money. There's also the luxury of being able to live with the music, to be able to leave it up, and then with the Marantz, to print the mix on a CD and then go ride around in the car and listen. That's a big plus. And especially with the 02Rs, to have the capability to completely recall, and then be able to go back—I'm really excited about this."

We would have headed off to a few more studios but passing the beach we noticed the surf was up, and Pelonis got an eager surfer's glint in his eye that he politely tried to hide. So I let him off the hook for the rest of the day and hopefully he hit the waves instead of the phone after we said good bye. As for me, I hit La Superica for a late lunch and headed back down Highway 101 to L.A. ■

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—FROM PAGE 226, NY METRO

rate environment," says William Garrett, the studio's in-house engineer (who has operated an in-house recording facility for Sony Music for the past six years). "The first thing we realized was that most of the publishing company's writers and producers by now had better equipment at home than we had purchased for the original studio over five years ago. That was the motivation to build a new room." The new studio is based on a design that Garrett and engineer Bradshaw Leigh (who also designed the lobster shack studio used by Billy Joel for his *River of Dreams* record) had come up with several years earlier. With a budget of $20,000, Garrett chose equipment from a pool of possibilities that had significantly widened since the first writer's studio went in, but he also had to keep in mind that Sony has a few side businesses, one of which is equipment manufacturing. Hence the PCM-800 decks. "There were a lot of equipment requisition protocols and hoops you have to jump through, the same as in any corporate environment," Garrett observes. "But there are also some benefits—you could say I got the digital tape decks at a good price, and that helps you stay on budget." Despite the large pool of potential users, Garrett has a protocol to follow in this aspect, as well: Writers get first crack at the studio, followed by publisher/producers and then "everybody else."

Juliana Hatfield mixed for a Mammoth/Atlantic release in the Neve Suite at Boston's Sound Techniques with producer/engineer Tim O'Heir (seated at the board). Bandmembers Mikey Welsh (foreground) and Todd Phillips stand by.

Room With a View owner Alessandro Cecconi said he plans to open Room Service, a Pro Tools-equipped digital editing/sequencing suite, as an adjunct service for the mix-and-overdub-oriented studio. Room With a View also had its new SSL 9000J console installed in early February, bringing to seven the number of Js floating around New York. "The point of Room Service is that it will help keep more of the mixing clients in the studio, doing their post-mix editing and sequencing," Cecconi explains. "In a way, the name says it all—you have to offer more services to keep more clients in the studio longer."

Acme Soundworks had a partial ownership change recently with the addition of new co-owner Fritz Lang (loved *Nosferatu*, Fritz) following the departure of Todd Miller, one of the studio's two original co-founders along with Jondi Whitis. The studio, which is now positioning itself to more aggressively pursue corporate and industrial productions, has installed a DAR Soundstation DAW system with 16-channel Sigma-Plus add-on. Acme also maintains tielines to nearby Chelsea TV Studios, which has been a major source of projects for the audio facility.

Bon Jovi band keyboardist David Bryan installed a Yamaha 02R digital console in his home studio in New Jersey (no, I don't know what exit). The studio is used for pre-production for the band's projects, for composing projects with bandmates Richie Sambora and Jon Bon Jovi, and for a recent project with Dr. John. The studio also houses Tascam DA-88s and a Yamaha ProMix 01 for submixing duties. ■

Send New York news to Dan Daley at danwriter@aol.com or fax 615/646-0102.

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—FROM PAGE 228, SESSIONS & STUDIO NEWS

SOUTHEAST

At Miami's Criteria Studios, Bob Dylan tracked for his upcoming Columbia release with producer Daniel Lanois and engineer Mark Howard, assisted by Chris Carroll. Mexican star Juan Gabriel was also in overdubbing and mixing a self-produced effort with co-producer Vavy Lozano. Eric Schilling engineered, assisted by Chris Spahr...Suzy Bogguss mixed songs for a self-produced Capitol release with engineer Steve Marcantonio at The Sound Kitchen in Franklin, TN...Grammatrain tracked and mixed for Forefront Records at Ardent Studios in Memphis, TN, with producer/engineer John Hampton and assistant Matt Martone. Supergroup Golden Smog also tracked and mixed a new project at the studio. Brian Paulson coproduced with the band and engineered, assisted by Pete Matthews...Jo-Jo and K.C. Haley of Jodeci worked on vocals for their upcoming solo release on Universal Records at Reflection Sound in Charlotte, NC, with engineer Kelvis Reid...Producers Javier Garza and Pablo Flores mixed a single for David Lee Roth at Crescent Moon Studios in Miami. Garza engineered, assisted by Chris Wiggins and Macelo Añez...At his Catalyst Recording Studio in Charlotte, NC, Rob Tavaglione coproduced and engineered projects for Velocet and Saltlick...Rowdy artist Caron Wheeler tracked a new LP with producer Dallas Austin, engineer Leslie Braithwaite and assistant Carlton Lynn at Atlanta's Darp Studios...At Masterfonics in Nashville, Beth Nielsen Chapman mixed for a Warner Bros. release with producer Rodney Crowell, engineer David Thoener and assistant John Thomas...RCA recording artists Illusions worked on their debut release at Doppler Recording in Atlanta with producers HOP Productions and engineer Alex Nesmith...

Narada recording artists VAS mixed their debut release at Music Grinders in L.A. Pictured (L to R) are bandmembers Azam Ali and Greg Ellis, engineer Dan Harjung and assistant Rudy Haeusermann.

SOUTHWEST

At Rivendell Recorders in Houston hard rockers Atticus Finch tracked for a new project with engineer Brian Jones and assistant Casey McPherson. The studio recently added 16 tracks of Alesis ADAT XT...Dallas studio Future Audio Recording hosted sessions for

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Mix Magazine, Oct. 1996

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Rocket Records artists Jimmie's Chicken Shack tracked an upcoming release at Oz Recording in Baltimore, Md. Using the band as an ottoman is producer/engineer Steve Haigler.

Vanessa Bell Armstrong, produced by Kirk Franklin. Funkmeister George Clinton was also in tracking for a forthcoming independent project...

STUDIO NEWS

The new **Hum** studio, owned by composer Jeff Koz, is now under construction in its new location, a warehouse in Santa Monica, Calif. Designed by Walter Meyer of **Meyer Architecture** and slated to open in June, the 5,700-square-foot renovated facility will house two studios, iso booths, production offices, client lounge and support functions...**A&M Studios** newly rebuilt Studio C is slated to open next month. The room, designed by **Vincent Van Haaff**, will feature a Euphonix CS3000 with the Hyper Surround multichannel mixing option...Vintage monitors—**Curb Records** added completely refurbished JBL 4435 monitors to its new Nashville studio...**Sound Image Studios** continued to expand its Van Nuys facility with the addition to Studio B of a tracking and overdub room. Recent clients include Polydor artists **Saga** tracking and mixing their 20th-anniversary record with producer **Jim Crichton** and engineer **John Hennng**, assisted by **Raul Mora**. ■

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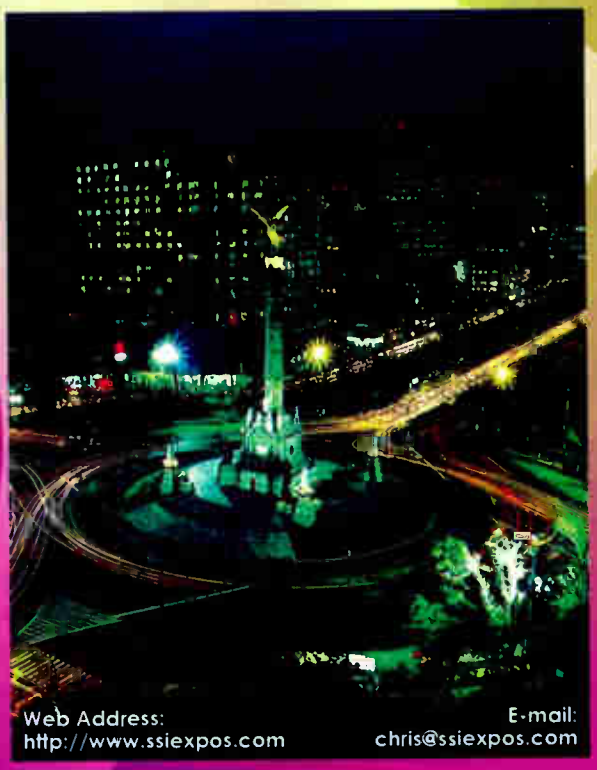

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SSI 400G High Point Dr. Hartsdale, NY 10530 USA · Tel: (914) 993-0489 Fax: (914) 328-8819

Specify if Exhibitor or Visitor Information

▪ STUDIO SHOWCASE ▪

Gallery Recording Studios

132 West 22nd Street, 6th Floor
New York, NY 10011
(212) 366-6640; Fax (212) 727-7187
e-mail: gallery@bbhinc.com

It's a recording studio and an art gallery! A beautifully designed new, spacious facility with outstanding acoustics, based in the heart of Manhattan. The best in vintage/modern gear and an inspiring atmosphere enhanced by ever-changing exhibits of striking modern artwork. Built to spoil the most demanding engineer, producer or musician. Some names: 148-in Trident 90 console with moving faders, Studer 827s, Lexicon, Quested, Pro Tools, DA-88s, Focusrite, Neve, Summit, Pultec, TC, Neumann, Steinway.

HARBORSOUND
180a CENTRAL STREET
SAUGUS, MASS. 01906
(617) 231-0096 Fax: (617) 231-0295

Harbor Sound Studios

180a Central Street
Saugus, MA 01906
(617) 231-0095; Fax (617) 231-0295

Harbor Sound Studios. Beautiful tracking facility designed and built by Acoustech, featuring custom Neve console (1073/1066), Studer A800 MkIII, Pultec, Teletronix, Genelec, vintage mics and the latest in new gear. Second room to feature Neve 8108 console and AMS Audiofile for mix and overdub. Located 10 minutes form Boston and 15 minutes to Cape Ann beaches. One minute from U.S. Route 1.

Paradise Sound Recording

PO Box 410
Index, WA 98256
(360) 793-2614; Fax (360) 793-7713

MAKE TRACKS IN PARADISE
At the base of the Cascade mountains, overlooking the North Fork of the Skykomish River, you will find the ultimate in recording environments. Paradise Sound Recording's superb acoustic design is complemented by an SSL 4056 G console and two different hard disk recording formats. Current projects include ongoing work for 21st Century Audio (3-D Sound), Camelot Records, Liquid City Records and other discerning artists. Call (800) 877-MTNS (6867) for more information.

Record Plant Remote

109 Pinecliff Lake Dr.
West Milford, NJ 07480
(201) 728-8114; Fax (201) 728-8017

Record Plant Remote has been an industry leader in location recording for over 20 years. We've kept abreast of new developments in audio technology without sacrificing our sonic integrity. Some of our recent clients include MTV, Aerosmith, Elton John, Michael Bolton, Spin Doctors, R.E.M., Live, Meatloaf, Wynton Marsalis, John Mellencamp, Keith Richards, Chuck Berry, Guns N' Roses, Whitney Houston, Pavarotti, INXS, James Taylor, Emmylou Harris, Shawn Colvin, Billy Ray Cyrus, Mary Chapin Carpenter, Trisha Yearwood and Harry Connick Jr. Our reputation speaks for itself!

Carmel Digital

PO Box 2834
Carmel, CA 93921
(408) 622-0522; Fax (408) 622-0660
e-mail: rmasson@carmeldigital.com
http://www.carmeldigital.com

Not enough $ for professional mastering?

THINK AGAIN!

Send your clients to CARMEL DIGITAL.

We're always within YOUR budget.

Triad Studios

4572 105th Ave. NE
Redmond, WA 98052
(206) 881-9322; Fax (206) 881-3645
http://www.triadstudios.com
e-mail kyasi@triadstudios.com

We make terrific recordings within reasonable budgets. Our acoustically fat studios have everything you need for a great sounding record including scads of vintage tube microphones and compressors, stereo Dolby SR for mixdown, extensive MIDI, DAWs and we're ADAT compatible. Recent clients include Narada Records, Music for Little People, Muzak, hundreds of Seattle area bands.

STUDIO SHOWCASE

Atlanta Digital

500 Means Street, Suite E
Atlanta, GA 30318
(404) 522-4777; Fax (404) 522-3723

Atlanta Digital provides CD Mastering and post-production. The studio features Sonic Solutions with NoNoise and CD printer in an audiophile monitoring environment. Outboard processing is by Focusrite, Manley, Apogee and TC Electronic. Video formats include Beta SP and ¾". Supported audio formats encompass Time Code DAT, Sony PCM-800 (DA-88) and analog tape. Recent credits include Arrested Development's Speech and Headliner, Vagabond and post-production credits from Bigelow and Eigel, Harcourt Brace and Optical Data.

Different Fur Recording

3470 19th Street
San Francisco, CA 94110
(415) 864-1967; Fax (410) 864-1966

25 years of recording all styles of music. Custom service in a creative atmosphere featuring Solid State Logic 4056/E/G TR and Studer 800 & A80s, renown acoustic sound. Excellent selection of microphones & outboard gear, Sonic Solutions digital mastering. Clients include such cutting edge artists as the Kronos Quartet, Primus, George Winston, Harvey Mandell, Robert Cray, Charlie Hunter Quartet and a host of Windham Hill artists. Contact Susan Skaggs, VP/General Manager.

The Saltmine

945 E. Juanita Ave., Suite 104
Mesa, AZ 85204
(602) 545-7850; Fax (602) 545-8140
http://www.primenet.com/~saltmine

(Fifteen min. from Phx. Sky Harbor Airport) The SALTMINE is the coolest tracking/overdub facility in Arizona...We feature a classic discrete NEVE console w/ 36 33114 modules and 8 33314A compressors; a STUDER A827 24-track and 40 tracks of ADAT; Pro Tools, a dozen Synths, samplers, vintage tube mic pre's and mics and outboard gear galore!!! We tune up a sick collection of 40 CLASSIC GUITARS and VINTAGE AMPS in a comfortable "LIVE VIBE" atmosphere for the band, producer or label on a budget. CLASSIC & MODERN RECORDING.

Troposphere Studios

One Naylon Place
Livingston, NJ 07039
(201) 994-2990; Fax (201) 994-2965
http://www.garden.net/users/tropospher
e-mail: tropospherestudios@garden.net

Conveniently located in northeast NJ, just 20 miles outside of NYC, Troposphere Studios offers its clients a huge, 7,000 sq.-ft., acoustically tuned facility designed for tracking, mixing and film or video lockup. We feature an SSL 4048 G Plus series console with lots of new and vinatge outboard gear to satisfy every artist, manager and producer. Spacious iso booths offer comfort to the performer, and a 15,000 sq.-ft. warehouse can easily be adapted as a live room. In short, Troposphere is one of a kind. Call for a brochure and information.

The Hook Studios

12623 Sherman Way, Suite B
North Hollywood, CA 91605
(818) 759-4665; Fax (818) 759-0268

"The best overdub facility in L.A."

With a focus on vocals and overdubs, The Hook is a facility dedicated to serving one client. Our goal is to provide a no-compromise microphone choice for each vocalist and instrumentalist. We feature a Neve 8068, a Studer A827, and 50 microphones including AKG C-12s, C-24s, Neumann U47s, U67s, M-249s, SM-2s, 582s; Schoeps C-221s, Telefunken Elam 250, 251. We are confident that we can meet your needs.

Sound/Mirror

76 Green Street
Boston, MA 02130-2271
(617) 522-1412; Fax (617) 524-8377

We are a fully digital location recording, post-production and CD-mastering company specializing in classical and acoustic music. We do extensive field recording around the world and have been involved in complete recording projects for nearly every major classical label over the past 20 years. Full location recording with PCM-9000; post-production with Sonic Solutions, Lexicon Opus and Sony DAE-3000 and more. Your recording may be our next Grammy nominee.

PRO CASSETTE DECKS

TASCAM

202 MKIII / 302

Provides high-fidelity sound reproduction and a wide frequency response, as well as a host of features to help you easily dub, edit, record or playback using 1 or2 cassettes.

- Dual Auto Reverse, Normal and high-speed dubbing.
- 4-second autospacer.
- "Dolby HX Pro" extends high frequency performance and minimizes distortion.
- Auto sensing forNormal, Metal and CrO2 tape.
- Functions like Intro Check, Computerized Program Search, Blank Scan and One Program quickly find the beginning of tracks you want.

302 *Advanced Features–*

The 302 is 2 independent decks, each with their own set of RCA connectors, transport control keys, auto-reverse, and noise reducing functions.

- Individual/simultaneous record capability–both decks
- Cascade and Control I/O let you link up to 10 additional machines for multiple dubbing or long record and playback.

112MKII/112RMKII

A classic "no frills" production workhorse, the 112 MK II is a 2-head, cost effective deck for musicians and production studios. Extremely rugged and reliable, the 112 MK II is ideal for production mastering and mixdown. It also features a parallel port for external control and an optional balanced connector kit means it is flexible enough to integrate into any production studio.

112R MKII *Advanced Features–*

- Three-head transport with separate high-performance record and playback heads.
- Precision FG servo direct drive capstan motors.
- Hysteresis Tension Servo Control (HTSC)Virtually eliminates wow and flutter by maintaining consistent back tension on the tape all through the reel.
- Auto Reverse mode plays or records in both directions.
- Continuous Reverse mode allows you to loop the tape during playback up to 5 times, or record in both directions.

HEADPHONES

AKG

K240M

The first headphone of choice in the recording industry. A highly accurate dynamic transducer and an acoustically tuned venting structure produce a naturally open sound.

- Integrated semi-open air design.
- Circumaural pads for long sessions.
- Steel cable, self-adjusting headband.
- 15Hz–20kHz, 600Ω

JUST IN

SENNHEISER

HD 265/HD580

The **HD-265** is a closed dynamic stereo HiFi/professional headphone offering high level background noise attenuation for domestic listening and professional monitoring applications.

The **HD 580** is a top class open dynamic stereo HiFi/professional headphone that can be connected directly to DAT, DCC, CD and other pro players. The advanced design of the diaphragm avoids resonant frequenciesmaking it an ideal choice for the professional recording engineer.

marantz

CDR615 / CDR620 Compact Disc Recorder

Both next-generation stand-alone write-once CD recorders they offer built-in sample rate conversion, CD/DAT/MD/DCC sub-code conversion, and adjustable dB level sensing. Additional features include adjustable fade in/fade out, record mute time, and analog level automatic track incrementing. A 9-pin parallel (GPI) port and heaphone output with level control are also included.

CDR620 *Additional Features–*

- SCSI-II Port • XLR (AES/EBU) Digital In/Out and Digital cascading
- 2x speed recording • Index Recording and playing*
- Defeatable copy prohibit and emphasis*
- 34 key, 2-way wired remote (RC620)

*Available on CDR615 w/optional Wired Remote (RC620)

PMD Series

Portable Professional Cassette Recorders

The world standard for field recording, the PMD line is also the value leader. They all feature RCA line input/outputs, 1/4-inch headphone jack, built-in speaker, pause control, audible cue and review, tape counter, full auto shut-off and low battery indicator.

- All models except the PMD-430 have 1/2 speed playback/record capability. With 1/2 speed playback, musicians can slow down complicated passages for analysis. At 1/2 speed the pitch is lowered by exactly one octave so the notes are still musically correct.
- By recording at 1/2 speed, a three hour meeting can be recorded on a single tape. A built-in mic and automatic level control make operation simple, and built-in speaker makes transcription convenient.
- Three standard 'D' cell batteries provide up to 7-1/2 hours of operation and the optional RB430 rechargeable battery delivers up to 5-1/2 hours.

	PMD-101	PMD-201	PMD-221	PMD-222	PMD-430
General					
Stereo/Mono	Mono	Mono	Mono	Mono	Stereo
Heads	2	2	3	3	3
Inputs/Outputs					
Mic Input	1/4-inch	Miniplug	Miniplug	Mini/XLR	1/4-inch
Condenser Mic	Built-In	Built-In	Built-In	Built-In	—
Remote Jack	—	Yes	Yes	Yes	—
Modular Tel. Jack	—	Yes	Yes	Yes	—
External Speaker Jack	—	Yes	Yes	Yes	—
Record Controls					
VU Meters	—	1	1	1	2 (Illuminated)
2-Speed Recording	Yes	Yes	Yes	Yes	—
Dolby B NR/dbx NR	—	—	—	—	Yes
Mic Attenuation	—	0,-10dB, -20dB	0,-10dB, -20dB	0,-10dB, -20dB	0,-15dB, -30dB
Ambient Noise Cont.	—	Yes	Yes	Yes	—
MPX Filter	—	—	—	—	Yes
Manual Level Control	—	Yes	Yes	Yes	—
Limiter	—	Yes	Yes	Yes	Yes
ALC	Yes	Yes	Yes	Yes	—
Peak Indicator	—	—	Yes	Yes	—
Playback Controls					
Pitch Control	±20%	±20%	±20%	±20%	±6%
Bias Fine Adj.	—	—	—	—	Yes
Tone Control	Yes	Yes	Yes	Yes	—
Memory Rewind	—	—	Yes	Yes	Yes

Telex

ACC2000/4000 Cassette Duplicators

Designed for high performance and high production, Telex duplicators offer easy maintenance and operation. The ACC2000 is a 2-channel monaural duplicator, the ACC4000 is a 4-channel stereo duplicator. Each produces 3 copies from a cassette master at 16X normal speed and with additional copy modules you can duplicate up to 27 copies of a C-60 original in ***under two minutes.*** And they copy both sides at once!

ACC2000XL / ACC4000XL

The XL Series feature "Extended Life" cassette heads for increased performance and wear characteristics.They also offer improvements in wow and flutter, frequency response, S/N ratio and bias.

Easy Maintenance:

- Slanted work surface and "heads-up" cassette platform prevent oxide build up on the heads and makes cassette loading and unloading easier.
- 3 point tape guidance system eliminates skew problems and prevent unnecessary wear and tear on the tape head mechanism.
- Audio and bias along with head adjustments are made easily from the top of the unit. A switch on the back engages the head and pinch roller for convenient cleaning.

Fingertip Operation

- Individual rotary audio level controls, "Peak" LED indicators
- Side A or A/B select button
- Stop all tapes instantly, at any point during the copy or rewind cycle.
- Short tape indicators alert you if a tape stops before the original does, identifying incomplete copies caused by jam or short.
- Automatic or manual selection of rewind and copy operation:
  –Rewinds tapes to the beginning or end automatically (AUTO mode) or manually.
  –In AUTO mode the copy button activates the entire rewind/copy/rewind sequence. In manual mode, it starts copying immediately.

Telex Copyette EH Series Duplicators

The Copyette series produce high quality, low cost cassettes in large quantities at approximately 16X normal speed. The 2 versions are capable of duplicating either 1 or 3 cassettes at a time. Available in both mono and stereo.

Stereo Copyette 1•2•1

Weighing only 8 lbs. (3.6 kg), this unit has a durable, impact resistant housing and includes a removable power cord, carrying handle and protective cover. Optical, non-reflective end-of -tape sensing system provides gentle tape handling.

Stereo Copyette 1•2•3

This duplicator copies both sides of three cassettes at once, yet it's as small as the 1•2•1. It weighs only 12 pounds (5.4 kg) and includes a hard cover to protect the unit while not in use. It uses all DC Servo motors for the ultimate in reliability.

MICROPHONES

AKG

C414B/ULS

A reputation for flawless performance and uncommon flexibility in the most demanding studio and concert sound applications.

- Dual 1" Gold-sputtered diaphrams.
- Flat on-axis response.
- 126dB dynamic range.
- Switchable 10dB and 20dB pad.
- 20Hz–20kHz.

JUST IN

CAD

Studio Condenser Mics

The "bench mark" for cost and performance, the Equi series of microphones incorporate a unique servo design and exceptional flexibility to provide extraordinary ballistic capability and exceptional transient response.

E-300

A multi-patterned side address mic that combines vintage capsule design with advanced head-amp electronics, the E-300 has an unusually wide frequency response of 10 Hz to 20 kHz and an exceptional dynamic range of 137 dB. Also extremely low self noise of 11dB. ideal for the most critical application

Shown w optional ZM-1 Shockmo

Unique powering of all mics is accomplished with a pair of rechargeable nicad 9-volt batteries in combination with 48-volt phantom power. This overcomes inherent current limiting associated with most phantom power supplies and can supply 10X the current.

E-200/E-100

The first member of the Equitek family, the **E-200** is al a dual capsule side address multi-pattern condenser m but with lower specifications than the E-300. The **E-10** uses the same electronics as the E-200, but with only one of the same capsules in a supercardioid pattern.

- Frequency response of 10 Hz to 18 kHz.
- Dynamic range of 137 dB • Low self noise of 16 dB.

audio-technica.

AT4033

Cardioid Capacitor Microphone

The AT4033 is a transformerless, studio microphone designed for use in the most demanding applications.

- Gold-plated, "aged-diaphragm" condenser element wi internal baffle plate to increase S/N ratio which, coupl with low-noise transformerless electronics, makes the AT4033 ideal for critical digital recordings.
- Dynamic range is 123 dB without built-in attenuator.
- Accepts up to 140 dB SPL without distortion above 1 T.H.D. A built-in switchable 10 dB (nominal) pad increases it to 150 dB.
- Internal open-cell foam windscreen.
- Integral 80 Hz hi-pass filter for easy switching from a flat frequency response to a low-end roll-off.

AT4050/CM5

The AT4050 multi-pattern condenser expands upon the AT4033 to set the standard for studio performance mics.

- 2 capacitor elements.
- Cardioid, Omnidirectional, and Figure 8 polar pattern settings.
- Vapor-deposits of pure gold on specially-contoured large diaphragms are aged through 5 steps to ensu optimum characteristics over years of use. Transformerless circuitry results in exceptional tran sient response and clean output even under extrem ly high SPL conditions.

PROCESSING

BEHRINGER

MDX 1200 Autocom

Attack/Release times, with Intelligent Program Detection.
Noise gate, switchable Soft Knee/Hard Knee characteristics for varied sound pressure levels.
Bright, illuminated LEDs show gain reduction.

MDX 2100 Composer

Integrated auto/manual compressor, expander & peak limiter.
Compresses "musically" in dynamic range without any audible "pumping" or "breathing".
Attack & release times are controlled automatically or manually.
Interactive Gain Control (IGC) combines a clipper and peak limiter for distortion-free limitation on signal peaks.
Servo-balanced inputs and outputs are switchable between +4dB and -10dB.

APHEX

107 Tubessence
2 Channel Mic Preamp

The 107 delivers outstanding sonic performance, as well as a great degree of presence, detail, openness and image.
2 independent channels with front panel XLR inputs
Up to 64dB of gain available
20dB pad with red LED indicator, 2 LED input meter
Full 48V phantom power with red LED indicator
Low cut filter with red LED indicator: 80Hz, 12dB/octave
Polarity inversion switch with LED indicator
Individual channel remote mute capability
Switchable +4dB/-10dB output with 1/4" TRS phone jacks

TUBESSENCE combines the best attributes of both tube and solid state circuitry to provide performance unmatched by conventional designs. The solid state front end is transformerless and only high end capacitors are used in the signal path. The tube circuit imparts the sonic characteristics of tubes without the extremely high voltages, heat, fragility, and short life span of conventional tube circuitry.

109 Tubessence
Parametric EQ

The Aphex 109 is an extremely versatile and high performance parametric vacuum tube EQ with unique features, flexibility and sound.
Great for "warming up" digital signals.
True tube circuitry in the output stage.
Dual (stereo) 2 band or mono 4 band EQ configuration offers flexibility from general sweetening to critical problem solving.
Operates in the EQ flat mode yet still passes signal through the Tubessence vacuum tube stage.
1/5 octave to 2 octave bandwidth adjustment.
Switchable -10dBV/+4dBu operating level.

t.c.electronics

Wizard M2000
Studio Effects Processor

The M2000 features a "Dual Engine" architecture that permits multiple effects and 6 different routing modes. There are 250 factory programs including reverb, pitch delay, chorus, flange, phase, EQ, de-essing, compression, limiting, expansion, gating and stereo enhancement. The M2000 also features 20-bit A/D conversion, AES/EBU and S/PDIF digital inputs/outputs, "Wizard" help menus, 16-bit dithering tools, Tap and MIDI tempo modes and single page parameter editing.

HIGH-END MIC PRE-AMPS

Focusrite

Red 1 / Red 8 Mic Pre-amps

The Focusrite Red Series is instantly recognized by leading engineers worldwide for its fidelity, musicality, precision and control. The Red1 is a 4 channel mic pre while the Red 8 has 2 channels. Both are ultra-high quality for use in digital recordings, and with high-quality ribbon, valve, and condenser microphones.
Each channel offers–
- Phantom power & Phase reverse
- Warm, and crystal-clear.
- Easy-to-read, accurate illuminated VU meters.
- Low noise floor with high gain bandwidth.
- Mic gain has 66dB range.

ISA 215 Dual Mono Mic-Pre & EQ

HOT!

Engineers, producers, and musicians worldwide are familiar with the legendary ISA 110 mic pre/EQ that forms the heart of the Focusrite Studio Console. Frequent requests for a 19" rack unit with the same circuitry have led to the development of this high-quality studio device.
- 2-independant mic pre-amp & EQ.
- Microphone inputs feature variable gain and switchable phantom power.
- Independant HF and LF shelving sections.
- Overlapping Upper and Lower Mid EQ w/variable bandwidth.
- Independant High and Low pass filters.
- Integrated PSU
- Large, easy to use control knobs and switches.

Focusrite Green Range
NOW AVAILABLE!

ALESIS

3630 Compressor RMS/Peak 2Ch.Comp/Limiter/Gate

The 3630 is a dual-channel compressor that offers Ratio, Threshold, Attack and Decay controls to handle the toughest signals. It also offers a choice between RMS and Peak compression styles, plus Hard and Soft Knee dynamic curves for every application from subtle gain control to in-your-face punch. Ideal for use in applications from studio recording and mixing to live sound reinforcement and broadcast.

M-EQ 230 Dual 1/3 Octave/Precision Equalizer

Used extensively in recording studios since 1989, the M-EQ 230 provides 2 independent 30-band 1/3 octave graphic EQ's in a single rack space. Covering every band from 25 Hz to 20 kHz in 1/3 octave increments the M-EQ 230 is ideal for tuning the monitors in your project studio or even getting the most out of a home stereo setup.

MidiVerb 4 2 Ch. Parallel Processor w/Auto Level Sensing

The MidiVerb 4 extends Alesis' line of affordable professional multi-effects processing. It provides the sonic quality and programming power required for studio recording and live sound reinforcement at an affordable price.
- Wide variety of dense, natural-sounding reverbs, rich chorus and flange, versatile delay, rotating speaker simulation, pitch shift, panning and more.
- Auto Level Sensing feature automatically sets your input signal to the optimum level to take advantage of the MidiVerb 4's wide dynamic range.
- 18-bit oversampling digital converters add to the excellent audio fidelity, with a resulting 20 kHz frequency response and a dynamic range over 90dB.
- 128 preset and 128 user-editable programs.
- Mono or Stereo single effects, dual-mono effects, and multi-chain configurations for 2 or 3 effects at once.

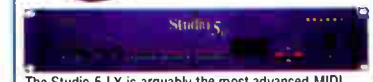
QuadraVerb 2 2 Ch. Master Effects w/Digital I/O

Alesis' most powerful signal processor, the QuadraVerb 2 offers the amazing audio fidelity of a high-end dedicated vocal reverb while providing powerful multi-effects capabilities.
- 300 programs (100 preset and 200 user-editable).
- Octal Processing allows use of up to 8 effects simultaneously in any order. Choose between over 50 different effects types for each block, including reverb, delay, chorus, flange, rotary speaker, pitch shift, graphic and parametric EQ, overdriver and more.
- 5 seconds sampling, triggerd pan, and surround sound encoding are also built in.
- Selectable -10 dB and +4dB levels, servo-balanced TRS inputs and outputs.
- AOAT Digital Interface allows you to work entirely in the digital between the Q2 and an ADAT XT.

MIDI

OPCODE

Studio 5 LX
Macintosh MIDI Interface



The Studio 5 LX is arguably the most advanced MIDI interface on the market today. It incorporates a MIDI patchbay, MIDI processor, and SMPTE synchronizer with it's interface functions, all in a 2 rack space unit.
- 15 Independant MIDI ins and outs.
- SMPTE reads and writes all formats– 24, 25/29.97/29.97DF/and 30.
- Network multple units, 240 MIDI channels each.
- 128 patches, unlimited virtual instrument controls.
- 2 assignable footswitch inputs, 1 controller input.
- 8X speed when used with OMS.
- Internal power supply.

Studio 3 & 4 MIDI interfaces, and Vision sequncing software also available.

JUST IN!

Mark of the Unicorn products now available.

PROCESSING

HOT!

White instruments

4200A, 4400 & 4700
L-C Series 1/3 Octave Active Equalizers

- The 4200A (active, cut only graphic EQ) and 4400 (active graphic EQ) provide 28 1/3-octave filters on I.S.O. centers from 31.5 Hz to 16kHz. Hand-tuned inductor/capacitor (L-C) resonant circuits provide the ultimate in performance and reliability.
- Better than 108 dB signal-to-noise ratio with no degradation even when filters are used.
- Continuously adjustable high and low-pass filters band-limit unwanted subsonic and ultrasonic noise.
- 3 outputs and powered accessory crossover socket facilitate distribution and level control to three subsystems. (Bi-amp or tri-amp operation with optional 2-way and 3-way plug-in crossover networks.
- The 4200A has a -15 dB control range, the 4400 has a ±10 control range.

The **4700** is similar in specifications to the 4200A/4400 EQs, the difference is that all functions of the 4700 are digitally controlled.

DSP 5024
Digital Signal Processor

- 2 input, 4 output signal processor with 107 dB of dynamic range.
- Crossover can be configured as 2-way, 3-way, 4-way or dual 2-way.
- Adjustments can be performed in frequency 1Hz steps, slope (6, 12, 18, 24 dB/oct.), shape (Butterworth, Bessel, Linkwitz-Riley).
- Parametric filters include boost, cut, high pass, low pass, rising shelf and falling shelf, adjustable in 1 Hz steps, 1/10 dB steps and bandwidth from 1/70th octave to 4.8 octaves.
- Delay up to 680 ms on each output.
- Ten non-volatile memories and presets with password security.
- Remote preset select interface includes PA422.

PORTABLE DAT RECORDERS

TASCAM
DA-P1

otary 2 head design
id 2 direct
ive motors.
R mic/ line
puts
/phantom power)
nalog and S/PDIF (RCA)digital I/O
/44.1/48kHz sample rates & SCMS-free recording.
uilt in MIC limiter and 20dB pad
RS jack w/ level control for monitoring
cludes shoulder belt, AC adapter, & battery.

HHB
DR1000/PDR1000TC

head Direct Drive transport
alanced XLR mic and line analog inputs and two RCA
nalog line outputs. Digital inputs and outputs include
/PDIF consumer (RCA) and AES/EBU XLR
eft/Right channel mic input attenuation selector(0dB/-
0dB)
3v phantom power, limiter & internal speaker.
uminated LCD display shows clock and counter, peak
vel metering, margin display, battery status, ID num-
er, tape source status and machine status.
ickel Metal Hydride battery powers the PDR1000 for
vo hours, AC Adapter/charger included.

R1000TC Additional Features:
ll standard SMPTE/EBU time codes are supported,
cluding 24, 25, 29.97 (drop frame and non-drop
ame) and 30 fps.
xternal sync to video, field sync and word sync.

STUDIO DAT RECORDERS

FOSTEX
D-25/D-30

ro DAT master recorder featuring confidence monitor-
ng and insert editing with a 4-head transport.
ync functions include the ability to chase sync to a
aster timecode. Resolves to WORD/VIDEO/DAT
ame signal + WORD.
ndependent left/right recording.
crub from tape or buffer, Jog/ Shuttle 1/2X to 16X.
MPTE/EBU TC generator/reader
n board chase/lock sync, RS-422 slot.
-head 4-motor transport.
6 MBit RAM bufferforinstant Start & Edits.

30 Additional Features:
arge, high resolution backlit LCD display which shows
ll parameters at a glance
ituitive menus from 10 dedicated soft keys
/ RS-422 ports for added flexibility.

FOSTEX D-15 TimeCode DAT NOW AVAILABLE!

Panasonic.
SV-3800/SV-4100

SV-3800/SV-4100 feature highly accurate and reliable
nsport mechanisms with search speeds up to 400X normal.
lh use 20-bit D/A converters to satisfy the highest profes-
nal expectations. The **SV-4100** features instant start, pro-
m and cue assignment, enhanced system diagnostics, multi-
digital interfaces and more.

Roland®
A-90EX Master Controller for the Next Century

The A-90EX is an 88-note, weighted master controller with the best keyboard action currently on the market—bar none. It offers incredibly realistic piano sounds, powerful controller capabilities and 'virtual' programmable buttons which can be configured to operate your software and other devices. The A-90EX combines the majestic sound of a concert grand, the expressive action of a fine acoustic keyboard and the comprehensive MIDI functions of a master controller—all in a portable stage unit.

Keyboard Controls
- Master Volume Slider and Global Transpose features allow you to send control commands to your entire MIDI setup without changing the balance between connected units.
- Sequencer Control Section lets you control song selection, tempo and other parameters quickly.
- The keyboard can be split into eight zones and features 20 different controls and connectors.

Superb Sound
- 2 types of stereo-sampled grand pianos, various acoustic and electric pianos (including a great classic Rhodes).
- 128 patches selected from Rolands extensive "JV" and "JD" series library.
- 64-voice polyphony, Built in effects

Extensive Performance Configurations
- Stores up to 64 Performances,(128 w/optional M-512E card) which may consist of up to 4 preset Patches along with various user-configurable parameters such as zone, effects, and MIDI channel.

88 Key Keyboard
- Proprietary 88-note hammer-action, velocity sensitive keyboard w/aftertouch offers the natural resistance and rebound of an acoustic piano and control of a synth.

JV-2080 64-Voice Synthesizer Module

JUST IN

Roland resets the standard with the incredibly expandable JV-2080 64-Voice Synthesizer Module. This amazingly powerful package offers unprecedented expandability, digital signal processing, and remarkable operational ease, all housed in a 2-unit rack-mount design

Features
- 64-Voice polyphony / 16-part multitimbral capability.
- 8 slots for SR-JV80 series expansion boards.
- 3 independant effects sets plus independant reverb/delay and chorus.
- 64-Voice polyphony/16-part multitimbral capability.
- NEW patch finder and Phrase Preview functions for easy access to the huge selection of patches.
- Large backlit graphic display
- Compatable with the JV-1080, XP-50, and XP-80.

NEW SR-JV80-10 "BASS & DRUMS" EXPANSION BOARD NOW AVAILABLE!

DM-800
Digital Audio Workstation

A compact, stand-alone multi-track hard-disk recorder that provides an amazing array of features at an unbelievably low price. Used music production, post production and broadcast, it performs all digital mixing operations from audio recording and editing to rotation track-bouncing and final mixdown. It supports SMPTE and MTC and features a built-in Sample Rate Resolver for sync with any time code.

NEW PRODUCT!

VS-880 V-Xpanded
Digital Studio Workstation

The VS-880 V-Studio Digital Workstation, is now even more versatile with the release of the VS-880 V-Xpanded. This new version incorporates powerful additional functions that allow you to get the most out of the VS-880's incredible creative potential.

NEW FEATURES

Mixer Section
- Auto Mixing Fuction records and plays back song data in realtime including fader movements and panning positions. No external sequencer is required.
- Easy recording with an inserted effect in "INPUT-TRACK" mode.*
- Process the master output with a specific inserted effect such as total compression.*
- Scene change by MIDI program change message.

Recorder Section
- Simultaneous playback of 6 tracks in MASTER MODE recording.
- Digital output with copy protection.

Effects Section*
- 10 additional effect algorithms (31 total) including Voice Transformer, Mic Simulator 19-band Vocoder, Hum Cancelor, Lo-Fi Sound Processor, Space Chorus, Reverb 2, 4-band Parametric EQ, 10-band Graphic EQ, and Vocal Cancellor.
- 100 additional preset effects patches.
- Effect change by MIDI program change message.
- Effect edit by MIDI control change message.

And More...
- Additionally, over 20 powerful and convenient features in editing/sync sections have been added.

The functions marked * require the optional VS8F-1 Effect Expansion Board

VS-880-S1 SYSTEM EXPANSION KIT

Current owners of the VS-880 now enjoy unprecedented support from Roland with the release of this System Expansion Kit. Supplied on a ZIP diskand including a new owner's manual, the VS-880-S1 will provide current version users with all of the benefits of the VS-880 V-Xpanded at a fraction of the cost.

HARD DISK RECORDING

ATTENTION MAC USERS–

digidesign

PROTOOLS PROJECT, AUDIOMEDIA III, MASTERLIST CD, & POWERMIX DAE NOW AVAILABLE!

SOUNDSCAPE
DIGITAL TECHNOLOGY LTD.

SSHRD-1
Hard Disk Recorder/ Editor

A professional Multitrack Digital Audio Workstation for the PC, the SSHDR1 combines the highest quality processing hardware with easy-to-use Windows-based software for the most complete and affordable solution for high quality digital audio recording and editing on the PC. The SSHDR1 has over 50 powerful editing tools and is expandable from 8 to 128 tracks, with up to 32 inputs and 64 outputs. Ideal for a wide range of applications ranging from, recording music in project studios with an 8 track system, to multiple unit 32, 48 and 64 track systems used by major TV and film studios for audio post productionlinked to video.
- All audio processing, disk handling and sync. is carried out by the powerful DSP in the hardware, so any PC can be used. Even a 386!!!
- Up to 64 virtual tracks all with Move, Copy, Trim, Slip, Solo, Repeat, Delete, Cut, Glue edit functions.
- Solo/Multi-track audio scrubbing, 999 named markers
- Realtime fade In/Out (8 selectable curves).
- Automated Punch In/Out, Volume contouring.
- All SMPTE formats, including 29.97 and 29.97 DF.
- AV file support w/full sync. (Req.Video forWin.V1.1).
- Optional EDL File support w/full auto conform via RS422.
- Volume and Pan controls, assignable fader grouping.
- Reverse/Phase Invert/Compute tempo.
- Optional Time Module features Time stretch/Time compression Pitch shift and Sample rate conversion.
- 8 physical output channels, selectable for each PART
- Non-destructive sample-resolution editing.
- Cycle record mode with stacked TAKES and pre-roll (like analog multi-track tape recorders)
- **AND MUCH MORE...**

FOSTEX
DMT-8 VL

JUST IN

The latest in the Fostex HD recording family, the DMT-8 VL truely brings the familiarity of the personal multi-trac to the digital domain.
- 18 bit A/D, 20 bit D/A conversion.
- 8 channel mixer, CH. 1&2 feature both mic & line level
- 2 band EQ and 2 AUX sends per channel
- Cut/Copy/Move/Paste within single or multiple tracks.
- Scrub from tape or buffer, Jog/ Shuttle 1/2X to 16X.
- Built-in MIDI Sync., 6 memory locations
- Dual function Jog/Shuttle wheel provides digital "scrub" without pitch change.
- Divide the drive into 5 seperate 'virtual reels' each with it's own timing information.
- **NO COMPRESSION!**

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—FROM PAGE 69, JOHN MEYER

Then Mark called his friend Roger Nichols, who came up and listened to this prototype. Roger thought they were wonderful and wanted a pair. He took our alpha systems for a Rickie Lee Jones album he was doing. He said that we shouldn't keep knowledge like this to ourselves—that we had to release it and that he'd help us. And that's how it actually happened.

The HD-1 got us into the studio monitor field through the back door. We're now thinking of building more products for that market, and have some new designs we're working on that are more powerful that the HD-1 or HD-2.

You also developed the SIM—Source Independent Measurement—system for evaluating your own products, and which you then offered for sale. Were you surprised by SIM's success?

No. I had pretty good intuition that our industry would like a measurement tool if it wasn't too hard to use, and would work with music itself. We built a really good tool that confirmed data the way people are used to seeing it. That's one of the reasons we did it as a frequency and a phase response, with correction filters rather than doing it in a time domain, which was proposed by some colleagues at Stanford. That would have made it very unfamiliar for our world; users wouldn't know how to do a complex correction. But correcting the frequency responses is pretty intuitive. I didn't think that we would build as many as we have, but some people really like the tools. These things always go further than you imagine.

The latest developments—your self-powered MSL-4 and MTS-4 full-range systems—appear to be natural extensions of what you've done before.

Actually, the MTS-4 is pretty sophisticated because it's three tuned boxes, each with its own driver. The MTS-4 integrates three cone drivers, a high-frequency horn driver and quad amplifiers in a single cabinet under 57 inches tall. The MSL-4 features a cone driver, an HF horn driver and an amplifier for each transducer in a cabinet only 36 inches tall. We use air summation to combine the energy so it can get quite high, peak powers by having it distribute over multiple drivers. The self-powered designs allow us to try things that you probably wouldn't attempt in the field, in terms of quad amping or something that would be very difficult with a separate amplifier. As soon as you change the level, you change the crossover points. So the concept really lends itself to amplifiers without individual level controls. It's one thing on a bi-amp system when they turn the low up or down, but multi-way systems become more complex. You have to figure out ways of controlling the sound through equalization. We created a virtual crossover called the VX-1 that acts intelligently so you can lower the mid range or the lows or the high drivers with shelves.

You also incorporate IntelligentAC that automatically handles automatic voltage selection, EMI filtering, soft current turn-on, surge suppression and dual circuit breakers for each speaker. Was that intended to make life simple for system designers?

Yes. During a concert the voltage levels can change dramatically over the course of an evening. We had to have some way to handle that, plus generators and bad power. And if the tour moved outside of the U.S. or England—like China or Japan—you're likely to see anything! We also wanted the system to be immune from hum, so that if you have different power feeds on different phases it wouldn't be a problem. Lighting people know more about all of this because they deal with it all the time. I felt that we needed something that you didn't have to think about; you just plug it in.

You remove a lot of problematic variables by offering self-powered systems. You also developed the RMS [Remote Monitoring System] that allows the user to interrogate each component and make critical adjustments. Is this where Meyer Sound's thinking is heading?

Yes. In fact RMS seems to be becoming more and more popular. We've developed it into what we call Icon Modes, with [computer-generated] pictures of speakers with lights on them so you can see the way the system is set up. We also put in mute/solo functions as an option; there's a jumper inside the RMS module [provided on each RMS-capable cabinet] that you have to physically put in place. Some of the Broadway designers didn't want any possibility that the system could be muted accidentally!

We just can't afford to offer digital control and make it more difficult for people to use—fighting computers and protocols. RMS is intended mainly to read the status of each cabinet—to determine the temperature, and make sure that everything looks okay, if your dri-

vers are in there or not, or the power you're putting out. It gives you more information than you normally have; you don't have to see the lights on the amplifier. What we want to do is bring back all the information you need and still have the amp in the flown array.

Some people argue that if the amplifier is up in the air, what happens if it breaks? But, statistically, the drivers—because they're mechanical—break more often than the amps! No matter what you do, you have to go up in the air to replace the drivers. All of these problems are reduced if you don't overpower the woofer.

What are you currently working on?

Actually, we're building projectors for sound beams—a parabolic-type projector that will go from 600 to 14,000 cycles, to project sound 600 feet away. It's going to be used for a concert in Japan that shoots sound across an open air tent. They are going to use four or five, so we'll have 40 degrees by 10 degrees [propagation]; they produce 130 dB at 100 feet. We're also starting to develop a high-powered version of our main studio monitors.

What other future plans do you have?

Probably refining things. We're working on a very powerful array program that can measure each component and show their propagation patterns and interactions with each other. This is even difficult to do on a Pentium, so we're looking at maybe a Pentium plus some RISC engines for the real-time processing power necessary to calculate the response of sound systems in rooms.

Looking back over your long and varied career, what was your greatest challenge?

For a company like us, speaker evolution is a long road. To be able to develop the HD-1 we were fighting against the theory that it couldn't be done; that's always hard, because I only have my intuition and belief that man can do anything.

Of our 100 full-time employees, around a third are in the engineering department; we have a lot of people in R&D. It's a big commitment, but we have a very good bank. They understand that we're in the entertainment business and if you don't entertain with what we're doing, and create excitement, then nobody's interested. ■

Mel Lambert currently heads up Media&Marketing, a consulting service for pro audio firms and facilities.

—FROM PAGE 23, NEXT YEAR'S GEAR

that produces results that are never what you expect, and often bear little resemblance to the original, but are nevertheless always valuable. Features have evolved over the years it has been in development: Some prototypes have very sharp, angular filter slopes; some produce a weird type of spatial distortion in which all signals seem to come from the same side; and some boast a distinctive blue front panel.

Warhol—A brilliantly designed, very expensive vocal filter that looks like two soup cans with a string between them, but sounds just like two soup cans with a string between them.

Dali—When in the course of human events, the cat in the hat strikes back. While you were sleeping, I boiled a three-minute egg, but the plum of my aunt is on the stove of your uncle, and time is also a relative. Meeska-mooska-mousketeer, ask what you can do for your country.

Siskelandebert—An unusual dual-channel double-acting expander/limiter, with ability to make sound either very thin with a "shiny" top, or somewhat stodgy and "phat." Power supply runs on AC, DC or popcorn (with extra butter). Has two modes, "Thumbs Up" and "Thumbs Down," and correct choice of mode can make or break any program material that passes through it.

Seinfeld—Waveform generator with four modes: basic Sein (simple waveform with little or no resonance), Kramer (a spiky sawtooth, very unstable), Elaine (spunky, high-pitched and annoying), and George (phat, whiney and really boring). Output signal is very low—in fact, it's just about nothing.

St.Croix—Snazzy, oddly appealing, oversampling, high-output, multipurpose workstation/musical instrument/game design engine/media analyzer/time machine/exhaust tuner/food processor with a keen sense of history and a well-developed sense of its own importance. Doesn't take well to tweaking, although it loves to do so to other equipment. Extremely popular and durable, even though users have yet to figure out exactly what it does. ■

Paul Lehrman, writer, composer, educator and prognosticator, takes this sort of thing very, very seriously. Thanks to Marty, Mike, Al and the rest of the gang at LLP&P.

PRODUCER'S DESK

—FROM PAGE 62, STEVEN EPSTEIN

or the '70s, when the approach of classical recording was to use multitracks and a lot of mics, the musicians, and particularly conductors, felt that, "Okay, the trombone's not loud enough, but we can bring it up later in the mix." Some conductors still have that philosophy, or mentality. Now, for the most part, what we're doing is mininal miking, although we will also set up many mics, so we're not caught short. Normally we hone and refine our two- and three-mic pickup, and in the proper circumstances that's what gets put on the final CD. Going back to the trombone example, my inclination would be to say, "Can you have the trombone play up a little more?" An instrument playing more loudly will generate more harmonics and excite the room to a greater degree. This more intense sound is different than just turning up the level of an instrument to make it sound "louder." It's not natural.

Do you have certain engineers you like to work with?

I've been with CBS and then Sony Classical since 1973, and up until about four years ago, a fellow named Bud Graham did a lot of the classical work with me. Now, I work with four fine engineers: Richard King, Charles Harbutt, Rob Rapley and Mark Wilder. I enjoy experimenting with different mic setups, especially refining the two-microphone technique. This only works in a good acoustic environment with an ensemble that is well-balanced to begin with. In classical, the room is so important, particularly with digital, and if you're using fewer mics.

To what degree do you keep up with the technical side of recording?

I'm very excited about technological advances. As a producer, I'm probably a little more involved than some of my colleagues in the technical end of things, just because I'm interested in it.

I derive much satisfaction from selecting microphones for my sessions, in conjunction with the engineer. My favorite mic for several years has been the B&K 4003 omni (4009 matched pair). The 4009 usually serves as my main pickup for orchestral and smaller ensembles alike. Sometimes I've used the B&Ks in a "tree" configuration. The mics are characterized by a very open, natural bass response, complemented by an extended, very smooth high end. The new Neumann TLM 149 has very fine sound in the tradition of the classic M49 and M50. Depending on the situation, I might select the Schoeps MK-2 or 2s for an overall pickup. I'm still partial to the Neumann KM84 cardioids for string spots if we need them.

Did you embrace digital early?

I did. Fortunately, working for Sony you're on the cutting edge of trying out all this wonderful new equipment. What we like to do when possible is take along prototypes of different pieces of equipment on sessions and run them in tandem with our normal setup. Then we listen later on and evaluate the equipment.

What are your favorite places to record?

For classical I prefer a good-sounding hall. I love the Musikvereinsaal in Vienna, the Concertgebouw in Amsterdam. In Baltimore there's a wonderful place called Meyerhoff Hall that has great acoustics for recording. Heinz Hall in Pittsburgh has fine acoustics; I've done a lot of work there.

As far as studios are concerned, Abbey Road [in London] is still my favorite. To me, it's like The House That Elgar Built, because he opened it with the first recording. It's a great-sounding room. The stage at Skywalker Ranch [Novato, Calif.] is a lovely, good-sounding room. It can be tailored really nicely with absorptive and reflective panels on the walls, and it's a big enough room—along the lines of Abbey Road, maybe not quite as big—where you can get a really fine sound, from a chamber group to a reasonably sized orchestra.

I used to love the old [CBS] 30th Street Studios. It was such a tragedy when they tore that down. You walked in there and you had this incredible sense of the history of the place and all the great music that had been recorded there, from Stravinsky to Broadway shows. To this day, I avoid that block when I'm walking in the area. As far as I'm concerened, it's still there. [Laughs]

Where do you do your mixing?

I do all my mixing, jazz and classical, here at Sony. Most of our mixing is done on a Harmonia Mundi digital console, but if it's more than 24 tracks, such as in jazz, we'll use the new SSL 9000, which is a wonderful board, or we'll use the Neve 8068 in Studio B.

Where do your own musical tastes lie? You've been all over the map, producing baroque music as well as Schoenberg and Ives and other modern composers.

That's a tough one. Frankly, whatever I'm listening to at the time becomes my favorite. Charles Ives is one of my favorite composers. I love Dvorák and Tchaikovsky. Bach is a musical god, of course, and Mozart. I'm also very much

an Anglophile. I love Elgar and Vaughn Williams and Delius. If I were to just go out and listen for my personal enjoyment, I'd probably say the English school and Baroque.

Have you recorded much modern classical music?

Yes. In fact when I first started, we had a series called The Modern American Composers Series, and we did the music of George Crumb, which I found quite interesting. Just reading the scores was a fascinating experience. And there are various other people—Morton Feldman, Peter Leiberson, Richard Danielpour.

It's certainly a different aesthetic.

It's a different aesthetic, but it's still the same idea—to capture on tape what the artists are doing. Part of what's wonderful about this job is the diversity. I can do the Crumb work, which is this very interesting, highly percussive chamber piece, and then turn around and do a Haydn string quartet. It's been a wonderful education.

I would think it could be a full-time job just keeping up with Wynton.

[Laughs] It almost is. He's so prolific. And so versatile. He can go from hardcore traditional jazz to playing Baroque music on the piccolo trumpet, and you listen to that and you never think, 'Oh this is a jazz player trying to play piccolo trumpet.' With Benny Goodman, who was a great, great musician, you knew when he was playing the Mozart clarinet concerto that he was still a jazz player, with that vibrato of his.

What do you think when you look at the Billboard classical chart and you see that the Number One album for months has been the soundtrack for the Beethoven biopic, Immortal Beloved***?***

I feel good because I was involved in that recording! [Laughs] But I know what you're getting at. That album has already gone Gold, and for me, if it takes a film to let people know that there was such a person as Beethoven, so be it. A lot of people have discovered his music through that film, and I think that's great. It's rather discomforting to think that it takes a film to do this now, because there isn't as much appreciation in the culture of the great composers as there used to be. I think the state of musical education in this country is abysmal, and that's very sad. The Corporation for Public Broadcasting and A&E [the Arts & Entertainment cable network] have done a lot to expose people to classical music, but it's just about stopped being taught in the schools. So I'm for anything that exposes people to classical music. ■

—FROM PAGE 170, OFF THE BEATEN TRACK

The Hobo's Last Ride was tracked and mixed in a just a few days, Emrich says. "Typically, they'd come in, rehearse a song maybe once, and then we'd record it. Most of it went like that. They like it to be fresh. They don't like beating something to death, because the spontaneity and life disappears when you play something over and over again. I agree with them completely."

Jim Emrich's Web address is www.cedarhouse.com.

PHOTO: MICHAEL WONG

God Street Wine, L to R: Lo Faber, Jon Bevo, Aaron Maxwell, Tomo, Dan Pifer

God Street Wine: *Red* (Mercury). Because they are known for the strength of their live perfomances, and have developed a fairly large, rabid hippie following on the East Coast, God Street Wine have been frequently lumped in with Blues Traveler, Phish, Aquarium Rescue Unit, Black Crowes and the other so-called "HORDE" bands—*none* of whom sound very similar to each other in my view. One invariably hears that these bands are best enjoyed in a sweaty club, where they're able to cut loose and really jam. Records, the rap goes, don't do these bands justice. Having not seen GSW live, I can't comment on their JQ (jamming quotient). But I can say that *Red* is a helluva record, definitely one of my favorites of 1996. The band's rock is fairly straightforward, with touches of Dylan, funk, gospel, Pink Floyd and reggae thrown into the soup; it's hard to pigeonhole (and that's good). It's also a great-*sounding* record, one that's not bound by the limitations of how the band comes across live. The band and engineer Malcolm Springer did a great job of making a disc that's loaded with interesting vocal and instrumental textures, giving the album as a whole a rich and varied sound. Lo Faber and Aaron Maxwell's guitars are big and beefy, and keyboardist Jon Bevo manages to make the B-3 sound downright sumptuous. A fine effort all the way around.

Red is actually the group's fourth album; in eight years together, they've put out two independent records, a criminally overlooked album called *$1.99 Romances* on Geffen, and the Mercury release. The group decided to eschew traditional studios this time around, choosing instead to record in a house three members of the group were inhabiting in Ossining, New York. Malcolm Springer, who assisted on the Geffen album, and who has a long engineering history in Nashville and Memphis, put together the studio for the project along with Brian Duffy, bringing in a Mackie console and a collection of Neve modules—1073s, 1070s, 1066s. "The main tracks were Mackie, though," Springer says. "I would run things like the kick and snare through the Neves, and everything else on the drums would be Mackie. Then I'd bounce each individual track through a Neve module. Some people probably think that's crazy, but I think it sounds great." Springer used four ADATs for a total of 32 tracks. "We had one LA-2A and a bunch of Behringer compressors," he adds.

"The equipment was set up all over the house," Springer continues. "They set the control room up in the living room. They got a grand piano there, a B-3, the whole works. The main tracking area was Lo's bedroom, which is huge. Lo's bed sits in the corner, and the whole floor is brick and the ceiling is probably 14 to 16 feet high. In the cellar we put the Mesa Boogie [amp], right under the control room. And we'd put his guitar amp in my bedroom. The bass was in the attic, three floors up. We tried everything—on 'RU4 Real,' I couldn't find a good-sounding vocal room for that song, so we recorded it in Lo's van.

"Every song on the record has its own personality, and that's what they set out to do," he adds. "We wanted to get different drum sounds, get different guitar and keyboard sounds, so that every song had its own story and its own feeling. Like 'Get on the Train' sounds like it was done in 1960 or something. Then you hear 'Which Way Will She Go,' and it's got this incredible bottom end and everything sounds so fat. The snare drum on that song was miked to a Fender Twin, which was a nice sound. The lead vocal is triple-tracked—two of them are through a Leslie, left and right, and then there's slap-back on each side to make it sound even more watery. The vocal in the center is dry. Our workhorse mics were TLM 170s and U87s. Some of the guitars were close-miked with 421s."

Much of the record was cut live, though some of its sonic depth is the result of prudent overdubs. Springer says that about half the album ended up being his rough mixes. Signal processing used during the mix included AMS RMX, PC2290, SPX 990 and REV5s.

When Springer and I spoke last summer, he noted, "I had already cut 30 new tunes on the band before the record even came out. And we've also now got some nice tube gear—a Manley stereo compressor and an Imperion tube mic, which is super. It's handmade in Pennsylvania and it's the best-sounding mic I've ever heard, period." The group is incredibly prolific, with a catalog of 600-plus original tunes, Springer says. "They're just extremely creative people, and I think you can hear that in the record. We went in determined to do something different; not the same-old, same-old. And even if we don't sell 10 million records, at least we can hold our heads up and know we made a cool and different-sounding record."

God Street Wine has a Web site that's packed with info at www.netspace.org/gsw. ■

—FROM PAGE 224, ENHANCED CD

ting has been custom tweaked almost on a weekly basis over the past year to deal with such problems.

But things are looking up. A year later, CD plants are now much better prepared for multisession. Doug Carson is also about to update his DDP (Exabyte) package to include CD Extra, CDText, and DVD. This will give plants the option of using the interim step of writing to Exabyte rather than directly to glass.

VIEW FROM THE TOP

Despite initial difficulties, the commitment to CD Extra from several labels seems to be firm. "The major labels failed to orchestrate a unified market launch for CD Extra," says Mark Finer, consulting guru for Sony. "Also, record companies have been a little frustrated by CD Extra's dependency on computers and multiple operating systems." Still, Finer reaffirms Sony's commitment to both CD Extra and CD Text, pointing out that the company has already released more than 20 titles, with many more on the way.

The marketing of CD Extra has shifted from a "value-added" commodity to a "bonus" commodity. In other words, labels have abandoned plans to charge extra for the format. Instead, they hope to stimulate sales with the added media. This has always been the strategy of Rykodisc, an indie well known for venturing into uncharted waters. Rykodisc released the first ever multisession Enhanced CD (Sugar's *Besides*) in August 1995 and is about to release a new Ali Farke Toure CD Extra with full-blown multimedia and Blue Book files. Lars Murray of Ryko says, "Our policy from the start has been to try and provide worthwhile multimedia for the fans, but not to let the multimedia drive up the price of the disc or confuse the public with a separate SKU. It took some labels longer to figure this out. We started simply, with full-length videos, and kept the budgets down so we could provide the goodies for free. As developers work out the kinks, I expect enhanced discs to become more commonplace, and less risky to produce and market."

WHAT NOW?

Premastering facilities need to know if they should upgrade their systems to incorporate Enhanced CD services. They certainly don't want to invest in new equipment and witness a repeat of the DCC and MiniDisc fiasco. Fortunately, it's not a difficult decision. Enhanced CD will continue to grow steadily and the demand will surely increase.

Although the investment to *author* Enhanced CD can be great in terms of time and money, the investment to *premaster* Enhanced CD is rather small. The extra tools needed to create CD Extra masters require a small investment: less than $2,000! I hope this article will help lower the amount of time and patience needed also.

•••

Many thanks to the staff at NDR, Anne Shepard, Laurie Flannery and George Kawamoto, for their assistance in writing this article. Thanks also to the contributing editors at Emedia Professional, particularly Dana J. Parker and Robert A. Starrett, for their insightful articles on CD formats. ■

Toby Mountain is owner and president of Northeastern Digital Recording, which has mastered more than 3,000 audio CD projects since 1984. Most recently, he has done 20-bit mastering for David Bowie, the McGarrigle Sisters and the Discovery Channel.

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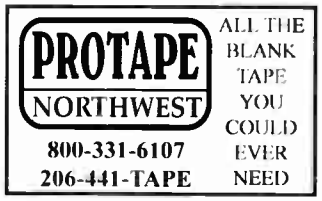

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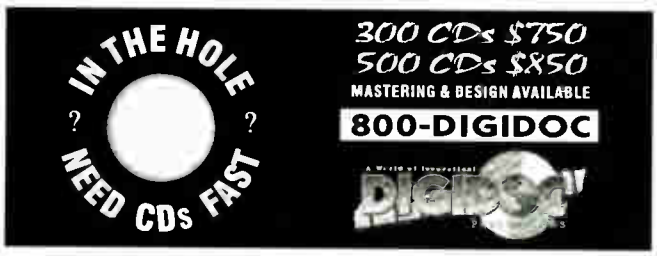

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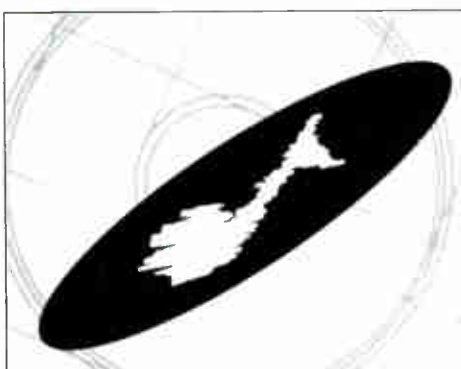

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Address (no PO Boxes) _____

City _____

State _____ Zip _____

Phone ( ) _____

Signature _____

_____ Display ($130 per inch) $ _____

_____ Text ($100 per inch, one-inch minimum) $ _____

_____ Bold @$10 additional $ _____

_____ Border @ $10 $ _____

_____ Reverse @ $25 $ _____

_____ Screen @ $15 $ _____

_____ Blind PO box @ $25 $ _____

TOTAL PAYMENT INCLUDED $ _____

❑ Visa ❑ MC ❑ AMEX

❑ Check/Money Order # _____

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FEEDBACK

PRESERVING OUR AUDIO HERITAGE

Thank you for the "Focus on Mastering" issue (December '96), especially St.Croix's "Original Audio Archives" and Paul Lehrman's "Short Cycles." I wonder how many of your readers appreciate the significance of the views presented or how closely related the two subjects are.

In this regard, I would have liked to see someone raise the question of digital audio and the headlong pursuit of new digital technologies vs. analog within the context of audio preservation. For example, does a pass through the digital domain compromise a program from the "raw, unaltered, dirty, popping, distorted, original" state that Mr. St.Croix has proposed is our obligation to preserve? Will the "next-generation Clean-up 2000 machine" be as effective on a 16-bit, 44.1k Apogee UV22 digital source as it would be on an analog copy? CDs don't meet the needs of audio historians for a myriad of reasons, and it is unlikely that a system employing the same basic technology operating under tighter tolerances (DVD) will, either. As I await the next round of hardware obsolescence, I wonder what is going to happen to the thousands of original, irreplaceable historical recordings under my care? Analog tape and equipment manufacturers obviously aren't considering such issues, but somebody needs to.

Kevin Irelan
Fallsburg, N.Y.

THE CUSTOMER'S ALWAYS RIGHT

I read the article "Short Cycles" by Paul D. Lehrman (December '96 *Mix*). It provides some interesting points about dawning technology...eventually. Why are you so sure that the world is going to come unglued if/when DVD is presented to the public? You must consider that technology is cheaper than ever before. DVD will be manufactured in virtually the same digital environment in which digital disk media has been pressed for almost 20 years! The cost of CD players is merely 20% of the introductory price, and the world knows how to use it!

I agree that the world is going a million miles per hour. The only problem with DVD is that we can't record on it as consumers! What kind of ignorant person thinks that the world is going to throw away all of our brand-new VHS players for a "play only" climate? The makers need to read this in print: We want to play and record! I am not talking about $3,000 CD-R machines, I am talking about $300 to $400 DVD recorders.

Finally, I feel comparing an "implant chip" to DVD is superfluous. I will put my hard-earned bucks where I want, when I want, and the makers of new technology better know this. They must sell to me, and that means impress me with desirable technology.

Doug Anderson
A/V Purchasing Agent
Keller, Texas

LES IS MORE

It was good to see Blair Jackson give credit to Les Dudek's contribution to the Allman Brothers' classic song "Jessica" (Classic Tracks, Jan. 1997). Although not a household name, Les Dudek has been heard by everyone who has heard "Jessica" and "Ramblin' Man." The bridge from "Jessica" came from Dudek, but he was never given songwriting credit, and most of the overdubbed leads at the end of "Ramblin' Man" were his.

And even though he was an excellent match for the Allmans, Dudek was never asked to join the band, but he did go on to record five solo albums and perform and record with Steve Miller, Boz Scaggs, Cher, Stevie Nicks, Dave Mason and many others. And judging from the fan mail from around the world in response to his latest album, *Deeper Shades of Blues*, Dudek is better today than ever. It's too bad the Allman Brothers never fully appreciated his contribution.

Steve Bussey
GeoSynchronous Records
geosync@pan.com

CHEMISTRY CLASS

In response to the Computer Checklist given by Charles Maynes in the February '97 issue, a word of caution is advised for those using compressed air to remove dust from electronic equipment. Compressed air is usually safe to use when cleaning your electronic gear, but under certain conditions, you might be doing more harm than good. As most of you know, air contains hydrogen gas. When hydrogen is mixed correctly with oxygen, you get water—not a good thing for electronic components. Compressed air, along with many other gasses, is known as a wet gas and has the potential to leave small traces of residue (water) on the items being "dusted."

A better solution is to use nitrogen gas. Nitrogen is a non-flammable, "dry" gas and will not leave any residue on your gear. Although compressed air is virtually cost-free, nitrogen is not very expensive. You can usually find cylinders of varying sizes to meet your needs at your local welding supply shop.

Leland Graber
COBi Digital
Medford, Ore.

CORRECTION

There were some errors in the October 1996 Field Test of the Jensen mic preamp, made and sold by The John Hardy Company. The product's proper name is Jensen Twin Servo® 990 Mic Preamp. Our area code is now 847, so call 847/864-8060 or fax 847/864-8076. Jensen designs are not based on limiting the audio bandwidth to 25 kHz, as stated in the article. The Jensen data sheet states a -3dB down point of 140 kHz, much higher than 25 kHz. The copper heat sinks are ⅛ inch—not ⅙ inch—thick. And the four ground lift switches (one for each channel) disconnect pin #1 of the output from the audio—not chassis—ground. A separate ground lift switch near the power supply disconnects the entire audio ground from the chassis ground.

John W. Hardy
Evanston, Ill.

Send Feedback to Mix, *6400 Hollis St. #12, Emeryville, CA 94608; fax (510) 653-5142; or mixeditorial @cardinal.com*

REALITY FOR $1500* A PAIR. INTRODUCING THE HR824 ACTIVE MONITOR.

f you've been trusting the quality f your creative prod-ct to passive monitors osting $400-$600 a air, there's an aston-hing revelation aiting for you. In our pinion, the active, iamplified HR824 is he most accurate ear-field monitor vailable — so accurate hat it essentially has no "sound" of its wn. Rather, Mackie Designs' High Resolution Series™ HR824 is the first mall monitor with power response so lat that it can serve as a completely neu-ral conductor for whatever signal you end it.

Mackie acoustic engineer David Bie uses scanning laser vibrometry to map HR824 tweeter dome vibrations. Film at 11.

SCIENCE, NOT SNAKE OIL.

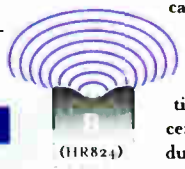
Internally-biamplified, servo-con-rolled speakers aren't a new concept. But o keep the cost of such monitors reason-ible, it's taken advances in measurement nstrumentation, transducers, and elec-ronics technology. In developing the HR Series, Mackie Designs sought out the nost talented acoustic engineers and then nade an enormous commitment to ex-otic technology. The HR824 is the result of painstaking research and money-is-no-object components, not to mention housands of hours of listening tests and ens of thousands of dollars in tooling.

FLAT RESPONSE... ON OR OFF-AXIS.

One of the first things you notice about the HR824 is the gigantic "sweet spot." The detailed sound field stays with you as you move back and forth across the console — and extends far enough behind you that musicians and produc-ers can hear the same accurate playback.

The reason is our proprietary ex-ponential high frequency wave guide. Without it, a monitor speaker tends to project critical high frequencies in a narrow beam (Fig. A) — while creating undesirable edge dif-fraction as sound waves interact with the edges of the speaker. Imaging and definition are compromised. The "sweet spot" gets very small.

Like biamped speakers, wave guides aren't a new concept. But it takes optimized internal electronics and a systems approach to make them work in near-field applications.



(HR824)

The HR824's wave guide (Fig. B) maximizes dispersion, time aligns the acoustic center of the HF transducer to the LF transducer's center, and avoids enclosure diffraction (notice that the monitor's face is perfectly smooth.) The exponential guide also increases low treble sensitivity, enabling the HF transducer to handle more power and produce flat response at high SPLs.

CLEAN, ARTICULATED BASS.

Seasoned recording engineers can't believe the HR824's controlled low bass extension. They hear low frequency accuracy that simply can't be achieved with passive speakers using external amplifiers. Why?

First, the HR824's FR Series 150-watt bass amplifier is directly coupled in a servo loop to the 8.75-inch mineral-filled polypropylene low frequency transducer.

It constantly monitors the LF unit's motional parameters and applies appropriate control and damping. An oversized magnet structure and extra-long voice coil lets the woofer achieve over 16 mm of cone excursion. Bass notes start and stop instantly, without "tubbiness."

Second, the HR824's low frequency driver is coupled to a pair of aluminum mass-loaded, acoustic-insulated 6.5-inch passive drivers. These ultra-rigid drivers eliminate problems like vent noise, power compression, and low frequency distortion — and couple much more effectively with the control room's air mass. They achieve the equivalent radiating area of a 12-inch woofer cone, allowing the HR824 to deliver FLAT response to 42Hz with a 38Hz, 3dB-down point.

Third, the woofer enclosure is air-displaced with high-density adiabatic foam. It damps internal midrange reflections so they can't bleed back through the LF transducer cone and reach your ears. The typical problem of small-monitor midrange "boxiness" is eliminated.

A TRUE PISTONIC HIGH-FREQUENCY RADIATOR.

We scoured the earth for the finest high frequency transducers and then subjected them to rigorous evaluation. One test, *scanning laser vibrometry*, gives a true picture of surface vibration patterns. Two test results are shown in the upper right hand corner of this ad. Figure C is a conventional fabric dome tweeter in motion. You needn't be an acoustic engineer to see that the dome is NOT behaving as a true piston.

Figure D shows our High Resolution metal alloy dome at the same frequency. It acts as a rigid piston up to 22kHz, delivering pristine, uncolored treble output that reproduces *exactly* what you're recording.

The Mackie HR824 Active Monitor. ±1.5dB from 42 to 20kHz.

INDIVIDUALLY OPTIMIZED.

We precisely match each transducer's actual output via electronic adjustments. During final assembly, each HR824 is carefully *hand-trimmed* to ±1.5dB, 42Hz-20kHz. As proof, each monitor comes certified with its own serialized, guaranteed frequency response printout.

Fig. C: Uneven fabric dome tweeter motion distorts high frequencies.

Fig. D: HR824 alloy dome's uniform, accurate pistonic motion.

The HR824's front board has "radiused" edges to further eliminate diffraction; an "H" brace bisects the enclosure for extra rigidity.

Mackie is one of the few active monitor manufacturers that also has experience building stand-alone professional power amps. Our HR824 employs two smaller versions of our FR Series M-1200 power amplifier — 100 watts (with 150W bursts) for high frequencies, and 150 watts (200W peak output) for low frequencies. Both amps make use of high-speed, latch-proof Fast Recovery design using extremely low negative feedback.

TAILOR THEM TO YOUR SPACE.

Because control rooms come in all shapes, sizes and cubic volumes, each HR824 has a three-position Low Frequency Acoustic Space control. It maintains flat bass response whether you place your monitors away from walls (*whole space*), against the wall (*half space*) or in corners (*quarter space*). A low frequency Roll-Off switch at 80Hz lets you emulate small home stereo speakers or popular small studio monitors.

CONFRONT REALITY AT YOUR MACKIE DESIGNS DEALER.

We've made some pretty audacious claims in this ad. But hearing is believing. So bring your favorite demo material and put our High Resolution Series monitors through their paces.

If you've never experienced active monitors before, you're going to love the unflinching accuracy of Mackie Designs' HR824s.

If you've priced other 2-way active monitors, you're going to love the HR824's $1498/pair price* AND its accuracy.

*$1498 suggested U.S. retail price per pair.

HR824 Active Monitors accept balanced or unbalanced ¼" and XLR inputs. Jacks & removable IEC power cord face downward so that the speaker can be placed close to rear wall surfaces.

MACKIE.™

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